

TB143
Introduction to Personal
Computers
[Onsite]

Credit hours: 4

Contact hours: 50 (30 Theory, 20 Lab)

Prerequisite(s): None

Introduction to Personal Computers

Course Revision Table

Footer Date	Section	Reason for Change	Implementation Date
10/07/08	Courseware	New Curriculum	December 2008

Where Does This Course Belong?

How does this course relate to the program? Take a look!

Introduction to Personal Computers is a technical basics course required to achieve an Associate of Applied Science Degree in the Electronics Technology, Computer Drafting and Design, and Information Technology programs.

As a first quarter technical basics course to three associate degree programs, Introduction to Personal Computers (along with the other first quarter courses, Problem Solving and Strategies for the Technical Professional) offers students several diverse career opportunities.

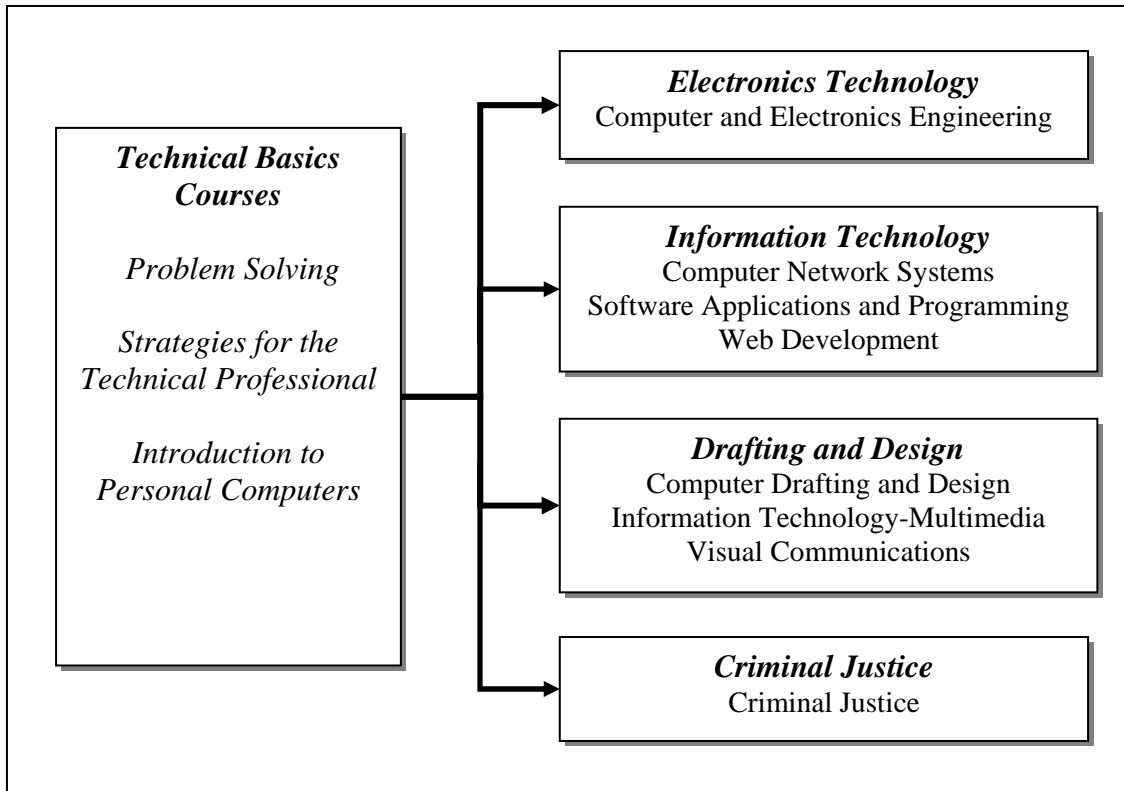
Graduates of the Electronics Engineering Technology and Computer Engineering Technology program may begin their careers in a variety of entry-level positions in various fields, such as technician, electronics technician, field service representative, salesperson, and computer technician.

Graduates of the Computer Drafting and Design program may begin their careers in a variety of entry-level positions in various fields involving drafting and design, some of which include mechanical drafting, piping drafting, architectural and construction drafting, civil drafting, interior design, illustration, and design detailing. The availability of micro-CAD systems has enabled even small drafting firms to utilize computer-aided drafting and design. Many industries use drafters who can translate ideas, sketches and specifications of an engineer, architect, or designer into complete and accurate working plans needed to make products, engineer projects, or create structures.

Graduates of the Information Technology program may begin their careers in a variety of entry-level positions in the program option pursued. For the Computer Network Systems option, such positions may include computer network analyst, computer network technician, help desk analyst, and WAN/LAN technician. For the Software Applications and Programming option, such positions may include database programmer, junior programmer, software support technician, and software tester. For the Web Development option, such positions may include web administrator, web applications developer, web/software developer, and website developer.

The following course sequence provides an overview of how *Introduction to Personal Computers* fits in the programs.

Introduction to Personal Computers



Note: Refer to the catalog for the state-specific course information.

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First Things First

Welcome! This courseware is designed to provide strategies and resources that will aid you in teaching this course.

The courseware components check list below provides a snapshot of this course. You may want to review the components of the courseware. A good way to track your review is by **checking** in the box next to each component as you review it. Reviewing the components will give you the bigger picture and better prepare you for what is coming up in the next few weeks. All the best!

Courseware Components Check List

Courseware Components	Reviewed
Syllabus	
Course Description	<input type="checkbox"/>
Major Instructional Areas	<input type="checkbox"/>
Course Objectives	<input type="checkbox"/>
SCANS Objectives	<input type="checkbox"/>
Course Outline	<input type="checkbox"/>
Instructional Methods	<input type="checkbox"/>
Instructional Materials and References	<input type="checkbox"/>
Course Evaluation and Grading	<input type="checkbox"/>
Instructor Guide	
Important Notes before You Start	<input type="checkbox"/>
Course Overview	<input type="checkbox"/>
Instructor Resources	<input type="checkbox"/>
Classroom and Lab Setup	<input type="checkbox"/>
Your Feedback	<input type="checkbox"/>
Unit 1	
Objectives	<input type="checkbox"/>
Content Covered	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 2	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>

Introduction to Personal Computers

Courseware Components	Reviewed
Summary and Reminders	<input type="checkbox"/>
Unit 3	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 4	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 5	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
In-Class Assessment	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 6	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 7	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 8	
Objectives	<input type="checkbox"/>

Introduction to Personal Computers

Courseware Components	Reviewed
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
In-Class Assessment	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 9	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 10	
Objectives	<input type="checkbox"/>
Readings	<input type="checkbox"/>
Key Concepts That Must Be Covered in Class	<input type="checkbox"/>
Teaching Tips for This Unit	<input type="checkbox"/>
Homework	<input type="checkbox"/>
Labs	<input type="checkbox"/>
Summary and Reminders	<input type="checkbox"/>
Unit 11	
Course Review	<input type="checkbox"/>
Final Exam	<input type="checkbox"/>
Research Assignment	<input type="checkbox"/>
Appendix A: Test and Answer Keys	<input type="checkbox"/>
Exams for Units 1-4	<input type="checkbox"/>
Exams for Units 5-7	<input type="checkbox"/>
Final Exams	<input type="checkbox"/>
Appendix B:	N/A
Appendix C: Lab Solutions	<input type="checkbox"/>
Appendix D	N/A
Appendix E	N/A
Appendix F	N/A
Appendix G	N/A

Syllabus: Introduction to Personal Computers

Instructor: _____

Office hours: _____

Class hours: _____

Course Description

Organization of a typical Personal Computer (PC) is examined in a given popular operating systems environment. Terminology and concepts related to major PC hardware components and their functions will be discussed consistent with industry standards and practices.

Major Instructional Areas

1. The Personal Computer and its Components
2. The Motherboard and its Components
3. Operating Systems
4. The Graphical User Interface (GUI) Desktop
5. Configuring and using the Operating System
6. Installing, uninstalling, upgrading, and configuring PC components
7. Computer Security
8. Introduction to Networking

Course Objectives

1. Demonstrate an understanding of what makes-up a personal computer.
2. Identify the major components of the motherboard in a PC including the CPU, chipset, memory, and expansion bus, and describe how they coexist.
3. Summarize the purpose of a computer operating system, and contrast the disk operating system (DOS) with the graphical user interface (GUI) operating system.
4. Describe how a Windows operating system (OS) is booted and used to manage folders, data, and applications in a PC.
5. Examine the methods used to manage data in a Windows-based computer system.
6. Describe how user accounts, passwords, and malware detectors are used to maintain a secure computer system.

7. Describe how to reduce the occurrence of computer malfunctions, and how to troubleshoot and recover from computer malfunctions when they inevitably occur.
8. Describe the physical characteristics of the disk drives used in a typical PC, what is needed to install them, and how they are configured to work with the Windows OS.
9. Examine the issues of installing or upgrading the video display system of a PC.
10. Describe a computer network and explain how to construct and configure a simple peer-to-peer network using three PCs.

SCANS Objectives

SCANS is an acronym for Secretary's Commission on Achieving Necessary Skills. The committee, created by the National Secretary of Labor in the early 1990s, created a list of skills and competencies that the committee feels are necessary for employees to function in a high-tech job market.

1. Assess a poor password and provide feedback to ensure security.
2. Distinguish how to reduce the occurrence of computer malfunctions by ranking troubleshooting steps by time.
3. Discuss the safety concerns with removing and replacing the power supply
4. Devise a scenario using a restore CD, System Restore, or disk image.
5. List the most popular network protocols and explain their function in a network.
6. Identify the basic steps that help to prevent security breaches.

Course Outline

Note: All graded activities, except the Project, are listed below in the pattern of <Unit Number>.<Assignment Number>. For example, Lab 1.5 refers to the 5th lab activity in Unit 1.

Unit	Activities
1—History and Architecture	<ul style="list-style-type: none"> ● Content covered: <ul style="list-style-type: none"> <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 1, “History and Architecture” ● Assignments: 1.1 (Start) ● Labs 1.1-1.2
2—CPUs and Memory	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 2, “CPUs and Memory” ● Assignments: 1.1 (Submit) ● Assignments: 2.1 (Start) ● Labs 2.1-2.2
3—Operating	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i>

Unit	Activities
Systems	<ul style="list-style-type: none"> ○ Unit 3, “Operating Systems” ● Assignments: 2.1 (Submit) ● Assignments: 3.1 (Start) ● Labs 3.1-3.3
4—The Desktop and Boot Process	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 4, “The Desktop and Boot Process” ● Assignments: 3.1 (Submit) ● Assignments: 4.1 (Start) ● Labs 4.1-4.2
5—Data and System Management	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 5, “Data and System Management” ● Assignments: 4.1 (Submit) ● Assignments: 5.1 (Start) ● Units 1-4 Exam ● Labs 5.1-5.3
6—Accounts and Security	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 6, “Accounts and Security” ● Assignments: 5.1 (Submit) ● Assignments: 6.1 (Start) ● Labs 6.1-6.2
7—Troubleshooting	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 7, “Troubleshooting” ● Assignments: 6.1 (Submit) ● Assignments: 7.1 (Start) ● Labs 7.1-7.2
8—Disk Drive Technologies	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 8, “Disk Drive Technologies” ● Units 5-7 Exam ● Assignments: 7.1 (Submit) ● Research Assignments: 8.1 (Start) ● Labs 8.1-8.2
9—Buses, Video, and Upgrades	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 9, “Buses, Video, and Upgrades” ● Assignments: 9.1 (Start) ● Labs 9.1-9.3
10—Networks	<ul style="list-style-type: none"> ● Read from <i>Introduction to Personal Computers</i> <ul style="list-style-type: none"> ○ Unit 10, “Networks” ● Assignments: 9.1 (Submit) ● Labs 10.1-10.3
11—Final Evaluation	<ul style="list-style-type: none"> ● Research Assignments: 8.1 (Submit) ● Final Exam

Instructional Methods

Teaching a technical subject like personal computers requires a teacher-guided instructional approach that involves all the senses of the student. Begin the theory portion of each class with the PowerPoint presentation. The PowerPoint presentation gives a visual review of the unit subjects to reinforce what the student learned from reading the assignment. This presentation should be followed by a lecture with discussion of the unit Key Concepts. Use the PowerPoint presentation and reading assignment to support discussions with the students.

Conclude the theory portion of the class with the hands-on labs. Depending on instructor preference and available facilities, the labs may be assigned to an individual or to cooperative learning groups. At the end of labs verify that the students met all the objectives for those labs—use the Lab Objective Checklist. If time permits, discuss with the students, what they accomplished in the labs and how that relates to what was covered in the theory portion of the class. Assign the reading assignment for the next class.

Two unit exams are given. The first is in Week 5, and covers topics in Units 1 through 4. The second exam is given in Week 8, and covers the topics in Units 5 through 7. The final exam will emphasize Units 8 through 10, and cover all prior topics.

There are eight weekly assignments, beginning with the first week. They are to be turned-in the following week. A ninth assignment requires research by the student. For that the student is given up to three weeks for preparation. It should be submitted no later than Week 11.

Instructional Materials and References

Student Textbook Package

Anthony, Tom, Bonham, Douglas, Kaeding, Randy, Larsen, Lawrence, Oliphant, John, and Schilling, Teresa. *Introduction to Personal Computers*. Benton Harbor, MI: Heathkit Educational Systems, 2009

Note that the Student Textbook contains all of the text reading assignments and all of the labs.

People contributing to the development of Introduction to Personal Computers include the following:

Tom Anthony reviewed the labs to verify they worked and were technically correct.

Douglas Bonham contributed to the writing of several units, labs, and PowerPoint presentations.

Randy Kaeding revised the labs to bring them up-to-date with the new computer and wrote three new labs. He also extensively revised the PowerPoint presentations and brought them into alignment with the Unit objectives.

Lawrence Larsen revised and edited several units, wrote exam questions to assess all of the unit and course objectives, and prepared the course template.

John Oliphant managed the development team, wrote several of the units, and developed several PowerPoint presentations.

Teresa Schilling, as the educational subject matter expert, supported the writing of the course template Syllabus and Appendix Z, and proofed the text units.

Other Resources

Resources for the lab exercises are located on the computer trainer hard disk drive. Any additional supplements, such as courseware files and other documents, and links to errata and late-breaking notes about the Heathkit text and labs, are located at www.heathkit.com/ITT. Login is Terabyte, password is defrag4.

Equipment and Tools

- The lab computers for this course are generic Intel-based personal computers with relatively up-to-date hardware and software (the Operating System is geared toward Windows XP Pro) configurations. As the purpose of the labs is to provide a hands-on platform to enhance students' learning in the generic personal computer structure and organization, emphasis should not be placed on seeking the most current specifications for both hardware and software.

Provided with each lab computer is an uninstalled video adapter and an Ethernet cable. In addition, a network hub, or switch, with at least three ports will be provided for every three lab computers.

- Common technician-related tools are all that is needed by the student to complete the exercises. At a minimum, each student should have a #2 Phillips screwdriver and a flat-bladed screwdriver. In addition, each student should have an antistatic wrist strap.

References

ITT Tech Virtual Library

Log on to the ITT Tech Virtual Library at <http://www.library.itt-tech.edu/> to access online books, journals, and other reference resources selected to support ITT Tech curricula.

Books

You may click “Books” or use the “Search” function on the home page to find the following books.

- ITT Tech Virtual Library > Books > Michael Karbo’s Online Service
 - PC Architecture
 - Windows XP Beginner
 - Windows XP Superuser
- ITT Tech Virtual Library > Books > Books 24x7 > View by: IT and Technical Topics > Hardware > PCs > *PC User’s Bible* by John Ross and Kelly Murdock

Periodicals

You may click “Periodicals” or use the “Search” function on the home page to find the following periodicals.

- ITT Tech Virtual Library > Periodicals > Computerworld > Knowledge Centers
- ITT Tech Virtual Library > Periodicals > PC Magazine > Current Issue (or Previous Issues)

Reference Resources

You may click “Reference Resources” or use the “Search” function on the home page to find the following reference resources.

- ITT Tech Virtual Library > Reference Resources > CNET.com
- ITT Tech Virtual Library > Reference Resources > Microsoft TechNet
- ITT Tech Virtual Library > Reference Resources > The PC Technology Guide
- ITT Tech Virtual Library > Reference Resources > Tom’s Hardware Guide

Program Links

You may click “Program Links” or use the “Search” function on the home page to find the following program links.

- ITT Tech Virtual Library > Program Links > Computer and Electronics Engineering Technology (CEET) > Self-Assessment

Learning Guides

You may click “Learning Guides” or use the “Search” function on the home page to find the following learning guides.

- ITT Tech Virtual Library > Learning Guides > Student Research Guides > PC Research
- ITT Tech Virtual Library > Learning Guides > Student Research Guides > Tech Professionals
- ITT Tech Virtual Library > Learning Guides > Computer Technical Tutorials > Tutorials Categories
- ITT Tech Virtual Library > Learning Guides > Fundamentals of Communications

Other References

The following resources may be found **outside** of the ITT Tech Virtual Library, whether online or in hard copy.

Books

- Cowart, Robert and Knittel, Brian. *Special Edition Using Microsoft Windows 2000 Professional*, Indianapolis: Que Corporation, 2001.
- Cowart, Robert and Knittel, Brian. *Special Edition Using Microsoft Windows XP Professional, Third Edition*, Indianapolis: Que Publishing, 2005.
- Cowart, Robert and Knittel, Brian. *Special Edition Using Microsoft Windows Vista, Second Edition*, Indianapolis: Que Publishing, 2008
- Mark Minasi, *The Complete PC Upgrade & Maintenance Guide, 16th Edition*. SYBEX Inc., 2005.
- Scott Mueller, *Upgrading and Repairing PCs, Eighteenth Edition*. Indianapolis: Que Publishing, 2007

Course Evaluation and Grading

Evaluation Criteria Table

The final grades will be based on the following categories:

CATEGORY	WEIGHT
Assignments	15%
Research Assignments	10%
Unit Exams	20%
Labs	35%
Final Exam	20%
Total	100%

Note: Students are responsible for abiding by the Plagiarism Policy.

Grade Conversion Table

The final grades will be calculated from the percentages earned in the course, as follows:

A	90–100%	4.0
B+	85–89%	3.5
B	80–84%	3.0
C+	75–79%	2.5
C	70–74%	2.0
D+	65–69%	1.5
D	60–64%	1.0
F	<60%	0.0

(End of Syllabus)

Instructor Guide

Important Notes before You Start

1. The Evaluation Criteria Table in the syllabus lists five means for assessing your students' progress: unit exams, final exam, assignments, research assignment, and labs.
2. There are two Unit Exams to test the students' retention of the material presented in the reading assignments and in the theory portion of the class period. The first exam covers Units 1 through 4. Three sets of unit exams are provided; each contains 33 questions. You may choose any one of the three exams or any combination of exams to test your students. The second unit exam covers Units 5 through 7. Because the subject matter is less broad, only two 33-question exams are provided. You may choose either of the two exams, or both exams, to test your students. The exam for the last three units is included within the Final Exam. There are two Final Exams. You may choose either of these exams, or both, to test your students' understanding of the material covered in this course. Note that the first Unit Exam should be delivered prior to the PowerPoint presentation for Unit 5. The second Unit Exam should be delivered prior to the PowerPoint presentation for Unit 8.
3. The Final Exam is a test of the material presented in Units 8 through 10. The Final Exam is also a test of the material presented in the first seven units, although a majority of the questions will come from the last three units.
4. There are eight weekly Assignments. Each weekly assignment can be completed by the student using what they have learned in that week's reading assignment, classroom theory presentation, and the labs. In most instances, you will have more than one suggested topic to choose from. You have the option to assign just one topic or several. The assignment is due the following week.
5. There is one Research Assignment that is assigned in Week 8. It is due no later than Week 11. The assignment requires the student to gather information that is related to the material covered in Week 8.
6. The labs are graded by assigning an attribute between 1 and 4 to each objective in the Lab Objective Checklist located in the Appendix of the student's textbook. As a suggestion, an attribute of 1 is not acceptable, 2 is below expectations, 3 meets expectations, and 4 exceeds expectations. These are established by comparing the student results to the Lab Solutions found in Appendix C.
7. Make sure each student fully understands the procedure for accessing the ITT Tech Virtual Library on an ITT Tech computer.
8. You are encouraged to inspire, motivate, and direct student usage of the ITT Tech Virtual Library resources—a useful place to go for assignment research. There is a lab in Unit 3 that takes the student to the library web site and requires the student to identify resource areas and search for specific topics to become familiar with how the Library works. In addition, there are references to the Library within the students' reading assignment for additional information on several topics.

9. Distribute the evaluation criteria of any graded assignment or exam to the students.
10. Before using the PowerPoint presentations for the first time, verify the classroom has the capability to display the presentation. Become familiar with the presentation equipment and verify it works with the provided software before the first class meeting.
11. Verify the lab contains the appropriate Q1 computers and monitors, one Ethernet cable for each computer, one hub or switch (with a minimum of three RJ-45 connector ports) for every three computers, and one uninstalled video card for each computer.
12. Each student should have, at a minimum, one #2 Phillips and one flat-bladed screwdriver, and one antistatic wrist strap for use in the lab. It is assumed that each student has paper and pencil, or pen—for note taking if nothing else. These are required for Labs 1.1 and 1.2. Also suggested, but not required, for these labs is a small amount of tape for labeling cables and components. Because the students will be completing these labs on the first day of class, we recommend the lab have a roll or two of tape available for the students' use.

Course Overview

This is a first-quarter course for all the programs in the Schools of Information Technology, Computer Drafting and Design, and Electronics. It is a thorough revision to the previous Introduction to Personal Computers course. We have provided a summary of the changes that have been made at the end of this overview. This may be of interest for those of you who are familiar with the previous course.

This course is designed to give your students an overview of the operation of a personal computer, its history, organization, common terminology, language, operating system, and a hands-on experience with real PCs in a controlled environment. Designed to accommodate students with no computer background, the course begins with the basics and slowly builds a base of knowledge that will provide every student with a solid foundation for confidently using a personal computer now and into the future.

The course is not attempting to make your students computer experts. Rather, they should leave knowing the fundamentals of what a personal computer is, and how to effectively use one. To that end, your students will know how the CPU and memory interface with the motherboard chipset, and with that knowledge be able to make a sound judgment as to what type and speed CPU and memory, and motherboard chipset, to select for a given purpose. They will understand the different types of DOS and GUI computer operating systems, and they will know how to configure and use the Windows XP Professional operating system. They will have a general knowledge of what an expansion bus is and the difference between the several standards. They will be able to install, upgrade, and configure a video display adapter and monitor. They will know the components and protocols that go into the construction of a computer network, and they will assemble and configure a simple peer-to-peer network. Finally, they will have acquired the knowledge to perform preventative maintenance tasks, and simple troubleshooting procedures in the

event of a system failure, and should it be necessary, know when to contact tech support with the information needed to resolve an issue with the PC system.

Changes to the Student textbook/lab manual for the Introduction to Personal Computers course:

UNIT 1

Unit is renamed *History and Architecture* from *General Knowledge, CPUs, and Safety*.

Updated the timeline history.

Added new section, *The Emergence of the Personal Computer*.

Updated the *Bytes* section.

Added several devices to the *Computer Components* section, removed graphics.

Renamed and updated *The Computer Bus*.

CPU sections moved to Unit 2.

Added new section, *The PC as a System*.

Added content to *Cases and Motherboards*.

Updated and added new technology content to *Power Supplies and Connectors*.

Moved *When Things Go Wrong* to Unit 7.

Numerous minor updates, changes, and additions to existing text.

PowerPoint presentation updated and content added to reflect changes in text.

Labs updated to reflect newer technologies and hardware.

UNIT 2

Unit renamed *CPUs and Memory* from *Motherboards and Memory*.

CPU Components added from Unit 1.

Added new section, *Instruction Sets*.

Added *Intel Processors* section from Unit 1.

Condensed *CPU* history.

Added significant content on newer processors.

Expanded *AMD* section, added *VIA* and *PowerPC*.

Added new section, *Multicore, Multiprocessing, Multithreading, and Multitasking*.

Added new section, *System Cooling*.

Rearranged presentation of the *Memory* sections.

Added new section, *Memory Types*.

Added new sections on cache memory.

PowerPoint presentation updated and content added to reflect changes in text.

Lab 2-1 updated and revised.

Added Lab 10-1 *Memory* for better sequencing.

UNIT 3

Unit renamed *Operating Systems* from *Starting with Windows*.

Added short sections on *DR-DOS* and *PC-DOS*.

Added Short section on *OS/2*.

Added *Windows NT History* from Unit 5.

Updated *Windows NT* section, including Vista.
Added section on *Macintosh* and *Linux*.
Added section on the *ITT Tech Virtual Library*.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.
New lab created *Exploring the ITT Tech Virtual Library*

UNIT 4

Working with the Windows Desktop and File System.
Added section *The Mac OSX Desktop*.
Added section *The Windows Vista Experience*.
Added information on updating and flashing the BIOS.
Added section *The Windows Boot Process*.
Moved section *Viruses and Malware* to Unit 6.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.

UNIT 5

Unit renamed *Data and System Management* from *Windows XP History and Data Management*.
Moved *History of Windows NT* to Unit 3.
Moved *Which Operating System is Right for You* to Unit 3.
Added section, *Data Backups*.
Added section, *Windows System Management*.
Added section, *USB and IEEE-1394*.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.
Added new lab 5-3, *The Control Panel and Device Manager*

UNIT 6

Unit renamed *Accounts and Security* from *Windows User Accounts and Networking*.
Section *The Networked PC* moved to Unit 10.
Added section, *Authentication and Passwords*.
Added section, *Viruses and Malware* from Unit 4.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.

UNIT 7

Unit renamed *Troubleshooting* from *Troubleshooting and Supporting Your Own Computer*.
Added section, *Proactive Maintenance*.
Added section, *When Things Go Wrong with Power* from Unit 1.
Removed section, *Floppy Disk Drive Basics*.
Removed section, *Powering Portable Electronics Devices*.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.

Removed the *Removing and Installing Floppy Disk Drives* lab.
Added lab from Unit 2, *System Inventory*.

UNIT 8

Unit renamed *Disk Drive Technologies* from *Hard Drive Technologies*.
Drive operation theories updated.
Drive interface section updated and condensed.
Partitioning methods updated.
CDs de-emphasized, DVDs emphasized.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.

UNIT 9

Buses, Video, and Upgrades.
Updated and added new images and text to section, *Expansion Buses*.
Significant reworking of the *video display* content.
Major changes to the *Upgrading a Computer* section.
PowerPoint presentation updated and content added to reflect changes in text.
Labs updated to reflect newer technologies and hardware.
New lab, *Adding a 2nd Video Display Adapter*.

UNIT 10

Networks
Added *The Networked PC* from Unit 6
Updated all network cabling sections
Updated *LAN Communication* to include new technologies and reduce coax
Updated *Wireless LANs* to include latest standards and technologies
Removed the section, *Decibels*
PowerPoint presentation updated and content added to reflect changes in text.
Lab 10-1 *Memory* moved to Unit 2.
Added lab *Introduction to TCP/IP*.

Instructor Resources

Resources from Publisher

Resources for the textbook and lab exercises, such as courseware files and other documents, and links to errata and late-breaking notes about the Heathkit text and labs, are located at www.heathkit.com/ITT. Login is Terabyte, password is defrag4.

Classroom and Lab Setup

Classroom Setup

The theory portion of this course must be taught in a theory classroom with standard classroom equipment.

In addition, the classroom must provide a computer-interfaced display system to support the PowerPoint presentations that accompany each textbook Unit.

Lab Setup

The labs are to be conducted in the standard computer lab room. The computers should have the following configuration specific for this course:

- The lab computers for this course are generic Intel-based personal computers with relatively up-to-date hardware and software (the Operating System is geared toward Windows XP Pro) configurations. As the purpose of the labs is to provide a hands-on platform to enhance students' learning in the generic personal computer structure and organization, emphasis should not be placed on seeking the most current specifications for both hardware and software.

Provided with each lab computer is an uninstalled video adapter, and an Ethernet cable. In addition, a network hub, or switch, with at least three RJ-45 connector ports is provided for every three lab computers.

- Common technician-related tools are all that is needed to complete the exercises. At a minimum, each student should have a #2 Phillips screwdriver and a flat-bladed screwdriver, and an antistatic wrist strap.

Your Feedback

After you teach this course, answer the following questions to document your feedback. Your answers will help improve any future versions of the course. Therefore, be as descriptive as possible. If you have any suggestions for improvements, mention them as well.

Note: Please submit your feedback to your Program Chair / Associate Dean. All of the feedback submitted for this will be collected and forwarded to the Curriculum Department to be used in the revision cycle.

Date: _____

1. Comment on the appropriateness and level of the textbook with reference to the level of the students and the purpose of the course.
2. Do the course objectives cover the scope of the course comprehensively? If no, please provide specific **examples**. Comment on the difficulty level of the objectives.
3. Were the assignments and labs too difficult or too easy for the students? Describe the positive and negative aspects of assignments and labs. Please provide specific **examples**.
4. Are you satisfied with the quality of exam and/or quiz questions and their answers? If not, mention the specific areas of dissatisfaction, giving **examples**.
5. Which components in the syllabus, instructor guide and unit plan did you find most useful and which components redundant? Explain, giving reasons.
6. Explain what you like the most in the course, what challenges you encountered, and how you solved them while teaching this course.
7. Is there any other feedback that you would like to provide?

(End of Instructor Guide)

Unit 1: History and Architecture

Objectives

- 1: Demonstrate an understanding of what makes-up a personal computer.
 - 1.1: Identify the major components of the personal computer (PC) including the power supply, hard disk drive, floppy disk drive, optical drive, memory, CPU, motherboard, and video adapter, and describe how they coexist.
 - 1.2: Identify and select the proper connectors, sockets, and cables used for interconnecting common PC components.
 - 1.3: Demonstrate proper safety procedures when disassembling and reassembling a personal computer.

Content Covered

Introduction to Personal Computers

- Unit 1, “History and Architecture”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Methods used to communicate with computers, including serial and parallel data transfer, and the several number systems used to describe that data.
2. Overview of the physical PC system.
3. The tactics of disassembling and reassembling a computer.
4. Understanding and avoiding electrostatic discharge (ESD).

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider reviewing what serial data flow is and what parallel data flow is. Use 8 bits of binary data to illustrate how the data moves. Point out that serial data can move over greater distances compared to parallel data because of the electrical constraints of the cable medium. This tip refers to key concept 1.
- Consider identifying all of the external inputs and outputs of the computer (serial port, parallel port, keyboard, mouse, USB, Ethernet, and audio). Point out that all use serial data, except for the parallel port, to support long cable lengths and to

keep the cable diameter small, to aid flexibility for improved durability and ease of use. This tip refers to key concept 1.

- Consider bringing an open lab PC into the classroom. Use it to point out the common locations of connections and components. Show the students the different types of connectors and types of cables. Relate the internal connections to the external I/O connections supporting the operation of a PC. Caution: While performing these demonstrations, wear an antistatic wrist strap attached to the computer chassis, to show that static issues must be considered around open computers. This tip refers to key concept 2.
- Consider pointing out the location of the two ICs used as the “chipset” to control the operation of the PC. Describe the system functions controlled by the GMCH, or “Northbridge,” and the system functions controlled by the ICH, or “Southbridge.” This tip refers to key concept 2.
- Consider using the lab PC to illustrate the construction of a common PC. Describe the various common methods used to attach the case covers. Now is a good time to show the students the unique way the lab computer side panel is removed and installed. Then point out how the various drives, motherboard, and power supply are attached. Note that the drives are installed using several different combinations of cages, rails, and mounting hardware. If you have time, pop the front panel off the PC and point out the many different types of cables, connectors, and switches. Caution: While performing these demonstrations, wear an antistatic wrist strap. This tip refers to key concept 3.
- If you haven’t already done so, when talking about the antistatic wrist strap, explain that static electricity is the enemy of the integrated circuits found in the PC. Emphasize this by pointing out that most circuits within the PC operate at less than 2 volts, using internal conductors smaller than one-thousandth the width of a human hair. This tip refers to key concept 4.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 1.1 (Submit week 2)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 1.

- Draw a timeline showing the history of the computer. Include at least 15 points on your timeline.
- Convert the current calendar year (2009, 2010, 2011, etc.) to binary and hexadecimal number systems.
- Draw a block diagram of a PC system, including several common internal and external peripherals.
- Make a list of all the input, output, input/output, and support hardware devices you encounter in your daily life.

Labs

Lab 1.1: Inside the Computer

What is the purpose?

The purpose of this lab is to familiarize you with the cables and connectors used to attach components to both the outside and inside of a computer, and show you how to disassemble and reassemble a typical PC, and in the process, identify the major components found within a PC.

What are the steps?

All of the procedural steps are provided in the Lab on page 1-43 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 1.2: Computer Power

What is the purpose?

The purpose of this lab is to familiarize you with the system of power distribution within the PC, show you how to calculate the power consumed by the PC, and give you the opportunity to demonstrate their ability to successfully remove and reinstall the PC power supply.

What are the steps?

All of the procedural steps are provided within the Lab on page 1-59 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you were able to complete all the steps, answer the questions, and the PC was able to properly power-up and boot after you reinstalled the power supply, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned a little history of the computer. They learned the language of computers and discovered it wasn't all that different from the math they studied in school. They also learned what it takes to make a computer work, where the parts go, how to disassemble and reassemble a computer, and how to protect its components from static electricity. Finally, they put what they learned into practice by opening a PC, examining its cables and components, removing and reinstalling the computer power supply, and restoring the computer to its original working condition.

Reminders

Next class your students will dig a little deeper into the PC and study the operation of the central processing unit, system memory, and the integrated circuits that oversee the operation of the PC. Have them read Unit 1, if they have not already done so, to make sure they understand the material covered today. Then have them read Unit 2. Finally, give them Assignment 1.1 for submission next week.

(End of Unit 1)

Unit 2: CPUs and Memory

Objectives

- 2: Identify the major components of the motherboard in a PC including the CPU, chipset, memory, and expansion bus, and describe how they coexist.
 - 2.1: Describe the different types of CPUs found in a PC and explain why one type is preferred over another.
 - 2.2: Explain how to identify the different types of memory modules and how they interface with the CPU.
 - 2.3: Explain the relationship between the CPU, memory, and the chipset.

Readings

Introduction to Personal Computers

- Unit 2, “CPUs and Memory”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. The basic structure of the CPU (central processor unit).
2. Review of the CPUs manufactured by Intel Corporation.
3. Review of the other CPUs competing with Intel Corp.
4. Examine the concepts of multicore, multiprocessing, multithreading, and multitasking CPUs.
5. Examine the different types of solid-state memory and how it is configured for use in a PC.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students' learning style.

- Consider addressing this from two perspectives. First are the physical characteristics of the CPU. It is designed with a large flat surface to efficiently radiate heat. The interface pins, or pads, are placed on the bottom to make the connection points as close to the internal circuits as possible. The number of pins keeps growing to keep up with the increased functions performed by the CPU. The second perspective of the CPU is its internal structure. This is best shown with a diagram identifying the external connections, including the address bus, data bus, and control lines. Inside the CPU outline, show the address register, the data register, the instruction decoder, arithmetic and logic unit, and the buses and

control lines between the blocks. Then show how address bus finds the data, how the data is read and decoded into instructions and information, the information is processed by the ALU, and finally delivered to an address over the data bus. Point out that the Intel chipset controls the CPU-to-memory interface. This tip refers to key concept 1.

- Consider talking through the lineage of the Intel processors beginning with the original Pentium and stepping through to the latest Core 2 Quad. Point out the differences between the desktop CPUs and the laptop Celeron CPUs. This tip refers to key concept 2.
- Consider reviewing the alternative CPUs. While there have been several over the past two decades, the only real player remaining in the PC market is AMD and their CPUs. Describe the AMD processors beginning with the Athlon 64 and stepping up to the Phenom. This tip refers to key concept 3.
- Consider reviewing the often confusing terms multicore, multiprocessing, multithreading, and multitasking using “threads,” data paths, and internal processors to illustrate the concepts. This tip refers to key concept 4.
- Consider examining the idea of static and dynamic memory. Explain why dynamic memory is slower than static memory. Then compare the several common types of memory modules used in desktop PCs, by showing how each builds on the characteristics of the previous. Use SDRAM, DDR, DDR2 and DDR3 as examples. This tip refers to key concept 5.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 2.1 (Submit week 3)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 2.

- Draw a timeline showing the history of the Intel CPUs used in PCs.
- You are going to be delivering a short presentation of the benefits of upgrading the department's computers to quad-core processors. Draw a simple illustration/block diagram that demonstrates multiprocessing. Include multiple applications.
- Draw an illustration of a typical motherboard. Point out the major connection points and components.

Labs**Lab 2.1: The Motherboard****What is the purpose?**

The purpose of this lab is to familiarize you with the general layout of a PC motherboard and how power is distributed within the PC, and provide a closer look at the three main types of system buses, PCI, PCIe, and memory.

What are the steps?

All of the procedural steps are provided within the Lab on page 2-45 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 2.2: Memory**What is the purpose?**

The purpose of this lab is to familiarize you with the different types of memory modules used in a PC, show how to uninstall and reinstall a memory module, and observe how a PC responds to a memory module failure.

What are the steps?

All of the procedural steps are provided within the Lab on page 2-53 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned about CPUs, from conception to the latest quad processor. Your students should now have a good understanding of CPU terminology, the advantages one CPU has over another, and the type of CPU installed in the lab trainer. By the same token, your students should know the different types of PC memory, the best way to select memory, and the type of memory in the lab trainer. Finally, your students should now understand how the PC chipset interfaces the CPU to memory and to the other components within the PC.

Reminders

Next class your students will study the software that makes the PC a useful tool, its operating system. Have them read Unit 3. Also, give them Assignment 2.1 for submission next week.

(End of Unit 2)

Unit 3: Operating Systems

Objectives

- 3: Summarize the purpose of a computer operating system, and contrast the disk operating system (DOS) with the graphical user interface (GUI) operating system.
 - 3.1: Describe the progression of PC operating systems from the early DOS through the series of Microsoft Windows operating systems.
 - 3.2: Discuss the several different operating systems available that use a GUI rather than a command line prompt.
 - 3.3: Describe the advantages and disadvantages of the DOS command line method of computing.
 - 3.4: Describe the advantages and disadvantages of the GUI method of computing.
 - 3.5: Describe the purpose of the ITT Tech Virtual Library and describe the major resource areas available.

Readings

Introduction to Personal Computers

- Unit 3, “Operating Systems”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Review PC operating systems from pre-DOS through Windows Vista.
2. Examine the advantages and disadvantages of DOS and Windows.
3. Compare and contrast the operating systems with graphical user interfaces (GUI), Windows, Apple, and Linux to each.
4. Describe the process for accessing the ITT Tech Virtual Library web site using the student User Name and Password.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider illustrating operating systems as a time line. Start with the idea that earlier personal computers required the user to start the computer by manually inputting data with toggle switches. Move on to the next generation, the disk operating system. This was a vast improvement, but the user was still saddled with a character-based system. Then, describe the several Windows operating systems, showing how they gradually move the user from a character to a

graphical user interface. Point out that with these changes, it is now possible for anyone to use a personal computer. This tip refers to key concept 1.

- Consider comparing DOS to Windows from a user perspective. Discuss the advantages of DOS—even today—in the areas of server support and PC system troubleshooting. Then look at the advantages of Windows from a user perspective. While doing so, also compare DOS to Windows. Point out that built-in DOS support is quickly fading from within the consumer version of Windows. This tip refers to key concept 2.
- Consider identifying the three readily available GUI-based operating systems. Create a list for each so the students can compare such characteristics as, the desktop, various input methods, application availability and compatibility, cost to implement, system support, and general ease of use. This tip refers to key concept 3.
- Consider setting-up a computer with Internet access and take the students through the process of accessing the ITT Tech Virtual Library web site. Use several of the Library references from the Instructor Guide for the demonstration. Make the visit to Books 24X7 the last place you go, and point out the need to judge the contents of a book or periodical by not only its title, but also by its publication date—after all, we are working with leading-edge technology, and the newer the references, the more useful the information. This tip refers to key concept 4.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 3.1 (Submit week 4)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 3.

- After taking this course your friends and family will consider you to be an expert on computers and operating systems. In the meantime, your friends are asking you about the various operating system options available today, and which might be the best choice. Make a list of some advantages and disadvantages of each: Windows, OS X, Linux.
- Draw a timeline showing the history of PC operating systems, from CP/M through Windows Vista. (Hint: use the list in Unit 1.)

Labs**Lab 3.1: The Windows XP Desktop, Part 1****What is the purpose?**

This lab serves a twofold purpose. First, it provides you with a brief overview of how to use the Windows XP Graphical User Interface (GUI). Second, it shows you how to switch to the "Classic" user interface, which is the same interface used by previous versions of Windows.

What are the steps?

All of the procedural steps are provided within the Lab on page 3-23 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 3.2: The Windows XP Desktop, Part 2**What is the purpose?**

In this lab you will explore more of the techniques of working in Windows Explorer, using the right mouse button, and adjusting the display characteristics.

What are the steps?

All of the procedural steps are provided within the Lab on page 3-37 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 3.3: Exploring the ITT Tech Virtual Library**What is the purpose?**

In this lab, you will learn how to access and find information in the ITT Tech Virtual Library. By the end of this lab, you should be able to look up information about specific computer-related components or software.

What are the steps?

All of the procedural steps are provided within the Lab on page 3-57 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned the basics of working with a Windows operating system. Just as Unit 1 provided a foundation for further hardware study, this unit provided a foundation for further operating system study. This study will continue in Unit 4, after the students have had a chance to explore Windows in the lab. If you have ever visited the computer section of a large bookstore, you know that most books about Windows are very large, some several inches thick. Obviously, what you have seen here is just a taste of a much larger world.

Reminders

Next class your students will study the process for booting the computer and satisfying Windows security in order to gain entry to the operating system. Then, they will examine the main components of the Windows desktop. Have them read Unit 4. Also, give them Assignment 3.1 for submission next week.

(End of Unit 3)

Unit 4: The Desktop and Boot Process

Objectives

- 4: Describe how a Windows operating system (OS) is booted and used to manage folders, data, and applications in a PC.
 - 4.1: Describe the purpose of the motherboard ROM/BIOS and how it is accessed.
 - 4.2 Describe the purpose of the power-on self test (POST).
 - 4.3 Describe the Windows start-up files.
 - 4.4 Describe the Windows File Manager, Explorer, and how it is used to organize files and folders.

Readings

Introduction to Personal Computers

- Unit 4, “The Desktop and Boot Process”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Explain the purpose of the ROM/BIOS, how to access it, and how to configure it.
2. Describe the Windows boot process as a series of steps—ROM/BIOS and how it controls PC start-up and hardware/software communications, POST verifies things work.
3. Identify the primary Windows startup files and explain their execution sequence.
4. Review the purpose of the Windows desktop.
5. Review the purpose of the Windows File Manager, Explorer, and describe how files are managed using Explorer.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider bringing in a lab PC system and use it to demonstrate accessing the BIOS. Modify the configuration to change the way the PC boots to demonstrate the POST. This tip refers to key concept 1.
- Consider expanding on the boot process concept by describing what the POST accomplishes. Then draw a timeline showing the steps in the boot process from power-on to the beginning of Windows startup. This tip refers to key concept 2.

- Consider describing the function of the Windows primary startup files and continue the boot process time line you started earlier. Show what happens when a file is missing or damaged. As an example, disable the file NTLDR by changing its name. Note that you may have to change its attributes before you can change its name. This tip refers to key concept 3.
- Consider using the lab computer to examine the Windows desktop. Identify the components, not examined in the Unit 3 labs, of the desktop and explain how the desktop can be used for storing files and application short-cuts. This tip refers to key concept 4.
- Consider using the lab computer to open and explain the purpose of the Windows File Manager, Explorer. Then, use Explorer to copy and move files from folder to folder, logical drive to logical drive, and Explorer to desktop. Show how you can drag and drop files, copy and paste with the Edit menu, and cut or copy and paste with the keyboard commands X, C, and V. And of course, don't forget the "Opps" key, V. This tip refers to key concept 5.
- Consider continuing the use of the lab computer to show how to change how files are displayed in Explorer. Use the Folder Options to enable file extensions and system files. Explain why system files are normally hidden. Then, use the View menu to change the Explorer display appearance. This tip refers to key concept 5.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 4.1 (Submit week 5)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 4.

- Draw a simple illustration of the Windows XP Desktop. Label each of the major items found there.
- Now that you know what to look for, pay attention to each computer you encounter for the next week. Keep track of how many of these systems have the file extensions displayed and how many of them have the extensions hidden. Which method do you prefer, and why?
- Watch a computer as it boots. Make a list of the various screens that you see before Windows starts. Use the Pause key to freeze the information on the screen. Include any beeps and other sounds you hear. Reboot the computer as many times as necessary to obtain the information you seek. (Note: some computers hide this information behind a "splash screen" advertising the name of the motherboard or system manufacturer. This splash screen can usually be turned off in the BIOS.)

Labs

Lab 4.1: Organizing the Desktop

What is the purpose?

The purpose of this lab is to show you how to move objects like applications, documents, and folders into the Start menu, and in the process, create shortcut icons that point to applications, documents, and folders that are stored in other folders. Then, open My Computer and display the contents of disks. Finally, you will learn how the right mouse button can be used to perform several additional tasks.

What are the steps?

All of the procedural steps are provided within the Lab on page 4-41 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 4.2: Working with Files and Folders

What is the purpose?

The purpose of this lab is to familiarize you with how to move objects like files and folders onto the desktop. Then, show you how the right mouse button may be used to perform several additional tasks. At the end of this lab you will explore the operation of the Recycle Bin.

What are the steps?

All of the procedural steps are provided within the Lab on page 4-55 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

If your students are experienced Windows users, this unit will have provided them with a tip or two that they didn't know about. On the other hand if they're new to the Windows world, or they've never had any formal instruction, this unit will have shown them how to tame that computer and make it behave. The end of the chapter covered how the computer boots and what makes that process work, what Windows does when it boots, as well as, what happens when the system won't boot. We suggested you give your presentation in reverse order, to get the students warmed-up to how the system functions before looking at the inner workings of Windows.

Reminders

Next class your students will learn how to manage the system and its data. Have them read Unit 5. Also, give them Assignment 4.1 for submission next week. And finally, remind them that there will be a Unit Exam covering Units 1-4.

(End of Unit 4)

Unit 5: Data and System Management

Objectives

- 5: Examine the methods used to manage data in a Windows-based computer system.
 - 5.1: Describe the various hard disk drive file systems, and how drives are partitioned in Windows using the Disk Manager.
 - 5.2: Describe the purpose of signed drivers and why they are used.
 - 5.3: Describe the reason for backing-up data and the various methods used to backup and restore data.
 - 5.4: Describe the process of using system restore to recover from a damaged system without the need to reinstall backed-up files.

Readings

Introduction to Personal Computers

- Unit 5, “Data and System Management”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Describe how data is stored on hard disk drives, and the best way to insure a hardware failure will not cause the loss of that data.
2. Describe what can be done to recover from a loss of data or an operating system failure.
3. Explain that the reason for using signed drivers is to limit the amount of system down-time due to driver failures.
4. Look at the use of system restore and backed-up data and explain when one or the other is preferable.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider setting-up a lab computer system to show how data is stored on the hard disk drive. Use Explorer to show drive status. Then, select the Tool tab and open the Defragmenter. Use it to illustrate how data is stored on the drive, and to identify the condition of the drive contents. Talk about the best practice of moving all data to a different hard disk drive, and if one is not available, at least to different logical drive (partition). Explain why this should be done. This tip refers to key concept 1.

- Consider describing how to recover from data loss, or a complete operating system failure. Point out that best practice is to back up both the system partition and the data partition. Emphasize regular data backups—the system and application files can always be reinstalled, but lost data may be gone forever. This tip refers to key concept 2.
- Consider talking about signed drivers, what it means to be signed, and why signed drivers should be used. Acknowledge that signed drivers are not always available. In those instances, you must rely on the integrity of the manufacturer to deliver stable, reliable, and malware-free drivers. This tip refers to key concept 3.
- Consider using the computer to demonstrate how to use the alternate boot option menu (F8) to recover from a non-functioning operating system. Demonstrate Safe Mode, and explain how it modifies the OS to allow you to repair or replace system files or drivers. Demonstrate the Last Known Good function as well, and explain what it does. Finally, demonstrate the Restore tool, and explain what it can be used for. This tip refers to key concept 4.

In-Class Assessment

Exam for Units 1-4 (provided in Appendix A)

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 5.1 (Submit week 6)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 5.

- Make a list of all the types of data you would include in a simple system backup of a typical home and business computer system. Estimate how much storage space you might need for this backup. Make another list of the types of data you would **not** include in your backup. For each item listed, give a brief explanation of why you would or would not include that type of data.
- You have been given a 500 GB hard drive as a replacement for your office PC. Nobody else uses this PC but you. Assuming you are going to be working for a company that develops large mechanical drawing files for customers, draw a graph showing how you might partition this drive. Briefly explain why you chose the size of each partition.
- Make a list of all the USB and Firewire devices you encounter for a week.
- Create a chart listing some of the ways you might recover from a serious hard drive problem. For each type of recovery, list the speed, difficulty, and chances of saving the original data on the drive.

Labs

Lab 5.1: Windows XP Configuration

What is the purpose?

In this lab you will open the Control Panel in Windows XP and learn how to use several of the various managers available to configure the system. In the process, you will discover that you have already used several control panel managers from different venues. The managers you will open and examine include the Regional and Language Options manager, the Mouse Properties manager, the Keyboard Properties manager, the Accessibility Options manager, and the Sounds and Audio Devices Properties manager.

What are the steps?

All of the procedural steps are provided within the Lab on page 5-37 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 5.2: The Windows XP File System

What is the purpose?

This lab has two specific goals. First, you will look at the features and utilities located in the Local Drive *Properties* menus. Then, you will demonstrate the unique capabilities of the Disk Manager by creating a new logical drive partition, name and size it, mount it to an empty NTFS folder, hide it from the list of drive letters, and finally, delete the drive.

What are the steps?

All of the procedural steps are provided within the Lab on page 5-51 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 5.3: The Control Panel and Device Manager**What is the purpose?**

In this lab you will explore the Device Manager and its system settings. Why devote an entire lab to just one manager? The Device Manager could be considered the most important tool for a user who maintains and repairs a PC that run Windows. Whenever a user must configure or troubleshoot a device or system problem, the first stop will probably be the Device Manager.

What are the steps?

All of the procedural steps are provided within the Lab on page 5-67 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Anybody can sit down and start using a computer, but the most knowledgeable users know how to configure and manage their systems, protect their data, recover from disasters, and utilize external storage systems. This unit covered a wide array of topics, but they are all related to being a smart, productive, and protected user.

Reminders

Next class your students will study user accounts, system security, and malware. Have them read Unit 6. Also, give them Assignment 5.1 for submission next week.

(End of Unit 5)

Unit 6: Accounts and Security

Objectives

- 6: Describe how user accounts, passwords, and malware detectors are used to maintain a secure computer system.
 - 6.1: Describe what a user account is and how it is used.
 - 6.2: Explain the purpose of a password and describe what makes one password strong and another weak.
 - 6.3: Describe what malware is.
 - 6.4: Describe how malware enters a computer, and what can be done to prevent that from happening.

Content Covered

Introduction to Personal Computers

- Unit 6, “Accounts and Security”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Describe the purpose of a user account, how to make one, and how to modify one.
2. Examine how authentication and user passwords can give the system administrator greater control over security in a PC.
3. Review the role malware plays in PC security and describe methods used to control their entry and spread within the system.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider describing the purpose of a user account and how it gets the user into Windows. Explain how the user account is assigned a profile that defines how the computer and operating system works for that specific user. Log a different user into Windows and the profile will change as well. This tip refers to key concept 1.
- Consider describing the purpose of computer security and how it is handled through user authentication. Go into how to make good and bad passwords. Also review other methods to limit physical access to a computer, such as using the keyboard lock command. This tip refers to key concept 2.

- Consider describing what malware is. List the various types of malware and how they are distributed. Then examine the various ways to block malware by using various types of “barrier” software. Point out that the best protection comes from a user that is alert and recognizes attempts to penetrate the computer protection scheme, whether from something as simple as phishing to the devious Trojan horse virus. This tip refers to key concept 3.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 6.1 (Submit week 7)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 6.

- The IT staff at the office has implemented a new password policy. Make a list of three secure passwords. Each one must use both upper and lower-case letters, at least one number, and one punctuation character. The password must not include any English words, repeating characters, or sequences of four characters in order on a standard keyboard, such as zxcv or 0987. Each password must be at least eight characters long.
- A computer is being used by a small business to store personnel records, payroll, and customer financing data. Discuss several specific ways you would protect this computer from unauthorized access.

Labs

Lab 6.1: Controlling Windows Access

What is the purpose?

In this lab you will learn how to implement password protection. You will then see how the administrator determines who has access to a computer, and what that access entails. You will also look at several other functions and utilities that help the administrator control Windows access.

What are the steps?

All of the procedural steps are provided within the Lab on page 6-27 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 6.2: Windows Security

What is the purpose?

In the previous lab you learned how to use two different methods to create a user. But, they didn't do anything to control that user's access to files and folders, other than requiring a password to access the computer. In this lab you will learn how to use the *properties* of a file or folder to regulate who has access to those objects. You will also learn how to control how a user may access a computer running Windows.

What are the steps?

All of the procedural steps are provided within the Lab on page 6-45 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned many Windows support issues are related to misunderstandings surrounding user accounts and restricted access to the system areas of the operating system. As a user these restrictions can be problematic. If one of your students is ever working as a system administrator responsible for the support of many computers, they are likely to learn that these restrictions keep a person happy and sane. As a regular user, it's good to know why the administrators always seem too strict about the security of their systems. PC system security starts by locking the doors and keeping others away from computers and servers. Beyond that, strong passwords help to provide secure authentication. If your students have never seen any of the malware discussed in this unit, then they haven't spent much time on any computer. Running a Mac or Linux system doesn't prevent a phishing attack, but it does reduce the threat from other malware.

Reminders

Next class your students will learn what it takes to maintain and troubleshoot their own computer. Have them read Unit 7. Also, give them Assignment 6.1 for submission next week.

(End of Unit 6)

Unit 7: Troubleshooting

Objectives

- 7: Describe how to reduce the occurrence of computer malfunctions, and how to troubleshoot and recover from computer malfunctions when they inevitably occur.
 - 7.1: List the questions one should ask when faced with a computer that no longer works the way it used to and explain how the answers may be used.
 - 7.2: Describe the system information that must be available when contacting a service technician about a computer problem.
 - 7.3: Describe the proactive maintenance tasks that may be used to prevent system failures and minimize down time in the event of a system failure.

Content Covered

Introduction to Personal Computers

- Unit 7, “Troubleshooting”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Review the process for troubleshooting a PC problem.
2. Describe what it means to proactively maintain a PC.
3. Examine the various types of electrical problems that can affect the stable operation of a PC and describe how they can be reduced or eliminated.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider explaining to your students that computer troubleshooting is not limited to computer specialists, although many will become one. Today use the approach, troubleshooting a personal computer. Go through the common steps to identify and isolate a computer problem. Make a list of sight and sound symptoms. Point out that it’s not a good idea to leap at the first suggestion of a problem, it may be a flag for a different issue all together. Rather, record all the symptoms, and from that list deduce the problem. Remind your students that most computer problems are not solved by the average user, even though they will have a sound footing to work from. Point out that they shouldn’t contact a service tech until they have gathered all the evidence, as well as, all of the hardware and software details of their computer—many out-of-warranty service calls are charged by the minute. This tip refers to key concept 1.

- Consider reviewing the process of maintaining a computer—what can be done beyond wiping off the dust from the case. Make a list of activities that should be performed, and when they should be performed. Point out that proactive maintenance is preferred over proactive troubleshooting of a computer problem. This tip refers to key concept 2.
- Consider describing the outside influences that can affect the reliable operation of a computer. Talk about electrical power issues and how they can be limited, or at least, reduced. Remind the students that the best computer power supply can never overcome an unstable or intermittent electrical power source, or the electrical forces of nature. This tip refers to key concept 3.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 7.1 (Submit week 8)

Use the following task to evaluate your student's understanding of the material covered in Unit 7.

- You have just received a new computer at work. It runs fast and works great. Thinking about the future and the day something might break or fail, make a list of several things you would do right away, before you begin performing any serious work on this machine. For each item, explain why it is important to record this information.

Labs

Lab 7.1: Hard Disk Recovery

What is the purpose?

In this lab you will install and explore the Recovery Console and the Advanced Options boot menus. You will find those tools can be very helpful when troubleshooting many hard disk drive problems, but you must know what you are doing before attempting to repair a problem.

What are the steps?

All of the procedural steps are provided within the Lab on page 7-17 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 7.2: System Inventory

What is the purpose?

A system inventory is a big list of all the parts, drivers, versions, and software in a computer. With a system inventory in your hands, you can get or provide much more efficient technical support. Some larger companies use special software to obtain hardware, software, and driver inventories of all the computers in their system. In this lab, you will use a combination of software tools, as well as, some manual poking around to see what's in the lab computer.

What are the steps?

All of the procedural steps are provided within the Lab on page 7-29 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

This unit began by discussing several troubleshooting strategies used by professional technicians, which are also useful to the technical computer user. The so-called “troubleshooting mindset” is useful for solving many different types of problems. Staying ahead of the need for repairs is a great strategy, but too many businesses don’t stay prepared for disasters. Finally, one of the more common troubles encountered by computer users, electrical power, was examined,.

Reminders

Next class, your students will study hard drives from the early versions to today’s monsters, then take a detailed look at optical drives. Have them read Unit 8. Also, give them Assignment 7.1 for submission next week. And finally, remind them that there will be a Unit Exam covering Units 5-7.

(End of Unit 7)

Unit 8: Disk Drive Technologies

Objectives

- 8: Describe the physical characteristics of the disk drives used in a typical PC, what is needed to install them, and how they are configured to work with the Windows OS.
 - 8.1: Describe the physical characteristics of a hard disk drive and an optical disk drive and compare and contrast these characteristics.
 - 8.2: Describe the different types of drive interface cables and explain what determines which cable is used in the system.
 - 8.3: Describe drive installation and configuration.
 - 8.4: Describe the different types of common compact disk (CD) and digital video disk (DVD) optical drives and the disk formats they support.

Content Covered

Introduction to Personal Computers

- Unit 8, “Disk Drive Technologies”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Describe how hard disk drives (HDD) works.
2. Describe how the optical drive works.
3. Compare the differences and similarities of HDD and optical drives.
4. Describe the different types of interface cables and where they are used.
5. Describe the process for installing and configuring a drive.
6. Describe the different types of CD, DVD, and dual-layer DVD formats.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students' learning style.

- Consider describing how a hard disk drive works. If you have an old drive available, open it and show the students the physical characteristics of the drive. Point out that the HDD has the data tracks arranged in cylinders, tracks, and sectors, and that there are often multiple disks and heads. This tip refers to key concept 1.

- Consider describing the optical drive with an open CD-ROM drive, if it's available. Point out that unlike the HDD, the optical drive has one single data track, similar to a vinyl record groove. This tip refers to key concept 2.
- Consider describing the differences between hard and optical disk drives. Point out that the media for a hard disk drive is optimized for fast reading and writing. Optical drives support both read only disks and read/write disks, but because of the media the read/write capabilities is limited. This tip refers to key concept 3.
- Consider describing the different types of hard and optical disk interface cables and connectors. While the students may be familiar with the different types, from an earlier unit, they probably didn't have the opportunity to see the actual connectors. Point out how the connectors are indexed. Describe the different types of IDE cables (40 and 80 conductor) and where they are used in the computer. This tip refers to key concept 4.
- Consider describing the IDE interface configuration process using jumpers and cable connectors—master/slave, cable select, and the primary and secondary drive controllers. Point out that SATA is attached to a single drive, and that it is fast becoming the standard for hard and optical disk drives. This tip refers to key concept 5.
- Consider describing the different types of optical disk drive technologies (CD, DVD, and dual-layer DVD). List the amount of data held by each, and their common use, both in computers and in multimedia. This tip refers to key concept 6.

In-Class Assessment

Exam for Units 5-7

Homework

The following homework is designed to cover the course objectives for this unit.

Research Assignment 8.1 (Submit week 11)

Use the following tasks to evaluate your student's understanding of the material covered in Unit 8.

- Research the various types of hard drives available from online and/or local retail computer stores. Make a chart of several different brands or models of 1 TB desktop hard drives available today. List at least one SCSI drive in addition to SATA drives. Include in that chart the price of the drive, its average seek time, interface type, spindle speed (drive RPM), maximum temperature, and its maximum rated noise specification.
- When you submit the assignment in Unit 11, be prepared to discuss the price of each drive as compared to its spindle speed, seek time, and noise specification.

Labs

Lab 8.1: Backing Up Your Data

What is the purpose?

This lab will show you how to use the backup program to back up a relatively small group of related files. Because these are actually application files, they normally wouldn't be backed-up, but their small size will quickly help you learn the proper procedure.

What are the steps?

All of the procedural steps are provided within the Lab on page 8-33 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 8.2: Drive Interfaces

What is the purpose?

The purpose of this lab is to familiarize you with the process of troubleshooting and replacing a hard disk drive.

What are the steps?

All of the procedural steps are provided within the Lab on page 8-43 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned about hard disk drives and optical disk drives. They learned how to install them and remove them. They also learned about the different interfaces used on these drives and how they should be configured. Finally, your students were shown how to maintain and troubleshoot hard and optical disk drives.

Reminders

Next class your students will learn how a motherboard can be expanded to work with an ever growing number of devices. They will also explore the world of display devices, and upgrading an existing system. Have them read Unit 9. Also, give them Research Assignment 8.1 for submission week 11.

(End of Unit 8)

Unit 9: Buses, Video, and Upgrades

Objectives

- 9: Examine the issues of installing or upgrading the video display system of a PC.
 - 9.1: Describe the common PC expansion buses, how they differ from each other, and how they are used to support the video display.
 - 9.2: Examine the two basic types of display monitor, the cathode ray tube (CRT) and the liquid crystal display (LCD).
 - 9.3: Describe the different types of video display cables.
 - 9.4: Describe the difference between dot pitch and display resolution and how they, along with color levels determine how the video image is displayed.

Content Covered

Introduction to Personal Computers

- Unit 9, “Buses, Video, and Upgrades”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Examine the many types of expansion buses and their purpose.
2. Describe how expansion bus cards (adapter cards) are installed and configured. Emphasize the installation and configuration of video adapters and the controller, or processor.
3. Examine the different types of video cable connectors and when they are used.
4. Take a look at the two types of video displays (monitors) and how they work.
5. Explain the relationship between dot pitch and resolution on both types of monitors.
6. Examine the color level configuration in Windows.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider making a list of the several expansion buses and how they relate to each other—width of data path, speed, and current standing in the world of computers. This tip refers to key concept 1.
- Consider describing the process of installing and configuring expansion cards (adapters). Explain how they are addressed using the address bus and IRQs. Then,

- explain the role of plug-and-play in the installation and configuration process. This tip refers to key concept 2.
- Consider describing the different types of video cable connectors—VGA, DVI, HDMI, and RGB—and explain what types of signals they carry. This tip refers to key concept 3.
 - Consider describing the two basic types of monitors and how they work. Point out that the CRT uses a moving electron beam to excite the phosphor of the face of the tube, while the LCD opens and closes liquid crystal shutters to control the passage of light through red, green, and blue filters. Point out that CRTs can have issues with phosphor “burn-in.” LCDs do not. This tip refers to key concept 4.
 - Consider explaining the relationship of display dot pitch (pixel count) and resolution. Show how the CRT electron beam must be aligned with the phosphor dots on the face of the tube. Also show how a change of resolution changes the number of dots struck by the beam. Explain how the LCD operates in a similar fashion, only there is nothing to align, or become misaligned. Emphasize the importance of using an LCDs “native” resolution when configuring the display for optimum image sharpness. List the several different Windows resolutions. Point out that different versions of Windows no longer support some of the lower resolutions, but they do default to VGA display resolution in several of the “safe” boot modes. This tip refers to key concept 5.
 - Consider explaining what the Windows display color setting means in terms of what colors are actually displayed. Different versions of Windows support different numbers of colors. This tip refers to key concept 6.

Homework

The following homework is designed to cover the course objectives for this unit.

Assignment 9.1 (Submit week 10)

Use one or more of the following tasks to evaluate your student's understanding of the material covered in Unit 9.

- At your new job, the IT staff is considering replacing many of the monitors being used in your department. They are considering purchasing some big CRT monitors. They want the department's opinion, and you are charged with developing the opinion. As a first step, make a list of the benefits and drawbacks of both CRT and LCD monitors.
- A friend has an older Pentium 4 computer, purchased around 2005, running Windows XP Home. It has 256 MB of DDR RAM, video built into the motherboard, and a 30 GB hard drive. The case and motherboard are generic types. The monitor is a CRT and has a 1024 x 768 display. All these specs were typical at the time for basic home systems. The friend wants to upgrade the computer to make it faster. What would you recommend as a cheap upgrade that will make a big difference, and what is your overall recommendation?

Labs

Lab 9.1: Hard Drive Maintenance

What is the purpose?

The purpose of this lab is to familiarize you with some of the most common Windows XP system maintenance tools and techniques.

What are the steps?

All of the procedural steps are provided within the Lab on page 9-25 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 9.2: Display Color Levels and Resolution

What is the purpose?

The purpose of this lab is to familiarize you with the Windows display setting controls.

What are the steps?

All of the procedural steps are provided within the Lab on page 9-35 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 9.3: Adding a 2nd Video Display Adapter

What is the purpose?

The purpose of this lab is to familiarize you with the process of adding a second display for a two-display system. To accomplish that task, you will install a second video adapter in the computer, connect a second monitor, and configure the system for dual monitor operation.

What are the steps?

All of the procedural steps are provided within the Lab on page 9-45 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

Today your students learned about the different types of expansion buses, how peripherals communicate with the CPU, and how video systems are installed and operate. Since few of us ever use a computer without adding peripherals of some sort, this unit also described several common upgrades and the issues the student must consider when implementing these upgrades.

Reminders

Next class your students will study networks, how they are constructed, and how they work. Have them read Unit 10. Also, give them Assignment 9.1 for submission next week.

(End of Unit 9)

Unit 10: Networks

Objectives

- 10: Describe a computer network and explain how to construct and configure a simple peer-to-peer network using three PCs.
 - 10.1: Describe the basic requirements of a computer network.
 - 10.2: Describe the different types of networking cable.
 - 10.3: Describe how hubs and switches are used to distribute information over the network.
 - 10.4: Describe how networks communicate with each other over the Ethernet.
 - 10.5: Describe how wireless network devices work and how they may be used to eliminate wired connections.
 - 10.6: Explain how a peer-to-peer network can work using both wired interconnections and wireless interconnections.

Content Covered

Introduction to Personal Computers

- Unit 10, “Networks”

Key Concepts That Must Be Covered in Class

The following key concepts must be covered in class in order to achieve the course objectives.

1. Present an overview of a computer network and identify the common components.
2. Examine the various types of cables used in a network, its advantages and limitations.
3. Describe the hardware used in a simple peer-to-peer network.
4. Describe how computers communicate with each other over a network.
5. Describe the several types of wireless hardware and how it may be used to eliminate wired hardware.
6. Use the information presented to illustrate how a peer-to-peer network could be constructed using both wired and wireless interconnections.

Teaching Tips for This Unit

The teaching tips are provided for your reference. Please choose carefully according to your teaching style and students’ learning style.

- Consider illustrating a simple peer-to-peer computer network and describing to the students the basics of what is needed to communicate over the network—a physical connection and a set of rules for communicating. Explain that a peer-to-

peer network is the simplest form of network that does not need a separate server computer to control the operation of the network. For that reason, the network user doesn't have to deal with a network operating system. This tip refers to key concept 1.

- Consider explaining the two basic types of network cable used in a simple peer-to-peer network, coax and twisted-pair. Examine their physical make-up, the usable cable length, and the data rate supported by each cable. Point out that coax is nearly extinct as a networking cable because of its cumbersome method of connection. This tip refers to key concept 2.
- Consider explaining that the physical connection between computers includes the interface connection in each computer, cable, and some type of device to distribute the network signal between computers. Explain that in a simple peer-to-peer network, that's either a hub or a switch. A hub receives a signal and routes that signal to all the attached computers. A switch, on the other hand, receives a signal and routes that signal only to the computer being addressed. This tip refers to key concept 3.
- Consider explaining that communication over a simple peer-to-peer network only requires that each member of the network follow the same protocols. Protocols are the rules that describe how the data that passes over the network is organized into special packets of information. The process ensures that a data packet that is damaged or lost can be identified and resent. This tip refers to key concept 4.
- Consider explaining that a wireless networking device provides a way to communicate with another wireless device. This can take the form of a wireless port in a computer, or a wireless hub or switch that is then connected to other wired computers. Note that it is possible to have all wireless computers. That would function like a simple network with a hub. List the four different wireless standards, their frequencies, the data transmission rate, and general transmission range. Point out that the IEEE-802.11N standard has yet to be finalized at this writing, but you can find several versions on the market. This tip refers to key concept 5.
- Consider redrawing your simple peer-to-peer network with all wireless networked computers and with only one wireless computer—the wired computers are in the office, while the wireless computer belongs to the “road warrior.” Explain how the wireless system saves on hardware, adds security issues to what was once a simple, secure network. This tip refers to key concept 6.
- Instructor Note for Lab 10.1, The Peer-to-Peer Network:

This lab uses the Windows XP wizards to establish a small three-node peer-to-peer network workgroup. While the wizards typically work well, once in a while something crazy happens. For example, during the final testing of this lab prior to

publication, one of the computers would insist on assigning itself an IP address on a separate subnet. This is likely related to the fact that a few days earlier this balky system was used to test a wireless networking system, and its IP address assignment was not in a pristine state.

The ultimate solution is to build the small network with static IP addresses, which almost guarantees success right away, and on the first try. Another solution if one computer refuses to cooperate is to use the recovery CD to start with a clean system.

Troubleshooting a system that will not communicate involves first verifying the IP address of the three systems. They must all be in the same subnet; that is the first three octets in the address must be the same on all the machines. Next, PING the machines to determine if communications is established at a basic level. If all checks out well, finally restart all three machines, and leave them alone for about 5-10 minutes.

Homework

Finish the Research Assignment assigned in Unit 8 and preparation for the Final Exam.

Labs

Lab 10.1: The Peer-to-Peer Network

What is the purpose?

In this lab you team up your lab station with two other lab stations and configure the three computers into a simple peer-to-peer network, configure the network with the correct protocols, and examine the network operating characteristics.

What are the steps?

All of the procedural steps are provided within the Lab on page 10-33 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Instructor Note: Please see the last tip in the 'Teaching Tips for this Unit' in case students encounter any difficulties.

Lab 10.2: Sharing Resources

What is the purpose?

In the previous lab, you connected three computers together in a simple peer-to-peer network and confirmed that they were communicating over the network. In this lab you will experiment with assigning share permissions and sharing resources on the networked computers.

What are the steps?

All of the procedural steps are provided within the Lab on page 10-47 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Lab 10.3: Introduction to TCP/IP

What is the purpose?

The purpose of this lab is to familiarize you with the process of installing and

configuring the Internet protocol TCP/IP. Installing TCP/IP also provides a wide array of utilities that support troubleshooting network connectivity problems. You will investigate two of those Windows-supplied utilities.

What are the steps?

All of the procedural steps are provided within the Lab on page 10-61 in the textbook. As the steps are completed, you should answer the questions within the steps.

Did it work?

If you are able to complete all the steps and answer the questions within the steps, the lab worked as intended. At the completion of the lab, be ready to show that you can meet each of the lab objectives.

Summary and Reminders

Summary

The world of computer networks is vast and far-reaching. Networking hardware is continually being improved and new devices are released every day, networking software is typically on a quick upgrade schedule. Keeping current on the technology is a part-time job, even for professionals working within this group of technologies. This unit presented a quick overview of basic PC networks, hardware, and software.

Reminders

Next class your students will take the Final Exam. Have them review their class notes, lab notes, and reading assignments. Also, remind them that Research Assignment 8.1 should be ready for submission next week.

(End of Unit 10)

Unit 11: Course Review and Final Exam

Course Review

Now that this course is nearing completion, it's time to review the important concepts with the students. Here is an approach to do this. Feel free to adopt any other approach that works for you:

- a. Start the class by congratulating them for successful participation in the course. You may want to recognize the commitment and hard work of some students.
- b. Discuss Research Assignment 8.1 with the students. Ask them what they found and if they were able to correlate drive performance with price. While not a requirement, ask if any of them looked for customer reviews of drives to determine if product reliability was reflected in the price of a drive. When you are satisfied with the presentations, ask the students to turn in their assignment.
- c. Ask the students to enumerate the takeaways from each unit. Give them a chance to speak about their experiences—the concepts that were easy or difficult for them.
- d. For each unit, summarize the key concepts and learning so that any important point is not missed. You can refer to the unit summaries for a list of points that should be covered.
- e. You may want to ask the students how they are prepared for the final exam, if any, and clarify their doubts before they attempt the exam.

Final Exam

Please refer to Appendix A for exam details.

Research Assignment

Research Assignment 8.1

- Provide a chart of several different brands or models of 1 TB desktop hard drives available today. List at least one SCSI drive in addition to SATA drives. Include in that chart the price of the drive, its average seek time, interface type, spindle speed (drive RPM), maximum temperature, and its maximum rated noise specification.
- Discuss the price of each drive as compared to its spindle speed, seek time, and noise specification.

(End of Unit 11)

Appendix A: Test and Answer Keys

Exams for Units 1-4

DATE: _____
STUDENT NAME: _____
COURSE NUMBER: _____
INSTRUCTOR: _____
SCHOOL LOCATION: _____

General Instructions:

1. This is a closed book, closed notes exam. No reference material (including assignments and labs) will be permitted for use during the exam session.
2. This exam contains 33 multiple choice questions.
3. Please use the separate answer sheet provided to you for marking your answers.
4. Each question in the exam is worth three points.

Exam 1 for Units 1-4 Questions

1. Who forced the computer industry to standardize virtually everything that had to do with personal computers?
 - a. Xerox
 - b. IBM
 - c. Microsoft
 - d. Apple
2. A gigabyte is equal to _____.
 - a. 1024 kilobytes
 - b. 1,073,741,824 bytes
 - c. 1,048,576 megabytes
 - d. 1,099,511,627,776 bytes
3. A PC is made up of several different types of components. Which of the following is considered an input device?
 - a. Hard disk drive
 - b. Network interface card
 - c. Motherboard
 - d. Mouse
4. Which of the following best describes a computer bus?
 - a. A common path to transmit information to all parts of the computer.
 - b. The place in a computer where you attach peripheral devices.
 - c. A single wire connected to all devices in the computer.
 - d. A parallel set of conductors connected between components in the computer.
5. In a PC with an Intel chipset, which component interfaces the audio codec and BIOS?
 - a. Northbridge
 - b. GMCH
 - c. ICH
 - d. Super I/O
6. Which of the following is a consideration when replacing a motherboard?
 - a. Physical size of the board.
 - b. Size and speed of the CPU.
 - c. Bus controller.
 - d. The type of BIOS used by the board.
7. The IDE hard disk drive gets its power through what type of connector?
 - a. Mini-connector
 - b. Molex connector
 - c. P2

- d. 20-pin
8. The best software diagnostics are based on what operating system?
- a. DOS
 - b. Windows 3.x
 - c. Windows 9.x
 - d. A proprietary OS.
9. Which of the following precautions is **not** a recommended method to prevent the build-up of static charges?
- a. Keep the computer chassis ungrounded to eliminate a path for static charges.
 - b. Ground yourself to the computer chassis.
 - c. Always wear an anti-static wrist strap that is connected to the computer chassis or motherboard ground when servicing a PC.
 - d. Maintain the relative humidity between 50% and 70%.
10. What is not considered a function of the instruction set?
- a. It tells the CPU where to find data.
 - b. It tells the CPU when to read data.
 - c. It tells the CPU its DMA and IRQ data location.
 - d. It tells the CPU what to do with the data.
11. What Intel CPU first introduced the two-processors in one package concept?
- a. Pentium D
 - b. Pentium 4
 - c. Pentium M
 - d. Core Duo
12. How does multithreading differ from multitasking?
- a. With multitasking, one multiprocessor CPU executes two or more programs simultaneously; with multithreading, one multiprocessor CPU executes two threads of code from one program simultaneously.
 - b. Multithreading is more efficient than multitasking because most programs will not cooperate with the multitasking CPU, while all programs support cooperative multithreading.
 - c. Multithreading only works with single-core CPUs, while multitasking works with both single-core and multi-core CPUs.
 - d. With multitasking, one CPU executes two or more programs; with multithreading, one CPU executes one program that is designed with two separate threads of program code.
13. Which component in a PC generates the most heat?
- a. CPU
 - b. Memory
 - c. Chipset

- d. Video processor
14. In what type of memory is data only written once?
- a. RAM
 - b. EPROM
 - c. PROM
 - d. EEPROM
15. What advantage does DRAM have over SRAM?
- a. It is cheaper to make.
 - b. It is faster.
 - c. It uses more transistors to store each bit of data.
 - d. It doesn't require refreshing.
16. Which is the fastest memory technology?
- a. SDRAM
 - b. DDR3 SDRAM
 - c. DDR SDRAM
 - d. DDR2 SDRAM
17. Which of the following is a characteristic of a SIMM?
- a. two rows of pins
 - b. used with the 8088
 - c. newest package type
 - d. 72 pins
18. What type of memory module has 184 pins?
- a. SO-DIMM
 - b. SDR DIMM
 - c. DDR DIMM
 - d. DDR 3 DIMM
19. Because there is the possibility of data loss using a disk cache, cached data should also be written to the disk drive on a regular basis. Which of the following methods is most efficient?
- a. Write-through cache
 - b. Write-back cache
 - c. Buffered-cache
 - d. Non-volatile cache
20. What is the purpose of the command line prompt?
- a. It helps you keep track of where you are in a program.
 - b. It is a simple way to enter graphical images in DOS.
 - c. It tells you when you made a mistake.
 - d. It shows you where to enter a DOS command.

21. What is a misconception of file names, beginning with Windows 95?
 - a. It is possible to have a file name with nearly 255 characters.
 - b. Long file names are stored with truncated file name equivalents to make them compatible with DOS-based file systems.
 - c. Only DOS-based files names need have a dot-three file extension.
 - d. It is a good practice to limit long file names to no more than 20-25 characters.
22. What was a major reason for Microsoft developing a Windows NT-based operating system?
 - a. They needed a secure and stable OS for large corporations and the Government.
 - b. There was a large need to support computer gaming.
 - c. They needed an OS that worked with all types of hardware.
 - d. They needed an OS that was compatible as both a server and as a home computer OS.
23. Which Windows operating system was specifically designed with network operating system program code?
 - a. Windows 2000
 - b. Windows XP
 - c. Windows 98
 - d. Windows ME
24. What was the major difference between early Windows and Macintosh operating systems?
 - a. The use of a graphical user interface.
 - b. The command line interface.
 - c. The number of supported CPUs.
 - d. The design of the keyboard.
25. The ITT Tech Virtual Library has several different types of resources. What's the first step to using the ITT Tech Virtual Library?
 - a. Visit the Learning Resource Center.
 - b. Read the FAQs.
 - c. Go to Ask a Librarian.
 - d. Read the Learning Guides at the Library.
26. What is required before Windows 2000, Windows XP, or Windows Vista will let you onto the desktop?
 - a. Ctrl-Alt-Del followed by the user name.
 - b. User authentication.
 - c. Ctrl-Alt-Del followed by the password.
 - d. User name and password.
27. Select the major change to Vista from Windows XP?

- a. All new taskbar.
 - b. Greater system security.
 - c. Methods used to configure plug-and-play devices.
 - d. The desktop view.
28. By default, how are files displayed in the Windows Explorer?
- a. List view
 - b. Icon view
 - c. Detail view
 - d. Tile view
29. By default, a Windows system has its file extensions hidden. In that case, how would the file `VIRUS.TXT.EXE` be displayed?
- a. `VIRUS.TXT`
 - b. `VIRUS.EXE`
 - c. `VIRUS.TXT.EXE`
 - d. `VIRUS.TXT.EXE`
30. What do you call a memory device that can be read from, but not written to?
- a. CMOS
 - b. RAM
 - c. ROM
 - d. DRAM
31. What two downloads are usually required to install a BIOS update?
- a. BIOS image file and BIOS flash utility file
 - b. BIOS patch file and BIOS image file
 - c. BIOS flash utility file and BIOS flash recovery file
 - d. BIOS flash recovery file BIOS patch file
32. What does single beep during a computer's startup usually mean?
- a. A POST error has occurred.
 - b. All is well with the computer.
 - c. The computer has a virus.
 - d. The speaker has failed.
33. What is the typical boot sequence in a PC?
- a. Power is applied, startup code in the BIOS runs the POST, the CPU then resets the system hardware, the BIOS locates the boot device, the MBR is told to load the first OS file.
 - b. Power is applied, the CPU resets the system hardware, startup code in the BIOS runs the POST, the BIOS locates the boot device, and loads the first OS file it locates.
 - c. Power is applied, the CPU resets the system hardware, startup code in the BIOS runs the POST, the BIOS locates the boot device, the MBR is told to load the first OS file.

- d. Power is applied, startup code in the BIOS runs the POST, the CPU then resets the system hardware, the BIOS locates the boot device, and loads the first OS file it locates.


Exam 2 for Units 1-4 Questions

1. Because of the influence of the IBM-compatible PC, _____ dominates the computer operating system market.
 - a. Xerox
 - b. IBM
 - c. Microsoft
 - d. Apple
2. At their core, computers recognize only what number system?
 - a. Binary
 - b. Hexadecimal
 - c. Decimal
 - d. Octal
3. Which of the following components is an output device on a PC?
 - a. LCD
 - b. Binary
 - c. Scanner
 - d. UPS
4. Which statement best describes the difference between parallel and serial data transfers?
 - a. A parallel data transfer is nothing more than a group of eight, or more, serial transmission lines moving bytes of data simultaneously down each line.
 - b. Serial data byte transfers move the data one bit at a time; parallel data byte transfers move all the data bits at the same time.
 - c. Serial and parallel data transfers operate in the same fashion, it all depends on how they are configured.
 - d. All serial data transfers occur outside the PC, all parallel data transfers occur inside the PC.
5. What is the main reason for component integration?
 - a. It provides more surface area for circuit cooling.
 - b. It makes the motherboard easier to troubleshoot.
 - c. It reduces the number of individual components and the subsequent heat they produce.
 - d. It increases the complexity of programming to control timing and data movement.
6. A computer uses 175 watts while booting and 125 watts during normal operation. Which of the following power supply ratings would be the best choice as a replacement power supply?
 - a. 125 W
 - b. 170 W

- c. 200 W
 - d. 450 W
7. When disassembling a computer, what is the most important step?
- a. Gathering the right tools.
 - b. Installing troubleshooting software.
 - c. Locating the original operating system CD.
 - d. Preparation.
8. The damage caused by static electricity is a result of:
- a. the generation of the static charges.
 - b. the dissipation of the static charges.
 - c. the uncontrolled discharge of the static charges.
 - d. low humidity.
9. CPUs are made of:
- a. microprocessors.
 - b. transistors.
 - c. clock cycles.
 - d. registers.
10. Which of the following plays the largest role in determining CPU performance?
Choose two.
- a. CPU Voltage
 - b. CPU manufacturer
 - c. External data bus size
 - d. CPU model number
11. The SEC cartridge is a feature of which processor?
- a. Pentium III
 - b. Pentium D
 - c. Pentium M
 - d. Pentium
12. What's the difference between cooperative multitasking and preemptive multitasking?
- a. Preemptive multitasking involves programs that are written by different companies and most likely will not willingly share execution time; cooperative multitasking involves programs that are written by the same company and are designed to share execution time.
 - b. Cooperative multitasking works only with multi-core CPUs; preemptive multitasking works with all CPUs.
 - c. Cooperative multitasking relies on individual programs to share execution time with other programs; preemptive multitasking relies on the OS to manage program execution.

- d. Only early versions of Windows supported preemptive multitasking; all versions of Windows support cooperative multitasking.
13. A heatsink uses a process called _____ to draw heat from a device such as a CPU.
- a. Convection
 - b. Conduction
 - c. Air flow
 - d. Heatsink compound
14. What type of memory can permanently store data until power is removed from the IC?
- a. ROM
 - b. DRAM
 - c. EEROM
 - d. SRAM
15. The most common memory technology used in today's computers is _____.
- a. DRAM
 - b. EDO RAM
 - c. SDRAM
 - d. RDRAM
16. What memory technology ensures reliable data storage and retrieval?
- a. L1 cache
 - b. refresh
 - c. DDR
 - d. ECC
17. PC-100 memory can be used in which computer with the following characteristic?
- a. 100 MHz-bus motherboard
 - b. 100 MHz 486
 - c. 100 MHz Pentium
 - d. 100 MHz Pentium II
18. What type of memory module is typically used in laptop computers?
- a. SO-DIMM
 - b. CRIMM
 - c. RIMM
 - d. DDR DIMM
19. Which of the following is of **least** importance when adding or upgrading memory in a PC?
- a. Does the total size of the memory exceed the capacity of the system?
 - b. Is the memory you are installing compatible with the memory already installed?

- c. Is the memory compatible with the motherboard?
 - d. Is the memory made by the same manufacturer?
20. What characteristic changed when computers switched from running a DOS system to a GUI-based system?
- a. The system for storing files on a hard disk drive.
 - b. The keyboard was replaced by a mouse input device.
 - c. The OS was completely revised to eliminate all DOS command structure.
 - d. The command prompt was eliminated.
21. Two Windows system files that contain hardware and software configuration and setup information are called:
- a. CONFIG.SYS and AUTOEXEC.BAT
 - b. REG1.DAT and REG2.DAT
 - c. HDW.DAT and SWARE.DAT
 - d. USER.DAT and SYSTEM.DAT
22. Which of the following is based on the NT operating system?
- a. Windows ME
 - b. Windows 98
 - c. Windows 2000
 - d. Windows 3.11
23. What Vista operating system supports advanced multimedia functions?
- a. Vista Starter
 - b. Vista Home Premium
 - c. Vista Business
 - d. Vista Home Basic
24. What is the only Macintosh feature that did **not** predated those found in Windows-based computers.
- a. The graphical user interface.
 - b. The Mouse.
 - c. The killer application, desktop publishing.
 - d. The Intel CPU.
25. What normally appears on the Taskbar?
- a. Date and time
 - b. A button for each open program.
 - c. My Computer
 - d. Channel Bar
26. What main Windows component is found on every Windows desktop?
- a. Recycle Bin
 - b. My Computer
 - c. Sidebar

- d. My Documents
27. What is one way to open the Windows Explorer in Windows XP?
- a. Right-click Computer and select Explorer.
 - b. From the Start menu, select Programs, Accessories, and Windows Explorer.
 - c. Double-click the Start button and select Explore.
 - d. On a Windows logo keyboard, press  + X.
28. Which of the following methods will not allow you to copy a file that you have selected?
- a. On the keyboard, hold down the Control key and press the C key.
 - b. Right-click the selected file and select the Copy command in the drop-down menu.
 - c. On the keyboard, hold down the Windows logo key and press the C key.
 - d. Open the Edit menu in the menu bar and select Copy.
29. CMOS is an acronym for:
- a. Computer Memory Output System.
 - b. Complimentary Metal-Oxide Semiconductor.
 - c. Computer Memory Operating System.
 - d. Complimentary Metallic-Oxidized Substrate.
30. What is normally **not** provided in the BIOS Setup?
- a. Hard Drive type
 - b. Number of hard drives
 - c. CPU type
 - d. Chipset type
31. What do you do to recover from a BIOS flash that has failed?
- a. Move the CMOS jumper to its restore position, load the new flash BIOS code, then, return the jumper to its normal position.
 - b. Download and run the flash recovery file to restore the original BIOS safe code.
 - c. Move the CMOS jumper to clear position to erase the damaged BIOS information and restore the safe BIOS code, then, return the jumper to its normal position.
 - d. Switch off power to the motherboard, move the CMOS jumper to the clear position, count to ten, and move the jumper back to the normal position.
32. After installing a new device you receive a POST error. What should you do?
- a. Reboot the computer.
 - b. Replace the device.
 - c. Replace the HDD cables.
 - d. Check that the device is installed properly.

33. What is the key system file used to control the boot process in Window 2000 and later?
- a. IO.SYS
 - b. NTLDR
 - c. NTDETECT.COM
 - d. BOOT.INI

Exam 3 for Units 1-4 Questions

1. What term best describes a 16-bit value in a computer?
 - a. Kilobyte
 - b. Byte
 - c. Word
 - d. Gigabyte
2. The value 1011 1110 1111 0010 is an example of what number system?
 - a. Hexadecimal
 - b. Decimal
 - c. Binary
 - d. Octal
3. Which of the following components is both an input and an output device on a PC?
 - a. Microphone
 - b. Hard disk drive
 - c. Keyboard
 - d. Printer
4. In a PC with an Intel chipset, which component interfaces the CPU and memory?
 - a. GMCH
 - b. ICH
 - c. Southbridge
 - d. Codec
5. Using a computer with its cover removed can result in:
 - a. the generation of stray RFI.
 - b. longer computer life.
 - c. an electrical hazard.
 - d. a reduction of dust accumulation.
6. The main power supply connector on a motherboard with an ATX12V2.0 form factor has _____ pins.
 - a. 12
 - b. 20
 - c. 24
 - d. 36
7. When it comes to servicing a PC, what will a technician need for most tasks?
 - a. A complete set of tools, in order to perform every possible PC servicing task.
 - b. A few basic hand tools such as screwdrivers, flashlight, and an antistatic wrist strap.
 - c. Linux-based troubleshooting software.

- d. Diagnostic tools such as multimeters and oscilloscopes.
8. Which of the following statements is true regarding static electricity discharges?
- a. The damage is always immediate and obvious.
 - b. They are safe and harmless if handled properly.
 - c. They can be completely prevented by raising the humidity.
 - d. A device may not show symptoms of failure right away.
9. The CPU clock provides what function?
- a. It synchronizes all activities on the motherboard.
 - b. It maintains the display clock and system calendar.
 - c. It controls the execution of external bus commands.
 - d. It determines the speed at which the CPU operates.
10. What CPU family introduced the 64-bit data bus and internal CPU cache?
- a. Pentium
 - b. 80486
 - c. Pentium 4
 - d. Core Duo
11. What is multitasking?
- a. It is the apparent simultaneous execution of two or more programs by a single processor, while the CPU only works on one program at a time.
 - b. It is the simultaneous execution of two or more programs by a single processor.
 - c. It is the simultaneous execution of two or more programs by a pair of CPUs.
 - d. It is the ability of the CPU to store data while simultaneously executing program instructions.
12. Which of the following CPUs is made up of two Pentium 4 cores each with their own L2 cache?
- a. Core 2 Quad
 - b. Pentium D
 - c. Core 2 Duo
 - d. Core Duo
13. Which of the following is **not** a good way to keep a computer system as cool as possible?
- a. Maintain a low ambient temperature.
 - b. Keep air moving through the computer case.
 - c. Clean dust and lint from component heatsinks once a year.
 - d. Keep the computer out of direct sunlight.
14. What type of memory must have its data restored on a regular basis or it will be lost?
- a. EEROM

- b. DRAM
 - c. SRAM
 - d. ROM
15. A DDR SDRAM memory module is preferred over an SDRAM memory module because:
- a. it uses ECC technology.
 - b. it operates at twice the clock speed.
 - c. it can move twice as much data at the same clock speed.
 - d. it operates synchronously.
16. A CPU uses cache memory to improve performance. What type of CPU cache memory may be found on the motherboard, or within the CPU?
- a. Primary
 - b. L3
 - c. L2
 - d. L1
17. The type of memory required in a computer is determined by:
- a. the motherboard.
 - b. the operating system.
 - c. the BIOS type.
 - d. the CPU type.
18. What is the purpose of a disk cache?
- a. It is a process for storing frequently accessed data in a special location on the hard disk drive for quick retrieval.
 - b. It is a process that eliminates the need for cache memory in the CPU.
 - c. It is a process for temporarily storing frequently accessed data in user RAM rather than on the hard disk drive.
 - d. It is a process for organizing data in a structured format prior to storing the data on the hard disk drive.
19. Which of the following statements best describes the command prompt?
- a. A dialog box stating "Click here to begin."
 - b. A blinking spot on the screen, called a cursor.
 - c. MS-DOS or PC-DOS
 - d. Ctrl-K or /s
20. What are the two Windows system files that contain hardware and software configuration and setup information called?
- a. System Data
 - b. Registry
 - c. User Accounts
 - d. Device Manager

21. Of the four major versions of Windows 2000, how many are designed specifically as server operating systems?
 - a. 1
 - b. 2
 - c. 3
 - d. 4
22. Identify the Windows operating system that requires activation?
 - a. XP
 - b. ME
 - c. 2000
 - d. 98 SE
23. What is **not** a good reason to use the Linux operating system to run a dedicated business computer?
 - a. There are many variations of free Linux available.
 - b. There are hundreds of applications available that duplicate many of those designed specifically for Windows.
 - c. Linux operates on computers that may no longer be compatible with Windows XP and Vista.
 - d. The Linux community is relied upon to provide most of the driver support.
24. Where does a file go when it is deleted in Windows?
 - a. Nowhere, it is just renamed.
 - b. Into the Trash folder where it is temporarily stored.
 - c. Into the Recycle Bin where it is temporarily stored.
 - d. Into the compost pile where it is gone forever.
25. What is the purpose of the Quick Launch Bar in the taskbar?
 - a. It holds icons of programs you frequently launch.
 - b. It holds the clock and the icons of other startup programs.
 - c. It holds buttons linked to all the open applications on the desktop.
 - d. It provides access to the program menus and system programs in the Start Menu.
26. When you drag an object from a source folder and drop it into a destination folder on the same disk, what happens?
 - a. The object is deleted from the source folder and placed in the destination folder.
 - b. A copy of the object is placed in the destination folder.
 - c. A shortcut to the object is placed in the destination folder.
 - d. The file is moved to the destination and a shortcut is created in the source folder.
27. The Properties command is a powerful tool for learning about an object? How do you examine the “properties” of a disk drive?

- a. In the Start Menu, right-click My Computer, and select the Properties option.
 - b. Open the Windows Explorer, right click on the disk drive icon, and select Properties.
 - c. Open the Windows Explorer, Open the File menu, and select Properties.
 - d. Right-click the Start button and select Properties.
28. How do you access the BIOS Setup program, on most computers?
- a. Push a special button on the front of the case.
 - b. Press Ctrl-Alt-Delete.
 - c. Press Delete, Insert, or some other key during boot-up.
 - d. Press the reset button.
29. When should the BIOS firmware be upgraded? *Choose two.*
- a. When it is needed to solve a system problem.
 - b. When the battery dies and wipes out the firmware.
 - c. When the BIOS has been reset.
 - d. When memory is added to the system.
30. What is the purpose of the POST?
- a. It is a series of tests that verify the BIOS is properly configured.
 - b. It is used to display system configuration information during system startup.
 - c. It is run any time there was a system failure.
 - d. It is a series of tests run prior to loading the operating system that verify everything is working properly.
31. Which of the following is the result of a POST error?
- a. Multiple beeps from the speaker.
 - b. The operating system cannot find the NTLDR file.
 - c. Rear-panel LEDs begin flashing.
 - d. Dead computer.
32. What is the purpose of the BOOT.INI file?
- a. It tells NTLDR where the OS files are located.
 - b. It tells NTLDR under what conditions to call NTDETECT.COM.
 - c. It tells NTDETECT.COM when to load.
 - d. It tells the OS where to load in memory.
33. What Windows XP file would you use to repair the BOOT.INI file after you receive an "Invalid BOOT.INI" error message?
- a. NTBOOTR
 - b. BREBUILD
 - c. BOOTRSTR
 - d. BOOTCFG

Answer Sheet

DATE: _____
 STUDENT NAME: _____
 COURSE NUMBER: _____
 INSTRUCTOR: _____
 SCHOOL LOCATION: _____

General Instructions:

To answer each question, please darken the circle corresponding to your choice of answer by using a pencil. If you decide to change your answer, please erase your original answer completely and darken your new answer.

Question No.	(a)	(b)	(c)	(d)
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
8	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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19	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix A: Test and Answer Keys

Question No.	(a)	(b)	(c)	(d)
24	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
25	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ANSWER KEY EXAM 1 FOR UNITS 1-4

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	b	1	<i>Introduction to Personal Computers</i>	1-5
2	b	1	<i>Introduction to Personal Computers</i>	1-11
3	d	1	<i>Introduction to Personal Computers</i>	1-16
4	d	1	<i>Introduction to Personal Computers</i>	1-18 — 1-19
5	c	1	<i>Introduction to Personal Computers</i>	1-20 — 1-24
6	a	1	<i>Introduction to Personal Computers</i>	1-28
7	b	1	<i>Introduction to Personal Computers</i>	1-34 — 1-35
8	a	1	<i>Introduction to Personal Computers</i>	1-38
9	a	1	<i>Introduction to Personal Computers</i>	1-40 — 1-41
10	c	2	<i>Introduction to Personal Computers</i>	2-4
11	a	2	<i>Introduction to Personal Computers</i>	2-11
12	d	2	<i>Introduction to Personal Computers</i>	2-15—2-17
13	a	2	<i>Introduction to Personal Computers</i>	2-25

Appendix A: Test and Answer Keys

14	c	2	<i>Introduction to Personal Computers</i>	2-32
15	a	2	<i>Introduction to Personal Computers</i>	2-34, 2-38
16	b	2	<i>Introduction to Personal Computers</i>	2-33
17	d	2	<i>Introduction to Personal Computers</i>	2-35
18	c	2	<i>Introduction to Personal Computers</i>	2-36
19	b	2	<i>Introduction to Personal Computers</i>	2-42
20	d	3	<i>Introduction to Personal Computers</i>	3-2
21	c	3	<i>Introduction to Personal Computers</i>	3-6—3-7
22	a	3	<i>Introduction to Personal Computers</i>	3-8
23	a	3	<i>Introduction to Personal Computers</i>	3-12—3-14
24	b	3	<i>Introduction to Personal Computers</i>	3-20
25	a	3	<i>Introduction to Personal Computers</i>	3-22
26	d	4	<i>Introduction to Personal Computers</i>	4-2
27	b	4	<i>Introduction to Personal Computers</i>	4-9—4-10
28	d	4	<i>Introduction to Personal Computers</i>	4-12

Appendix A: Test and Answer Keys

29	a	4	<i>Introduction to Personal Computers</i>	4-17—4-18
30	c	4	<i>Introduction to Personal Computers</i>	4-26
31	a	4	<i>Introduction to Personal Computers</i>	4-31—4-32
32	b	4	<i>Introduction to Personal Computers</i>	4-33
33	c	4	<i>Introduction to Personal Computers</i>	4-35—4-37

ANSWER KEY EXAM 2 FOR UNITS 1-4

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	c	1	<i>Introduction to Personal Computers</i>	1-4 — 1-8
2	a	1	<i>Introduction to Personal Computers</i>	1-10
3	a	1	<i>Introduction to Personal Computers</i>	1-17
4	b	1	<i>Introduction to Personal Computers</i>	1-9 — 1-10
5	c	1	<i>Introduction to Personal Computers</i>	1-24
6	c	1	<i>Introduction to Personal Computers</i>	1-31
7	d	1	<i>Introduction to Personal Computers</i>	1-36
8	c	1	<i>Introduction to Personal Computers</i>	1-39
9	b	2	<i>Introduction to Personal Computers</i>	2-2
10	c	2	<i>Introduction to Personal Computers</i>	2-5
11	a	2	<i>Introduction to Personal Computers</i>	2-9—2-20
12	c	2	<i>Introduction to Personal Computers</i>	2-15
13	b	2	<i>Introduction to Personal Computers</i>	2-26

Appendix A: Test and Answer Keys

14	d	2	<i>Introduction to Personal Computers</i>	2-33
15	c	2	<i>Introduction to Personal Computers</i>	2-35
16	d	2	<i>Introduction to Personal Computers</i>	2-39
17	a	2	<i>Introduction to Personal Computers</i>	2-32
18	a	2	<i>Introduction to Personal Computers</i>	2-36
19	d	2	<i>Introduction to Personal Computers</i>	2-43
20	a	3	<i>Introduction to Personal Computers</i>	3-5—3-6
21	d	3	<i>Introduction to Personal Computers</i>	3-7
22	c	3	<i>Introduction to Personal Computers</i>	3-13
23	b	3	<i>Introduction to Personal Computers</i>	3-16—3-18
24	d	3	<i>Introduction to Personal Computers</i>	3-19—3-20
25	b	4	<i>Introduction to Personal Computers</i>	4-4, 4-6—4-7
26	a	4	<i>Introduction to Personal Computers</i>	4-4
27	b	4	<i>Introduction to Personal Computers</i>	4-11—4-12
28	c	4	<i>Introduction to Personal Computers</i>	4-14

Appendix A: Test and Answer Keys

29	b	4	<i>Introduction to Personal Computers</i>	4-26
30	d	4	<i>Introduction to Personal Computers</i>	4-27—4-29
31	c	4	<i>Introduction to Personal Computers</i>	4-32—4-33
32	d	4	<i>Introduction to Personal Computers</i>	4-34
33	b	4	<i>Introduction to Personal Computers</i>	4-37—4-38

ANSWER KEY EXAM 3 FOR UNITS 1-4

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	c	1	<i>Introduction to Personal Computers</i>	1-11
2	c	1	<i>Introduction to Personal Computers</i>	1-11 — 1-12
3	b	1	<i>Introduction to Personal Computers</i>	1-17
4	a	1	<i>Introduction to Personal Computers</i>	1-20 — 1-24
5	a	1	<i>Introduction to Personal Computers</i>	1-25 — 1-26
6	c	1	<i>Introduction to Personal Computers</i>	1-33 — 1-34
7	b	1	<i>Introduction to Personal Computers</i>	1-37
8	d	1	<i>Introduction to Personal Computers</i>	1-40
9	d	2	<i>Introduction to Personal Computers</i>	2-3
10	a	2	<i>Introduction to Personal Computers</i>	2-8
11	a	2	<i>Introduction to Personal Computers</i>	2-15
12	b	2	<i>Introduction to Personal Computers</i>	2-18
13	c	2	<i>Introduction to Personal Computers</i>	2-30—2-31

Appendix A: Test and Answer Keys

14	b	2	<i>Introduction to Personal Computers</i>	2-33
15	c	2	<i>Introduction to Personal Computers</i>	2-30
16	c	2	<i>Introduction to Personal Computers</i>	2-37—2-38
17	a	2	<i>Introduction to Personal Computers</i>	2-37
18	c	2	<i>Introduction to Personal Computers</i>	2-39—2-40
19	b	3	<i>Introduction to Personal Computers</i>	3-2
20	b	3	<i>Introduction to Personal Computers</i>	3-7
21	c	3	<i>Introduction to Personal Computers</i>	3-12—3-13
22	a	3	<i>Introduction to Personal Computers</i>	3-11—3-18
23	d	3	<i>Introduction to Personal Computers</i>	3-21
24	c	4	<i>Introduction to Personal Computers</i>	4-5
25	a	4	<i>Introduction to Personal Computers</i>	4-7
26	a	4	<i>Introduction to Personal Computers</i>	4-13—4-14
27	b	4	<i>Introduction to Personal Computers</i>	4-15
28	c	4	<i>Introduction to Personal Computers</i>	4-27

Appendix A: Test and Answer Keys

29	a	4	<i>Introduction to Personal Computers</i>	4-30—4-31
30	d	4	<i>Introduction to Personal Computers</i>	4-30
31	a	4	<i>Introduction to Personal Computers</i>	4-33—4-34
32	a	4	<i>Introduction to Personal Computers</i>	4-37—4-38
33	d	4	<i>Introduction to Personal Computers</i>	4-40

Exams for Units 5-7

DATE: _____
STUDENT NAME: _____
COURSE NUMBER: _____
INSTRUCTOR: _____
SCHOOL LOCATION: _____

General Instructions:

1. This is a closed book, closed notes exam. No reference material (including assignments and labs) will be permitted for use during the exam session.
2. This exam contains 33 multiple choice questions.
3. Please use the separate answer sheet provided to you for marking your answers.
4. Each question in the exam is worth three points.

Exam 1 for Units 5-7 Questions

1. Which two file systems can be used by all Microsoft operating systems??
 - a. FAT16
 - b. NTSF
 - c. FAT32
 - d. NTFS
2. Which of the following file types will save the most file space after you compress them?
 - a. JPG
 - b. MP3
 - c. Application (.EXE)
 - d. Text (.TXT)
3. Creating a backup of your data files can be made easier if you:?
 - a. Place the data files on a separate partition.
 - b. Defragment the hard drive twice each week.
 - c. Compress the data files.
 - d. Encrypt the data files.
4. Which of the following will allow you to recover the data when a computer has been stolen from an office?
 - a. Recovery CD
 - b. ASR
 - c. A backup copy of the data
 - d. Recovery Console
5. How often should you backup data?
 - a. Every time you save a file.
 - b. At least once a day.
 - c. At the end of a work week.
 - d. No more often than once a month.
6. What type of backup stores only those files that changed since the last backup?
 - a. Incremental
 - b. Full
 - c. Differential
 - d. Partial
7. What is the purpose of a signed driver?
 - a. It prevents the formation of malware within the computer.
 - b. It serves as a command interpreter between Windows and an individual hardware device within the computer.
 - c. It is a protocol that translates Windows commands to the computer.

- d. It is the firmware in a hardware device that communicates with Windows.
8. Windows uses an update process to patch program code problems. Which Update setting will automatically download patches but wait for you to install them?
- a. Automatic Updates
 - b. Download Updates
 - c. Notify Me
 - d. Turn off Updates
9. How is virtual memory created in Windows?
- a. The system installer must determine the best place to store the page file, and load the file `pagefile.sys` onto that drive.
 - b. Windows automatically installs the swap file when the operating system is installed for the first time.
 - c. The system administrator must open the Virtual Memory configuration window and manually select the size and location of the paging file.
 - d. Virtual memory is created on the hard disk drive, by Windows, every time an application runs out of user RAM.
10. Your three-week old computer is hit with a nasty virus. You have secured your data files on a separate hard drive, but the system partition has an enormous amount of data corruption. Which of the following tools would be the best choice to fix this system?
- a. System Restore CD
 - b. Disk imaging software
 - c. System Restore
 - d. Windows Backup
11. While trying out a registry hack, you find that you have made a major mistake. Windows won't finish its startup process, and you can't get into the registry to undo your mistake. Which of the following tools would be the best choice to fix this system?
- a. System Restore CD
 - b. Disk imaging software
 - c. Safe Mode
 - d. Last Known Good Configuration
12. How much current can a USB port on the back of a computer supply?
- a. 100 mA at 5 volts
 - b. 500 mA at 5 volts
 - c. 50 mA at 12 volts
 - d. 100 mA at 12 volts
13. Why are IT managers concerned when users are allowed USB and IEEE-1394 devices at the workplace?

- a. The employees can use them to bring in games for their computers.
 - b. The extensive use of USB and IEEE-1394 peripheral devices cause additional electrical power demands on the system.
 - c. It is possible to use a USB or IEEE-1394 device to boot a computer and bypass its internal security devices.
 - d. The company managers will demand the IT department support the operation of personal USB or IEEE-1394 devices.
14. How can you close one potential security hole?
- a. Disable the Administrator account.
 - b. Use only Guest accounts.
 - c. Rename the Administrator account.
 - d. Rename the Guest account.
15. Microsoft's term for an account on a computer that is not attached to a network is:
- a. local account.
 - b. local computer.
 - c. primary user.
 - d. local profile.
16. What is a hacker most likely not going to steal from a networked computer?
- a. A user's personal information.
 - b. Password and account logins.
 - c. Video game hacks.
 - d. Proprietary company data.
17. What is authentication in terms of computer access?
- a. It is the process of verifying the user is who they say they are.
 - b. It is method used by the BIOS to verify the operating system is good.
 - c. It is the process for configuring a user profile.
 - d. It is only performed the first time the Windows operating system is installed.
18. What is the purpose of a strong password?
- a. It is so complex that the user must write the code in some obscure location.
 - b. It is complex enough to prevent any unauthorized access.
 - c. It ensures that only the authorized user has access to a computer
 - d. It eliminates the need to physically lock down a computer.
19. What is the most reliable and secure way to share resources between computers?
- a. Install the utility called *File and Printer Sharing for Microsoft Networks*.
 - b. Create a user account on a Windows workgroup.
 - c. Enable File and Printer sharing in your Security and Sharing dialog box.
 - d. Create a user account on a Windows NT-based domain network.

20. A software program is recording your keystrokes in an attempt to gather your password for your online bank. This type of program is usually described as:
- worm.
 - spyware.
 - adware.
 - phishing.
21. You receive an urgent e-mail message from your online bank, warning you that without immediate action, your account is going to be disabled. If you click the provided link, then verify your account information, your money will be safe. Such a warning is most likely:
- worm.
 - spyware.
 - adware.
 - phishing.
22. What type of virus uses the programming and scripting features found in applications?
- Macro
 - File infectors
 - Multi-partite
 - Boot sector
23. What is the most effective way to protect a computer from malware?
- Install and maintain an antivirus program and firewall.
 - Visit only trusted sites on the Internet.
 - Install and maintain an antivirus program, a spyware detector, and an adware and cookie blocker.
 - Scan e-mail for viruses before opening the e-mail.
24. All of the USB connectors on the front of your desktop are in use, but you need a file from your flash drive. You run an extension USB cable from a never used connector on the back of the computer, but the USB port does not work. Which of the following would be most important when describing this problem?
- The speed of your flash drive.
 - The capacity of your flash drive.
 - The Windows version.
 - That it is an unused USB connector.
25. A computer that reboots at random times and intervals is most likely experiencing:
- a hardware problem.
 - a Windows driver problem.
 - excessive USB power usage.
 - a malware problem.

26. You are into your second day of trying to figure out why a vital application will not start on your computer. In the meantime your deadline is approaching and no progress is being made. You should:
 - a. re-load the application
 - b. re-load Windows
 - c. search the web for a solution
 - d. call in tech support
27. You want to find out if other people have been having the same problem that you are seeing with your computer. Your best place to search for this information would be:
 - a. manufacturer's FAQ.
 - b. manufacturer's knowledge Base.
 - c. Newsletters.
 - d. USENET or newsgroup forum.
28. Which of the following redundancy techniques is best fulfilled by a thorough and periodic backup strategy?
 - a. RAID
 - b. ECC memory
 - c. Data redundancy
 - d. Redundant Power Supply
29. Preventing failures altogether, and thus improving up time, is the goal of:
 - a. establishing a baseline.
 - b. environmental controls.
 - c. Remote Notification.
 - d. Fail-Over.
30. Often problems can be predicted ahead of time by comparing the current system performance against:
 - a. System or Data backups.
 - b. RAID performance.
 - c. a drive mirror.
 - d. a baseline.
31. A surge suppressor is designed to:
 - a. remove spikes and supply backup power.
 - b. remove spikes and sags and supply backup power.
 - c. remove spikes.
 - d. remove sags.
32. A possible danger following a blackout is a:
 - a. brownout.
 - b. sag.

- c. surge.
 - d. line voltage.
33. What could be a warning sign that your computer power supply is about to fail?
- a. Application crash.
 - b. Failure to access the Internet.
 - c. Excessive swap file usage.
 - d. Random reboots.

Exam 2 for Units 5-7 Questions

1. What is the largest partition that can be created on a drive with FAT16?
 - a. 540 MB
 - b. 1024 MB
 - c. 2 GB
 - d. 2 TB

2. Which of the following actions will **not** show you the amount of free space on a hard drive?
 - a. In Windows Explorer, select the drive and look on the status bar.
 - b. Double-click the drive's icon in Windows Explorer.
 - c. In Windows Explorer, select the drive and examine the graphic display of the drive in the window pane.
 - d. Right-click the drive's icon and select Properties from the list.

3. Which of the following is true of data encryption?
 - a. It can only be unencrypted by the computer administrator.
 - b. If the user account is deleted, any encrypted file cannot be unencrypted.
 - c. Encrypting a file compresses the file to its fullest extent as well.
 - d. Every encrypted file has a unique password that should never be lost.

4. What should not be included in regular data backups?
 - a. The contents of My Documents
 - b. E-mail and photos
 - c. Data from old projects
 - d. Operating system and application files

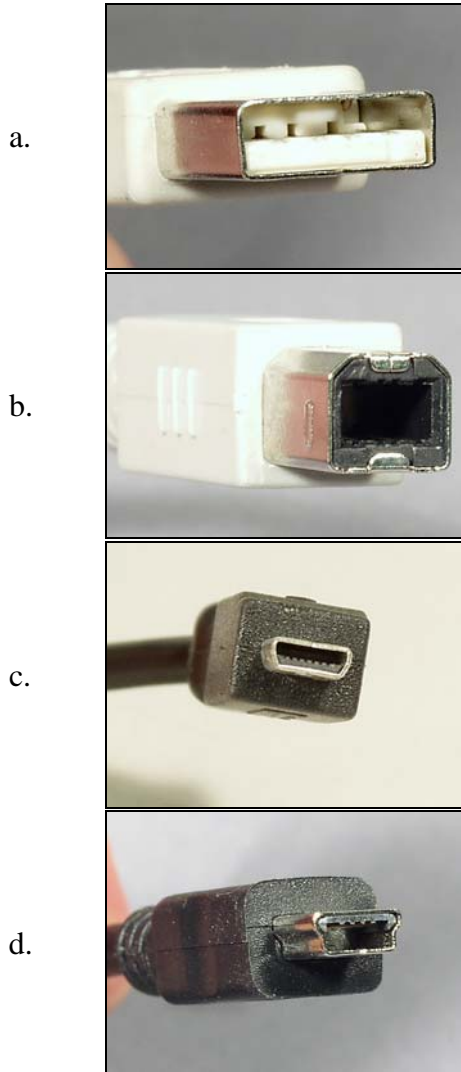
5. What is **not** an appropriate media for backing-up data?
 - a. Fixed hard disk drive.
 - b. Rewritable DVD.
 - c. Digital audio tape.
 - d. Off-site storage facility.

6. What backup type never requires more than two tapes in order to restore the entire set of data?
 - a. Incremental
 - b. Full
 - c. Differential
 - d. Partial


7. If you are using the incremental backup method how do you recover from a loss of data?
 - a. Copy the data from last incremental backup to the computer.

- b. Copy all the incremental backups from the last full backup to the computer.
 - c. Copy the last full backup to the computer.
 - d. Copy the last full backup and all the incremental backups from that backup to the computer.
8. Why use a signed driver?
- a. You can be assured that this driver is completely free of bugs.
 - b. The driver has been tested with every possible hardware platform.
 - c. The driver has been thoroughly tested and is known to be free of malware.
 - d. It may be safe for use with 64-bit versions of Windows.
9. What do you call programs that take advantage of previously-unknown Windows bugs?
- a. Patches
 - b. Unsigned drivers
 - c. Viruses
 - d. Exploits
10. What is a common name for Windows virtual memory?
- a. Paging file
 - b. Windows RAM
 - c. Drive space
 - d. Root memory
11. After updating your video driver, two drawing applications start to crash randomly. Which of the following tools is the best choice for fixing the immediate problem?
- a. System Restore CD
 - b. Disk imaging software
 - c. System Restore
 - d. Windows Backup
12. You want to replace your small 20 GB hard drive with a new 500 GB model. Windows is running just fine, and you are experiencing no problems other than a lack of hard drive space. Which of the following tools would be the best choice for this upgrade?
- a. System Restore CD
 - b. Disk imaging software
 - c. System Restore
 - d. Windows Backup
13. 30 days ago you installed an application. The application apparently damaged some critical configuration settings, and you want the system to operate just like it did the day before you installed the application. Which of the following tools would be the best choice to fix this system?

- a. Safe Mode
 - b. Disk imaging software
 - c. System Restore
 - d. Last Known Good Configuration
14. Which of the following shows a Mini USB connector ?



15. When you install Windows NT/2000/XP, two accounts are created automatically. What are they?
- a. Guest and Installer accounts.
 - b. Power User and plain User accounts.
 - c. Power User and Guest accounts.
 - d. Administrator and Guest accounts.
16. Windows XP allows you to customize the GUI for each computer user by using:
- a. multi-level GUI files.
 - b. profiles.

- c. PGUIA (Proficient GUI Access).
 - d. User tags.
17. What is the purpose of a user account?
- a. It is used to control the privileges a user has for performing different tasks on the computer.
 - b. It is used to keep track of who is using the computer.
 - c. It is useful in a business setting to control how a computer is attached to the local area network.
 - d. It works with the BIOS to control how the computer boots to a network.
18. Which of the following is **not** a typical method used by hackers to gain entry to a computer system?
- a. Fool the user into loading viruses and worms.
 - b. Sit down at your logged-on computer while you are away from it.
 - c. Exploiting un-patched bugs in operating systems and applications.
 - d. Tap into your phone line while you are using a modem to access the Internet, and capture and decipher the data passing over the phone line.
19. If your hard drive data is corrupted or deleted, either by a malicious act or a hardware failure, what is the best way to restore the system?
- a. Restore from a recent backup.
 - b. Reinstall all your applications and recreate the data.
 - c. Restore from a backup created in 2001.
 - d. Utilize the recovery CD that came with the computer.
20. What makes a secure password?
- a. One that uses the date of your birthday.
 - b. One that uses the name of your child, sibling, parent, or pet.
 - c. One that includes upper and lower case letters, numbers, symbols and punctuation.
 - d. One that uses the name of your child, sibling, parent, or pet, but written in upper and lower case letters.
21. What can you do to prevent unauthorized access to an unattended running computer without having to shut it down?
- a. Run the Windows hibernate mode.
 - b. Press the  + L keys before leaving the computer.
 - c. Run the LOCK.COM utility from the command prompt.
 - d. Press the keyboard reset switch.
22. The key to keeping your anti-virus software working for you is to:
- a. Download new trial versions regularly.
 - b. Regularly install any updates provided by the maker of the software.
 - c. Scan your entire hard drive every morning.

- d. Scan your drives on the 4th day of every month, which is the most common time for viruses to come alive.
23. How do most worms enter a computer system?
- a. As an e-mail attachment.
 - b. On a floppy disk with a file from a friend.
 - c. While browsing the Internet.
 - d. On an OS install disk.
24. You have been updating and printing a report every day for the last few months, without any problems. Today, the application will not let you save your changes to the report. What question is most likely to lead to a solution?
- a. Has it ever worked before?
 - b. When does the problem happen?
 - c. What has changed since yesterday?
 - d. Have you defragmented the drive?
25. You recently doubled the amount of RAM in your computer to improve performance under your heavy workload. Now while faster, Windows crashes when starting your largest applications. What is the most important question to consider to resolve this problem?
- a. When did the crashes start?
 - b. How much RAM do the applications require?
 - c. Did the applications work before?
 - d. Is the swap file large enough?
26. Your web browser locks-up when visiting certain sites. You must use Task Manager to stop the non-responding browser before you can proceed with other work. What is the most accurate description of the problem?
- a. Computer failure
 - b. Windows failure
 - c. Application failure
 - d. Internet failure
27. For which problem below would a phone technician NOT be of much use?
- a. A laptop that reboots when it is moved.
 - b. An application that will not start.
 - c. A computer slowed by malware.
 - d. A Windows driver conflict.
28. It is a busy time at work and luckily you found an updated driver on your computer maker's web site that fixed the intermittent lockups that have been slowing you down. While there you also found & downloaded a BIOS update for your computer. You should:
- a. install it immediately.
 - b. install it if it fixes other problems.

- c. install it if it might improve performance.
 - d. not install it.
29. Which of the following techniques will **not** necessarily contribute to improved system up time?
- a. Data Redundancy
 - b. Hot Swap capability
 - c. Fault Tolerance
 - d. Fail-Over
30. Minimizing downtime is a primary goal of:
- a. Remote Notification.
 - b. environmental controls.
 - c. Fault Tolerance.
 - d. Fail-Over.
 - d. a baseline.
31. What is the name of a power line disturbance of dangerously high voltage, lasting a fraction of a second, and typically caused by lightning?
- a. Surge
 - b. Spike
 - c. Sag
 - d. Blackout
32. A UPS device will:
- a. remove spikes, surges, and supply backup power.
 - b. supply backup power only.
 - c. remove spikes and surges, but not sags or brownouts.
 - d. remove surges and sags, but not spikes or brownouts.
33. The fan in your computer's power supply has stopped turning. You should:
- a. replace the power supply.
 - b. clean the fan with compressed air.
 - c. clean the fan with a vacuum.
 - d. disassemble the supply and replace the fan.

Answer Sheet

DATE: _____
 STUDENT NAME: _____
 COURSE NUMBER: _____
 INSTRUCTOR: _____
 SCHOOL LOCATION: _____

General Instructions:

To answer each question, please darken the circle corresponding to your choice of answer by using a pencil. If you decide to change your answer, please erase your original answer completely and darken your new answer.

Question No.	(a)	(b)	(c)	(d)
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
6	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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9	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
15	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
16	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
17	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
18	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
19	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
20	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
21	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
22	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
23	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
24	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

Appendix A: Test and Answer Keys

Question No.	(a)	(b)	(c)	(d)
25	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
26	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
27	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
28	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
29	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
30	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
31	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
32	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
33	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ANSWER KEY EXAM 1 FOR UNITS 5-7 QUESTIONS

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	a	5	<i>Introduction to Personal Computers</i>	5-3
2	d	5	<i>Introduction to Personal Computers</i>	5-7—5-8
3	a	5	<i>Introduction to Personal Computers</i>	5-3—5-4
4	c	5	<i>Introduction to Personal Computers</i>	5-9, 5-12
5	b	5	<i>Introduction to Personal Computers</i>	5-9
6	a	5	<i>Introduction to Personal Computers</i>	5-13
7	b	5	<i>Introduction to Personal Computers</i>	5-15—5-16
8	b	5	<i>Introduction to Personal Computers</i>	5-18—5-19
9	b	5	<i>Introduction to Personal Computers</i>	5-20—5-21
10	a	5	<i>Introduction to Personal Computers</i>	5-22—5-25
11	d	5	<i>Introduction to Personal Computers</i>	5-22—5-25
12	b	5	<i>Introduction to Personal Computers</i>	5-28
13	c	5	<i>Introduction to Personal Computers</i>	5-32

Appendix A: Test and Answer Keys

14	c	6	<i>Introduction to Personal Computers</i>	6-1—6-2
15	a	6	<i>Introduction to Personal Computers</i>	6-2
16	c	6	<i>Introduction to Personal Computers</i>	6-4—6-5
17	a	6	<i>Introduction to Personal Computers</i>	6-8—6-9
18	c	6	<i>Introduction to Personal Computers</i>	6-13—6-14
19	d	6	<i>Introduction to Personal Computers</i>	6-15—6-16
20	b	6	<i>Introduction to Personal Computers</i>	6-19—6-20
21	d	6	<i>Introduction to Personal Computers</i>	6-24
22	a	6	<i>Introduction to Personal Computers</i>	6-18
23	c	6	<i>Introduction to Personal Computers</i>	6-22—6-23
24	d	7	<i>Introduction to Personal Computers</i>	7-2
25	a	7	<i>Introduction to Personal Computers</i>	7-4
26	d	7	<i>Introduction to Personal Computers</i>	7-5
27	d	7	<i>Introduction to Personal Computers</i>	7-6
28	c	7	<i>Introduction to Personal Computers</i>	7-10

Appendix A: Test and Answer Keys

29	b	7	<i>Introduction to Personal Computers</i>	7-10
30	d	7	<i>Introduction to Personal Computers</i>	7-11
31	c	7	<i>Introduction to Personal Computers</i>	7-14
32	c	7	<i>Introduction to Personal Computers</i>	7-13
33	d	7	<i>Introduction to Personal Computers</i>	7-15

ANSWER KEY EXAM 2 FOR UNITS 5-7 QUESTIONS

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	c	5	<i>Introduction to Personal Computers</i>	5-2
2	b	5	<i>Introduction to Personal Computers</i>	5-3—5-5
3	b	5	<i>Introduction to Personal Computers</i>	5-8
4	d	5	<i>Introduction to Personal Computers</i>	5-9
5	a	5	<i>Introduction to Personal Computers</i>	5-10
6	c	5	<i>Introduction to Personal Computers</i>	5-14
7	d	5	<i>Introduction to Personal Computers</i>	5-13—5-14
8	c	5	<i>Introduction to Personal Computers</i>	5-15—5-16
9	d	5	<i>Introduction to Personal Computers</i>	5-18
10	a	5	<i>Introduction to Personal Computers</i>	5-20—5-21
11	c	5	<i>Introduction to Personal Computers</i>	5-22—5-25
12	b	5	<i>Introduction to Personal Computers</i>	5-22—5-25
13	c	5	<i>Introduction to Personal Computers</i>	5-22—5-25

Appendix A: Test and Answer Keys

14	d	5	<i>Introduction to Personal Computers</i>	5-29
15	d	6	<i>Introduction to Personal Computers</i>	6-1
16	b	6	<i>Introduction to Personal Computers</i>	6-3
17	a	6	<i>Introduction to Personal Computers</i>	6-1—6-3
18	d	6	<i>Introduction to Personal Computers</i>	6-5—6-7
19	a	6	<i>Introduction to Personal Computers</i>	6-7
20	c	6	<i>Introduction to Personal Computers</i>	6-11—6-12
21	b	6	<i>Introduction to Personal Computers</i>	6-14
22	b	6	<i>Introduction to Personal Computers</i>	6-17
23	a	6	<i>Introduction to Personal Computers</i>	6-18—6-19
24	c	7	<i>Introduction to Personal Computers</i>	7-2
25	a	7	<i>Introduction to Personal Computers</i>	7-2
26	c	7	<i>Introduction to Personal Computers</i>	7-4
27	a	7	<i>Introduction to Personal Computers</i>	7-5
28	b	7	<i>Introduction to Personal Computers</i>	7-8

Appendix A: Test and Answer Keys

29	a	7	<i>Introduction to Personal Computers</i>	7-10
30	a	7	<i>Introduction to Personal Computers</i>	7-12
31	b	7	<i>Introduction to Personal Computers</i>	7-13
32	a	7	<i>Introduction to Personal Computers</i>	7-14
33	a	7	<i>Introduction to Personal Computers</i>	7-15

Final Exams

DATE: _____
STUDENT NAME: _____
COURSE NUMBER: _____
INSTRUCTOR: _____
SCHOOL LOCATION: _____

General Instructions:

1. This is a closed book, closed notes exam. No reference material (including assignments and lab) will be permitted for use during the exam session.
2. This exam contains 60 multiple choice questions.
3. Please use the separate answer sheet provided to you for marking your answers.
4. Each question in the exam is worth 1.67 points.

Final Exam 1 Questions

1. Which of the following best describes the operation of a typical hard disk drive?
 - a. A platter that spins at 500 rpm with a stationary read/write head.
 - b. A platter that spins at 20,000 rpm with a moving read-write head.
 - c. A platter that spins at 10,000 rpm with a fast-moving read-write head.
 - d. A platter spinning at 15,000 rpm with several independent read/write heads.
2. The data on a hard disk is physically organized on the platters. This organization is called:
 - a. the Bernoulli set.
 - b. sectors.
 - c. logical geometry.
 - d. drive type.
3. The _____ drive interface uses an 80-conductor ribbon cable.
 - a. SATA
 - b. IDE
 - c. SCSI
 - d. MFM
4. How many hard drives can be connected to a single SATA port on a motherboard?
 - a. One
 - b. Two
 - c. Four
 - d. 127
5. When installing an IDE hard drive, the drive's configuration as a master or slave is handled:
 - a. by jumpers on the drive.
 - b. in the BIOS.
 - c. by the data cable.
 - d. with setup software.
6. Partitioning a new drive is normally handled how?
 - a. At the drive factory
 - b. With FDISK
 - c. After Windows is installed
 - d. With the tools provided during the Windows installation
7. The data on a CD is stored on what type of media?
 - a. Magnetic
 - b. Aluminum
 - c. Polycarbonate

- d. Electrical
8. What is used to read the data from a CD?
- a. An antenna.
 - b. A floating magnetic pickup head.
 - c. Ultrasonic pulses.
 - d. A laser.
9. A CD-ROM drive is often described with a number such as 50X. What does this number represent?
- a. Fifty times faster access speed.
 - b. The number of writes and re-writes possible on a disk.
 - c. 50 times the standard 150 KB/s data transfer rate.
 - d. 50 times the standard 1 MB/s data transfer rate.
10. A dual-layer, double-sided DVD can typically hold how much data?
- a. 4.7 GB
 - b. 9.4 GB
 - c. 17 GB
 - d. 34 GB
11. Certain types of optical disk damage can be reversed through a process called:
- a. rejuvenating.
 - b. resurfacing.
 - c. defragmentation.
 - d. burning.
12. The physical installation of a CD-ROM is generally just like installing what else?
- a. Hard drive
 - b. Floppy drive
 - c. Zip drive
 - d. Monitor
13. One of the primary reasons CDs and DVDs are used for data storage is:
- a. data on optical disks lasts forever.
 - b. they hold far more data than any other media.
 - c. they are portable and inexpensive.
 - d. they are extremely durable.
14. What is the purpose of the expansion bus?
- a. To connect external add-on devices to the back of the system.
 - b. To connect add-on devices to the motherboard.
 - c. To allow the expansion of the motherboard chipset.
 - d. To allow expanded memory to be added.
15. Which type of expansion bus transfers data serially, rather than in parallel?

- a. ISA
 - b. PCI
 - c. AGP
 - d. PCIe
16. When a device needs the CPU to perform some task, it gets the CPU's attention by generating a/an:
- a. interrupt.
 - b. DMA.
 - c. soft fault.
 - d. system alert.
17. What Windows utility will help you make sure a device is installed correctly?
- a. PnP Manager
 - b. Control Panel
 - c. System Manager
 - d. Device Manager
18. The dots on a CRT are lit up when _____ strike the phosphorous coating on the inside of the tube.
- a. photons
 - b. electrons
 - c. light waves
 - d. pixels
19. Which of the following is a characteristic of a LCD video display?
- a. Wide viewing angles.
 - b. Flicker caused by bad refresh rates.
 - c. Narrow viewing angles.
 - d. Failed electron guns.
20. _____ checks your computer for user activity, and can shut off hardware devices to save power.
- a. VESA
 - b. APM
 - c. CPM
 - d. DHCP
21. A resolution of 800 x 600 is typical of what baseline video display standard?
- a. SVGA
 - b. VGA
 - c. WUXGA
 - d. EGA
22. A common problem with display adapters is:
- a. broken connectors.

- b. insufficient memory.
 - c. failed drivers.
 - d. beta operating systems.
23. How can you easily determine the type of memory needed for an upgrade?
- a. Call the manufacturer.
 - b. Take out one module and bring it with you to purchase more.
 - c. Check the motherboard documentation.
 - d. Look at the existing modules.
24. Probably the most difficult upgrade to perform is to replace the:
- a. hard drive.
 - b. video adapter.
 - c. memory.
 - d. motherboard.
25. Which of the following are characteristics of a Windows peer-to-peer network?
- a. One computer holds security and login information.
 - b. All of the computers are typically used as user workstations.
 - c. This type of network has very tight security.
 - d. This type of network utilizes a domain structure.
26. Which of the following is typically required with a client-server network:
- a. A workgroup.
 - b. At least one switch to route data throughout the system.
 - c. A network operating system.
 - d. Shared folders on individual hard drives.
27. The communication rules computers use are called:
- a. protocols.
 - b. topologies.
 - c. media.
 - d. connections.
28. What type of network is best when tight security is necessary?
- a. Peer-to-peer
 - b. Client-Server
 - c. WAN
 - d. LAN
29. In a _____ network, all devices are connected to a single linear cable.
- a. star
 - b. bus
 - c. ring
 - d. local area

30. In a _____ network, all devices are connected in a closed loop.
- star
 - bus
 - ring
 - local area
31. The _____ is the link between the personal computer and a LAN's network cabling system.
- hub
 - router
 - cable
 - NIC
32. In a twisted-pair network cable, why are the wires twisted together?
- To make them shorter.
 - To reduce electrical interference.
 - To allow more data on the cable.
 - To make the cable easier to install.
33. Twisted-pair cable can be used in lengths up to:
- 100 feet.
 - 100 meters.
 - 500 meters.
 - 2 km.
34. Twisted-pair cabling is rated by _____ which represent different levels of performance.
- lengths
 - categories
 - number of twists
 - conductor sizes
35. What network protocol is used on the Internet?
- TCP/IP
 - IPX/SPX
 - NetBEUI
 - Ethernet
36. Operating at 2.4 GHz and with a maximum throughput of 54 Mbps, the _____ wireless system is very popular today.
- 802.11A
 - 802.11B
 - 802.11G
 - 802.11N

37. What is the primary disadvantage of a wireless LAN, as compared to a wired LAN?
- Security
 - Distance
 - Interference
 - Throughput
38. The speed of a _____ Internet connection depends upon how far your computer is located from a nearby local telephone substation.
- dial-up
 - DSL
 - cable modem
 - T-Line
39. The Intel chipset system uses which device to control the transfer of data into and out of the SATA ports?
- ICH
 - GMCH
 - Northbridge
 - Codec
40. While shopping for a PC power supply, you know that your computer uses 225 watts while booting and 175 watts during normal operation. Which of the following power supply ratings would be the best choice as a replacement power supply?
- 125 W
 - 170 W
 - 250 W
 - 450 W
41. A static shock is caused by:
- the generation of static charges.
 - the dissipation of static charges.
 - the uncontrolled discharge of static charges.
 - low humidity.
42. Which of the following was Intel's first multicore CPU?
- Pentium D
 - Pentium 4
 - Pentium M
 - Core Duo
43. When considering thermal issues within a PC, which component generates the most heat and should get the most attention?
- CPU
 - Memory

- c. Chipset
 - d. Video processor
44. When choosing RAM technologies, what makes a DDR SDRAM memory module more appealing than an SDRAM memory module?
- a. it uses ECC technology.
 - b. it operates at twice the clock speed.
 - c. it can move twice as much data at the same clock speed.
 - d. it operates synchronously.
45. When purchasing memory for a laptop, which of the following is your most likely selection?
- a. SO-DIMM
 - b. CRIMM
 - c. RIMM
 - d. DDR DIMM
46. When adding memory to a PC, which should be the least of your concerns?
- a. Does the total size of the memory exceed the capacity of the system?
 - b. Is the memory you are installing compatible with the memory already installed?
 - c. Is the memory compatible with the motherboard?
 - d. Is the memory made by the same manufacturer?
47. In a Windows XP system, where can you locate the system files filled with hardware and software configuration and setup information?
- a. System Data
 - b. Registry
 - c. User Accounts
 - d. Device Manager
48. What must you provide in order to access a current Windows system?
- a. User name and Password
 - b. Ctrl-Alt-Del
 - c. User authentication
 - d. Ctrl-Alt-Del and Password
49. Which file display mode is active on a new Windows installation?
- a. List view
 - b. Icon view
 - c. Detail view
 - d. Tile view
50. When you first install Windows, all registered files have their file extensions hidden. In such a case, which of the following is how you would see a file called SPYWARE.TXT.SCR be displayed?

- a. SPYWARE . TXT
 - b. SPYWARE . EXE
 - c. SPYWARE . TXT . SCR
 - d. SPYWARE
51. Which type of memory device cannot be written to?
- a. CMOS
 - b. RAM
 - c. ROM
 - d. DRAM
52. What system file contains information about the boot process in Windows XP?
- a. IO.SYS
 - b. NTLDR
 - c. NTDETECT.COM
 - d. BOOT.INI
53. An important computer in your office has been destroyed in a fire. Which backup system will allow you to create a machine containing the same data as before the fire?
- a. Recovery CD
 - b. ASR
 - c. A backup copy of the data.
 - d. Recovery Console
54. Why would you want to use a signed driver?
- a. It helps to prevent the formation of malware within the computer.
 - b. It acts like a command interpreter between Windows and a hardware device within the computer.
 - c. It is a system protocol that transfers Windows commands to the computer.
 - d. It is the firmware in a hardware device that communicates with Windows.
55. What tool would be most appropriate for upgrading to a new and bigger hard drive, without reloading the operating system?
- a. System Restore CD
 - b. Disk imaging software
 - c. System Restore
 - d. Windows Backup
56. What is one way to increase the security of your windows system?
- a. Disable the Administrator account.
 - b. Use only Guest accounts.
 - c. Rename the Administrator account.
 - d. Rename the Guest account.

57. When you read about authentication, what does that mean with regards to Windows?
- It is the process of verifying the user is who they say they are.
 - It is method used by the BIOS to verify the operating system is good.
 - It is the process for configuring a user profile.
 - It is only performed the first time the Windows operating system is installed.
58. Your Inbox contains a message stating that your bank account has been compromised. The message contains links where you can go to resolve the issue if you have your account information handy. You should immediately consider this message as:
- legitimate.
 - spyware.
 - adware.
 - phishing.
59. Your CAD program causes Windows to crash with a blue-screen-of-death when you re-size a drawing window. It does not happen every time, on any particular drawing, but it is becoming more frequent. Which of the following is NOT an important symptom to report:
- blue-screen-of-death.
 - name of the drawing that last crashed.
 - intermittent CAD crash.
 - during re-sizing of a drawing window.
60. Your computer has been randomly locking up, no mouse, keyboard, or screen activity. You have even tried upgrading from Windows 2000 to Windows XP, but the problem continues. What is the most helpful thing to tell the repair technician?
- What applications you run.
 - How often you defrag the hard drive.
 - That a new OS did not help.
 - How safely you surf the Internet.

Final Exam 2 Questions

1. Which of the following refers to a drive's CHS values?
 - a. Cost, heads, size
 - b. Connection, heat, sectorization
 - c. Circumference, height, stiffness
 - d. Cylinders, heads, sectors
2. Which HDD interface has been used since the 1990s and is found in virtually all PCs since that time?
 - a. IDE
 - b. SCSI
 - c. SATA
 - d. ST-506
3. Which of the following refers to the attachment of two IDE drives to the same motherboard IDE port?
 - a. Primary, secondary
 - b. Master, slave
 - c. Only one IDE drive can be attached to a single port.
 - d. Drive ID numbers
4. On most computers today, BIOS Setup configuration is handled how?
 - a. Plug-n-Play
 - b. BIOS autodetect
 - c. Entering the CHS values into the BIOS setup.
 - d. Selecting drive type 0
5. Choosing between FAT32 and NTFS is part of which hard drive installation step?
 - a. Physical installation
 - b. BIOS setup
 - c. Partitioning
 - d. Formatting
6. Unlike floppy disks and hard drives, an optical disk is completely unaffected by:
 - a. bright light.
 - b. strong magnetic fields.
 - c. heat .
 - d. cold temperatures.
7. How is data stored on a CD-ROM?
 - a. As a series of ones and zeros that correspond directly to the data being saved.
 - b. As a series of transitions that represent the ones and zeros that make up the data.
 - c. As magnetically encoded data.

- d. As binary coded decimal digits.
8. The amount of time required for a CD drive to move its head across half the tracks on the disk is called:
- a. Mean access time
 - b. Seek time
 - c. Transfer rate
 - d. Head speed
9. CD-ROM drives are configured as:
- a. Always master drives on the secondary IDE port.
 - b. Always slave drives.
 - c. Either master or slave, depending the number of SATA ports.
 - d. Either master or slave.
10. When cleaning a CD or DVD, which of the following is most appropriate?
- a. Wipe in a circular pattern with a dry facial tissue.
 - b. Wipe from the center outwards with a soft lint-free cloth.
 - c. Wipe with a soft cloth and a mild solvent.
 - d. Put it in the dishwasher, but don't use the dry cycle.
11. How is data stored on a CD or DVD?
- a. In a single continuous track starting near the center of the disk and leading outward.
 - b. In concentric rings, like a hard disk drive.
 - c. In sectors and cylinders.
 - d. In a single continuous track starting near the outer edge of the disk and leading inward.
12. All devices that connect to the computer are attached to what kind of bus?
- a. Expansion bus
 - b. Address Bus
 - c. External data bus
 - d. PCI bus
13. The _____ expansion bus, used exclusively for video, has been displaced by PCI Express slots.
- a. ISA
 - b. PCI
 - c. AGP
 - d. PCIe
14. Which type of expansion bus is currently the fastest found on standard PCs?
- a. ISA
 - b. PCI
 - c. AGP

- d. PCIe
15. The CPU needs a way to get the attention of each and every device in the system. Because of this, every device in the system is assigned a unique:
- a. port number.
 - b. I/O Address.
 - c. Interrupt line.
 - d. IP Address.
16. If two devices are configured with the same I/O address, what happens when the CPU calls that address?
- a. The system controller sorts out which device is being called.
 - b. Both devices respond and the CPU sorts them out.
 - c. The system is likely to crash.
 - d. The Ethernet controller fails.
17. The frequency at which the entire screen is scanned is called the:
- a. HRR-horizontal refresh rate.
 - b. VRR-vertical refresh rate.
 - c. interlace rate.
 - d. persistence.
18. A major difference between a CRT and LCD display is:
- a. LCDs require a backlight.
 - b. LCDs use more power.
 - c. CRTs are more expensive.
 - d. LCDs are only used with laptop computers.
19. Which of the following Acronyms represent power-saving features in a computer?
- a. VESA
 - b. APM
 - c. CPM
 - d. DHCP
20. Which of the following is true regarding the repair of bad CRT monitors?
- a. They are easy and simple to repair, just open them up and see what's wrong.
 - b. You can usually fix them with just a hammer and a screwdriver.
 - c. Monitors contain circuits that exceed 50,000 volts; you should never open one unless you are an experienced electronics technician.
 - d. The cables are easy to replace and are the cause of most problems.
21. The best way to troubleshoot a suspected bad video adapter is to:
- a. try it in another slot.
 - b. remove it, check the connections, and put it back in.
 - c. replace the adapter memory.

- d. replace the adapter with a known-good adapter.
22. In most situations the most cost-efficient upgrade is to:
- a. add more memory.
 - b. buy a new computer.
 - c. upgrade the CPU.
 - d. replace the motherboard.
23. When installing a CPU upgrade, which of the following is **not** a major consideration?
- a. Socket type.
 - b. Bus speed.
 - c. Intel's iSpeed ratings.
 - d. The cost of a new system as compared to the cost of the new CPU.
24. Which system upgrade is most likely to require a complete system overhaul, including reinstalling the operating system and applications?
- a. Hard drive
 - b. Motherboard
 - c. CPU
 - d. Video card
25. Which of the following are characteristics of a Windows client-server network?
- a. All of the computers are typically used as user workstations.
 - b. This type of network has very tight security.
 - c. This type of network utilizes a peer-to-peer form of communication.
 - d. This type of network utilizes a workgroup structure.
26. The physical components required to hook up a computer on the network are called:
- a. protocols.
 - b. topologies.
 - c. media.
 - d. connections.
27. When a computer shares resources on the network, this computer is said to be providing:
- a. protocols.
 - b. topologies.
 - c. services.
 - d. benefits.
28. A local area network can best be described as:
- a. a network that spans a relatively large distance.
 - b. a network that covers a limited distance.
 - c. a network that uses UTP cables.

- d. a network that is easy to set up but has little security.
29. In a _____ network, all devices are connected to a single point.
- a. star
 - b. bus
 - c. ring
 - d. local area
30. The software that runs in a networked computer and provides services and shared devices is called:
- a. a protocol.
 - b. a driver.
 - c. a NOS.
 - d. interface adapter.
31. A _____ controls how and when data is moved into and out of the LAN's network cabling system.
- a. hub
 - b. BNC
 - c. cable
 - d. NIC
32. When security is of paramount importance, which cable type is likely to be used?
- a. UTP
 - b. STP
 - c. Coax
 - d. Fiber
33. Fiber optic network cable can be used in lengths up to:
- a. 100 meters.
 - b. 500 meters.
 - c. 2 km.
 - d. 20 miles.
34. CSMA/CD is a system used by which communication standard?
- a. TCP/IP
 - b. Ethernet
 - c. Token Ring
 - d. 10BaseT
35. A _____ is used to connect multiple computers on a LAN, and it has the ability to send data only to the device for which the data is intended.
- a. Hub
 - b. Switch
 - c. NIC
 - d. protocol analyzer

36. What is the primary disadvantage of a wireless LAN, as compared to a wired LAN?
- Security
 - Distance
 - Interference
 - Throughput
37. Which of the following is the same as a megabyte?
- 1000 kilobytes
 - 1,048,576 bytes
 - 1,073,741,824 bytes
 - 1,099,511,627,776 bytes
38. A computer bus can be defined as:
- A common path to transmit information to all parts of the computer.
 - The place in a computer where you attach peripheral devices.
 - A single wire connected to all devices in the computer.
 - A parallel set of conductors connected between components in the computer.
39. When you operate a computer with the side cover missing, you run the risk of:
- system components overheating.
 - a much longer computer life.
 - creating an electrical hazard.
 - generating stray EMI.
40. In order to work on a PC, what tools will allow you to handle most tasks?
- A complete set of tools, in order to perform every possible PC servicing task.
 - A few basic hand tools such as screwdrivers, flashlight, and an antistatic wrist strap.
 - Linux-based troubleshooting software.
 - Diagnostic tools such as multimeters and oscilloscopes.
41. There are many ways to prevent the generation of static charges, but which of the following is not recommended?
- Keep the computer chassis ungrounded to eliminate a path for static charges.
 - Ground yourself to the computer chassis.
 - Always wear an anti-static wrist strap that is connected to the computer chassis or motherboard ground when servicing a PC.
 - Maintain the relative humidity between 50% and 70%.
42. What is the difference between multithreading and multitasking?
- Multitasking: a single multiprocessor CPU executes two or more programs simultaneously. Multithreading: a single multiprocessor CPU executes two threads of code from one program simultaneously.

- b. Multithreading is more efficient than multitasking because most programs will not cooperate with the multitasking CPU, while all programs support cooperative multithreading.
 - c. Multithreading only works with single-core CPUs, while multitasking works with both single-core and multi-core CPUs.
 - d. With multitasking, one CPU executes two or more programs; with multithreading, one CPU executes one program that is designed with two separate threads of program code.
43. Which common memory technology is most often used in computers today?
- a. DRAM
 - b. EDO RAM
 - c. SDRAM
 - d. RDRAM
44. What is a disk cache?
- a. It is a process for storing frequently accessed data in a special location on the hard disk drive for quick retrieval.
 - b. It is a process that eliminates the need for cache memory in the CPU.
 - c. It is a process for temporarily storing frequently accessed data in user RAM rather than on the hard disk drive.
 - d. It is a process for organizing data in a structured format prior to storing the data on the hard disk drive.
45. A customer requests you send files using 8.3 file names. Which of the following will be acceptable?
- a. Ans Sht.doc
 - b. windows.dll
 - c. micro.soft
 - d. READMENOW.TXT
46. Which of the following will be found on the Taskbar?
- a. System Tray
 - b. A list of the programs that you can select and run.
 - c. My Computer
 - d. Channel Bar
47. How would you describe the Quick Launch Bar?
- a. It holds icons of programs you frequently launch.
 - b. It holds the clock and the icons of other startup programs.
 - c. It holds buttons linked to all the open applications on the desktop.
 - d. It provides access to the program menus and system programs in the Start Menu.
48. How do you check the amount of free space available on a disk drive?

- a. In the Start Menu, right-click My Computer, and select the Properties option.
 - b. Open the Windows Explorer, right click on the disk drive icon, and select Properties.
 - c. Open the Windows Explorer, Open the File menu, and select Properties.
 - d. Right-click the Start button and select Properties.
49. In order to change the boot drive sequence you need to access the BIOS Setup program. How do you do this?
- a. Push a special button on the front of the case.
 - b. Press Ctrl-Alt-Delete.
 - c. Press Delete, F2, or some other key during boot-up.
 - d. Press the reset button.
50. Which of the following is good reason to update the BIOS?
- a. When an application error message says to “update the BIOS.”
 - b. When the battery dies and wipes out the firmware.
 - c. When the BIOS has been reset.
 - d. When it is needed to add additional capabilities to the system.
51. How do you check the amount of free space on a hard drive?
- a. In Windows Explorer, select the drive and look on the address bar.
 - b. Double-click the drive’s icon in Windows Explorer.
 - c. In Internet Explorer, select the drive and examine the graphic display of the drive in the window pane.
 - d. Right-click the drive’s icon and select Properties from the dropdown list.
52. Until you do one of the following, you can’t know if your backup system actually works.
- a. On a regular basis, restore data to a computer and verify the accuracy of the restored data.
 - b. Switch on the “verify” function in the data backup program.
 - c. On a regular basis, read the stored data to verify it is still there.
 - d. Keep two storage devices, one as a backup in case of a system failure.
53. Which of the following is true regarding the creation of virtual memory in Windows?
- a. The system installer must determine the best place to store the page file, and load the file `pagefile.sys` onto that drive.
 - b. Windows automatically installs the swap file when the operating system is installed for the first time.
 - c. The system administrator must open the Virtual Memory configuration window and manually select the size and location of the paging file.
 - d. Virtual memory is created on the hard disk drive, by Windows, every time an application runs out of user RAM.

54. Why is serial data transfer technology becoming more popular than parallel data transfer?
- Serial transfers are almost as fast as parallel, but the interface circuitry is cheap enough to make it worthwhile to use in place of parallel.
 - Serial transmissions do not have a problem with jitter or skew like parallel transmissions.
 - Serial data may be transmitted over cables hundreds of feet long vs. cables of a few feet for parallel data transmissions.
 - Serial transmissions are not as prone to data errors as parallel transmissions.
55. Which of the following will allow you to recover your files and photos after a major hard drive crash?
- Restore from a recent backup.
 - Reinstall all your applications and recreate the data.
 - Restore from a backup created in 2005.
 - Utilize the recovery CD that came with the computer.
56. A password containing a basic level of security is:
- One that uses the date of your birthday.
 - One that uses the name of your child, sibling, parent, or pet.
 - One that includes upper and lower case letters, numbers, symbols and punctuation.
 - One that uses the name of your child, sibling, parent, or pet, but written in upper and lower case letters.
57. In order to prevent your system from malware attacks, what will you do?
- Install and maintain an antivirus program and firewall.
 - Visit only trusted sites on the Internet.
 - Install and maintain an antivirus program, a spyware detector, and an adware and cookie blocker.
 - Scan e-mail for viruses before opening the e-mail.
58. At about the same time you added a new hard drive to store your large data files, Windows started crashing when you launch certain applications. What question is most relevant?
- When did the crashes start?
 - How much RAM do the applications require?
 - Did the applications work before?
 - Is the swap file large enough?
59. Your computer is randomly rebooting, and you can't seem to connect any application or event as the cause. What is the most likely reason this is happening?
- A hardware device is failing.
 - A Windows driver is going bad.

- c. Excessive USB power usage.
 - d. A malware problem.
60. Which of the following techniques will automatically substitute a good component for a failed one without losing data or system up time?
- a. Data Redundancy
 - b. Hot Swap capability
 - c. Fault Tolerance
 - d. Fail-Over

Answer Sheet

DATE: _____
 STUDENT NAME: _____
 COURSE NUMBER: _____
 INSTRUCTOR: _____
 SCHOOL LOCATION: _____

General Instructions:

To answer each question, please darken the circle corresponding to your choice of answer by using a pencil. If you decide to change your answer, please erase your original answer completely and darken your new answer.

When the question is of True/False type, select option A for True and option B for False.

Question No.	(a)	(b)	(c)	(d)
1	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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14	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
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Question No.	(a)	(b)	(c)	(d)
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Question No.	(a)	(b)	(c)	(d)
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58	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
59	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
60	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

ANSWER KEY FINAL EXAM 1 QUESTIONS

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	c	8	<i>Introduction to Personal Computers</i>	8-4
2	b	8	<i>Introduction to Personal Computers</i>	8-3
3	b	8	<i>Introduction to Personal Computers</i>	8-8
4	a	8	<i>Introduction to Personal Computers</i>	8-14
5	a	8	<i>Introduction to Personal Computers</i>	8-17
6	d	8	<i>Introduction to Personal Computers</i>	8-18
7	b	8	<i>Introduction to Personal Computers</i>	8-22
8	d	8	<i>Introduction to Personal Computers</i>	8-22
9	c	8	<i>Introduction to Personal Computers</i>	8-26
10	c	8	<i>Introduction to Personal Computers</i>	8-25
11	b	8	<i>Introduction to Personal Computers</i>	8-29
12	a	8	<i>Introduction to Personal Computers</i>	8-26
13	c	8	<i>Introduction to Personal Computers</i>	8-20

Appendix A: Test and Answer Keys

14	b	9	<i>Introduction to Personal Computers</i>	9-1
15	d	9	<i>Introduction to Personal Computers</i>	9-4
16	a	9	<i>Introduction to Personal Computers</i>	9-7
17	d	9	<i>Introduction to Personal Computers</i>	9-8
18	b	9	<i>Introduction to Personal Computers</i>	9-9
19	c	9	<i>Introduction to Personal Computers</i>	9-10—9-13
20	b	9	<i>Introduction to Personal Computers</i>	9-15
21	a	9	<i>Introduction to Personal Computers</i>	9-20
22	c	9	<i>Introduction to Personal Computers</i>	9-20
23	c	9	<i>Introduction to Personal Computers</i>	9-21
24	d	9	<i>Introduction to Personal Computers</i>	9-24
25	b	10	<i>Introduction to Personal Computers</i>	10-3
26	c	10	<i>Introduction to Personal Computers</i>	10-3—10-4
27	a	10	<i>Introduction to Personal Computers</i>	10-5
28	b	10	<i>Introduction to Personal Computers</i>	10-10

Appendix A: Test and Answer Keys

29	b	10	<i>Introduction to Personal Computers</i>	10-11
30	c	10	<i>Introduction to Personal Computers</i>	10-11
31	d	10	<i>Introduction to Personal Computers</i>	10-13
32	b	10	<i>Introduction to Personal Computers</i>	10-16
33	b	10	<i>Introduction to Personal Computers</i>	10-17
34	b	10	<i>Introduction to Personal Computers</i>	10-17
35	a	10	<i>Introduction to Personal Computers</i>	10-24
36	c	10	<i>Introduction to Personal Computers</i>	10-27
37	b	10	<i>Introduction to Personal Computers</i>	10-31
38	a	1	<i>Introduction to Personal Computers</i>	1-20 — 1-24
39	c	1	<i>Introduction to Personal Computers</i>	1-31
40	c	1	<i>Introduction to Personal Computers</i>	1-39
41	a	2	<i>Introduction to Personal Computers</i>	2-11
42	a	2	<i>Introduction to Personal Computers</i>	2-25
43	c	2	<i>Introduction to Personal Computers</i>	2-30

Appendix A: Test and Answer Keys

44	a	2	<i>Introduction to Personal Computers</i>	2-36
45	d	2	<i>Introduction to Personal Computers</i>	2-43
46	b	3	<i>Introduction to Personal Computers</i>	3-7
47	a	4	<i>Introduction to Personal Computers</i>	4-2
48	d	4	<i>Introduction to Personal Computers</i>	4-12
49	a	4	<i>Introduction to Personal Computers</i>	4-17—4-18
50	c	4	<i>Introduction to Personal Computers</i>	4-26
51	b	4	<i>Introduction to Personal Computers</i>	4-37—4-38
52	c	5	<i>Introduction to Personal Computers</i>	5-9, 5-12
53	b	5	<i>Introduction to Personal Computers</i>	5-15—5-16
54	b	5	<i>Introduction to Personal Computers</i>	5-22—5-25
55	c	6	<i>Introduction to Personal Computers</i>	6-1—6-2
56	a	6	<i>Introduction to Personal Computers</i>	6-8—6-9
57	d	6	<i>Introduction to Personal Computers</i>	6-24
58	b	7	<i>Introduction to Personal Computers</i>	7-1

Appendix A: Test and Answer Keys

59	c	7	<i>Introduction to Personal Computers</i>	7-3
60	b	7	<i>Introduction to Personal Computers</i>	7-6

ANSWER KEY FINAL EXAM 2 QUESTIONS

Question Number	Correct Answer	Course Objective Tested	Reference in Course	
			Source	Page Number(s)
1	d	8	<i>Introduction to Personal Computers</i>	8-3
2	a	8	<i>Introduction to Personal Computers</i>	8-11
3	b	8	<i>Introduction to Personal Computers</i>	8-7
4	b	8	<i>Introduction to Personal Computers</i>	8-18
5	d	8	<i>Introduction to Personal Computers</i>	8-18
6	b	8	<i>Introduction to Personal Computers</i>	8-22
7	b	8	<i>Introduction to Personal Computers</i>	8-23
8	a	8	<i>Introduction to Personal Computers</i>	8-25
9	d	8	<i>Introduction to Personal Computers</i>	8-26
10	b	8	<i>Introduction to Personal Computers</i>	8-28
11	a	8	<i>Introduction to Personal Computers</i>	8-21
12	a	9	<i>Introduction to Personal Computers</i>	9-1
13	c	9	<i>Introduction to Personal Computers</i>	9-3—9-4

Appendix A: Test and Answer Keys

14	d	9	<i>Introduction to Personal Computers</i>	9-4
15	b	9	<i>Introduction to Personal Computers</i>	9-6
16	c	9	<i>Introduction to Personal Computers</i>	9-7
17	b	9	<i>Introduction to Personal Computers</i>	9-10
18	a	9	<i>Introduction to Personal Computers</i>	9-9—9-10
19	b	9	<i>Introduction to Personal Computers</i>	9-15
20	c	9	<i>Introduction to Personal Computers</i>	9-16
21	d	9	<i>Introduction to Personal Computers</i>	9-20
22	a	9	<i>Introduction to Personal Computers</i>	9-21
23	c	9	<i>Introduction to Personal Computers</i>	9-22
24	b	9	<i>Introduction to Personal Computers</i>	9-24
25	b	10	<i>Introduction to Personal Computers</i>	10-3—10-4
26	d	10	<i>Introduction to Personal Computers</i>	10-5
27	c	10	<i>Introduction to Personal Computers</i>	10-6
28	b	10	<i>Introduction to Personal Computers</i>	10-6

Appendix A: Test and Answer Keys

29	a	10	<i>Introduction to Personal Computers</i>	10-11
30	c	10	<i>Introduction to Personal Computers</i>	10-12
31	d	10	<i>Introduction to Personal Computers</i>	10-13
32	d	10	<i>Introduction to Personal Computers</i>	10-19
33	d	10	<i>Introduction to Personal Computers</i>	10-19
34	b	10	<i>Introduction to Personal Computers</i>	10-21
35	b	10	<i>Introduction to Personal Computers</i>	10-24
36	d	10	<i>Introduction to Personal Computers</i>	10-26
37	b	1	<i>Introduction to Personal Computers</i>	1-11
38	d	1	<i>Introduction to Personal Computers</i>	1-18 — 1-19
39	a	1	<i>Introduction to Personal Computers</i>	1-25 — 1-26
40	b	1	<i>Introduction to Personal Computers</i>	1-37
41	a	1	<i>Introduction to Personal Computers</i>	1-40 — 1-41
42	d	2	<i>Introduction to Personal Computers</i>	2-15—2-17
43	c	2	<i>Introduction to Personal Computers</i>	2-35

Appendix A: Test and Answer Keys

44	c	2	<i>Introduction to Personal Computers</i>	2-39—2-40
45	b	3	<i>Introduction to Personal Computers</i>	3-6
46	a	4	<i>Introduction to Personal Computers</i>	4-4, 4-6—4-7
47	a	4	<i>Introduction to Personal Computers</i>	4-7
48	b	4	<i>Introduction to Personal Computers</i>	4-15
49	c	4	<i>Introduction to Personal Computers</i>	4-27
50	d	4	<i>Introduction to Personal Computers</i>	4-30—4-31
51	d	5	<i>Introduction to Personal Computers</i>	5-3—5-5
52	a	5	<i>Introduction to Personal Computers</i>	5-14
53	b	5	<i>Introduction to Personal Computers</i>	5-20—5-21
54	d	5	<i>Introduction to Personal Computers</i>	5-26—5-27
55	a	6	<i>Introduction to Personal Computers</i>	6-7
56	c	6	<i>Introduction to Personal Computers</i>	6-11—6-12
57	c	6	<i>Introduction to Personal Computers</i>	6-22—6-23
58	a	7	<i>Introduction to Personal Computers</i>	7-2

Appendix A: Test and Answer Keys

59	a	7	<i>Introduction to Personal Computers</i>	7-4
60	d	7	<i>Introduction to Personal Computers</i>	7-10

Appendix B

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Appendix C: Lab Solutions

Lab Model Answers

Throughout the lab exercises students are asked to answer questions and to document observations. The following section contains model or typical answers for these questions. On occasion these answers will differ from what students observe in the lab. Every effort has been made to ensure that these answers are accurate, and that they reflect the expected outcome with the hardware provided.

If the course hardware or operating system is modified, changed, or updated, many of these model answers will be affected.

Lab 1-1

Inside the Computer

3. Use Figure 1 as a guide and list each of the cables on your computer, and briefly describe their purpose:

Line Cord – Provides AC power to the computer.

Keyboard Cable – Connects the keyboard to the computer.

Mouse Cable – Connects the mouse to the computer.

Monitor Cable – Connects the video monitor to the video adapter.

6. Compare the connector on the free end of the cable coming from the keyboard to those shown in Figure 2. Most PCs use one of three connectors. The connector on the right is the original, called a 5-pin DIN connector. If you ever see one of these, you know you are looking at an antique (in computer time). The one on the left was introduced by IBM on its PS/2 computer. For this reason it is usually called a *PS/2-type* connector. It is smaller and has 6 pins. Most computers use this as the keyboard connector. The USB connector in the middle is not designed as a keyboard connector, but rather a universal serial bus connector, used by some keyboards. Which type of port does your computer keyboard use? PS/2 Type

9. Like the keyboard, you will find there are three different types of mouse connectors. Compare the connector on your mouse to those shown in Figure 3. The connector in the middle uses the computer's 9-pin, D-connector serial port (COM1 or COM2) to provide the mouse interface. The one on the left is for the PS/2 port dedicated to interfacing the mouse to the computer. The connector on the right is a USB type of connector that plug into any of the USB ports on the computer. Every desktop computer has a dedicated PS/2 mouse port. Which type of port does your mouse use? PS/2 Type

Your computer may have a USB connector at the end of the mouse cable, then an adapter to convert to PS/2. This due to a slow transition away from PS/2 connectors. Eventually, USB will replace PS/2 entirely.

17. Look at Figure 6. It points out four major field replaceable units in the computer, and one area that can hold accessory adapter cards. These are numbered 1 through 5. Place the proper number by the names listed below to identify these six locations. Your computer will have all six, but they may be in different locations within the computer.

5 Power Supply

4 CD-ROM Drive

1 Motherboard

3 Hard Disk Drive

2 PCI/PCIe Bus Sockets

21. The power supply is distributing power to which units in the computer?

Motherboard

CD/DVD-ROM drive

Hard disk drive

31. You are already familiar with the two PS/2 ports into which the keyboard and mouse were originally attached. The PS/2 port has 6 pins arranged in a semicircle. Because the two PS/2 ports appear identical, small icons are provided by each so that you know what goes where. And to remove all doubt, each is color-coded.
33. The serial port connector has 9 pins arranged in 2 rows. Serial ports such as the one shown in the photo have been used by a serial mouse, a serial printer, or an external modem. All of these devices have made a transition to USB.

35. The parallel port connector has 25 connector holes arranged in 2 rows. The end of the old parallel port has been predicted for years, and finally we start to see it disappear.
39. The video port connector has 15 connector holes arranged in 3 rows.

Lab 1-2

Computer Power

30. The label also identifies the maximum current in amperes (A) available for each of the supply voltages. Refer to this label and fill in the currents in the spaces provided below:

<i>Voltage</i>	<i>Current</i>	<i>Power</i>
+3.3 Volts	<u>20A</u>	<u>66W</u>
+5 Volts (sb)	<u>2A</u>	<u>10W</u>
+5 Volts	<u>20A</u>	<u>100W</u>
+12 Volts (+12V1)	<u>8A</u>	<u>96W</u>
+12 Volts (+12V2)	<u>14A</u>	<u>168W</u>
-12 Volts	<u>0.8A</u>	<u>9.6W</u>
-5 Volts	<u>None</u>	<u>0W</u>

33. When viewed in this way, what is the maximum power that the six supplies can provide? 449.6W watts.

Lab 2-1

The Motherboard

9. Refer to Figure 2 and compare it to your own motherboard. Find the PCI bus expansion sockets on your motherboard. How many PCI sockets are available (have no cards installed) on your motherboard? 2 Each PCI socket aligns with a slot on the back panel of the chassis. Notice that unused card slots are covered with removable plates. Always keep these slots closed, either with blank cover plates, or with the cover plate attached to the end of a circuit card adapter.

11. In today's computers, memory comes in modules called single in-line memory modules (SIMMs) or dual in-line memory modules (DIMMs). Your computer uses DIMMs for real-time data storage, either DDR or DDR2—you may even find computers with SDR memory, but they are quickly going away. Refer to Figure 2 and find the DIMM sockets on your motherboard. What is the total number of DIMM slots? 2 How many DIMM modules are installed in the slots? 2 How many slots are available for additional memory? 0

Lab 2-2

Memory

4. Look closely at Figures 1, 2, and 3 so that you know what you are looking for. Now, look under the tangle of cables and find the memory module sockets on your motherboard. They are just to the right of the fan on the CPU. How many memory sockets are there? 2 How many of the sockets have a memory module installed? 2

9. Use Figures 1, 2, and 3 as references to examine the memory module and especially any empty sockets in your computer. What kind memory is installed? Two 1 GB DDR2 800 MHz DIMMS

13. Now that you know what to do, find out how much memory the computer thinks it has installed and record it here: 2 GB When you're done, shut down the computer.

21. Switch on the computer and allow it to boot into Windows. Did the computer boot normally? No What symptoms did you observe to indicate that the memory has failed? The speaker on the motherboard beeped three times, and the video display power LED never switched from amber to green.
22. Are you able to use the front panel power switch to switch off power to the computer? Yes
34. Switch on the computer and allow it to boot. Use the same method as before to check the system properties (Start > My Computer, right-click, select Properties). How much system memory is available to the computer? 2 GB If the computer did not pass the POST and launch Windows, turn off the computer. Switch the rear panel power switch to off. Wait for the motherboard LED to extinguish. Reseat the DIMM in its socket and try it again. If you still have a problem, call your instructor. Once the POST passes, you know the DIMM is properly installed.

Lab 3-1

The Windows XP Desktop, Part 1

37. Use your mouse cursor to grasp the top edge of the taskbar. Notice that the cursor has changed to a double-ended arrow. You should recall that this means the window can be resized. While the double-ended arrow appears, try to pull up on the top edge of the taskbar. What happens? The taskbar stretched up, creating more space to show multiple rows of icons and window buttons. Now return the taskbar to its original size.
38. Click and hold your mouse button on the center area of the taskbar. Then drag the taskbar toward the right side of the desktop. What happens? The taskbar and its contents formed a column on the right side of the desktop, leaving the bottom of the desktop open. Now return the taskbar to its original location.
57. Open the *Taskbar and Start Menu Properties* window. You should remember how to do this. Click on the *Start Menu* tab if the Start Menu page is not already shown on the desktop. Then click on *Classic Start Menu* and *OK* to close the Start Menu. Describe any differences in the desktop. The desktop icons My Documents, My Computer, and My Network Places appeared. No other changes were noted.

58. Right-click anywhere on the desktop (except the taskbar) and click *Properties* to open the Display Properties window. Click on the *Themes* tab if the Themes page is not already in front. Then, click on the down arrow beside the Theme list box and change the Theme to *Windows Classic* and click *OK* to close the Display Properties window. What does the desktop look like now? The wallpaper disappeared, the color scheme changed, and the taskbar appearance changed, leaving the overall appearance of a Windows 2000 desktop. If you wish, you can also move the Recycle Bin to its more familiar location at the left side of the display.

Lab 3-2

The Windows XP Desktop, Part 2

13. Finally, to save the file, click on the *Save* button. You may see a box which warns you that formatting will be removed. We don't care about formatting at this time, so click *Yes*. The Save As dialog box disappears and leaves the original WordPad message. Look at the title bar. What is the name of the file? Janet's Birthday
25. Recall that you placed the two files you are looking for in My Documents. Click on the *My Documents* icon in the Places Bar. Do your two files show up in the Directory Contents box? No The reason for this is that the list is limited to the subdirectory folders and the specific file type specified in the *Files of type* list box at the bottom of the window.
27. Click on the *All Documents (*.*)* option. Are the two files that you created earlier shown now? Yes
29. Open the *Files of type* list box again. Click on the *Text Documents (*.txt)* option. Are the two files that you created earlier shown now? Yes
33. Select the *Details* option from the View Menu. Notice that you are now able to see more information about each item in the list. Which of the two files did you create first? Janet's Birthday How can you tell? (Use the scroll bar at the bottom of the Folder Contents box to see all of the file details.) Compare the dates and times of the files.

55. Open the *Color quality* list box to view the available colors. What you see will depend upon the video adapter and display monitor used by your computer. It could be any or all of the following colors: 256, 16-bit, 24-bit, or 32-bit. What color amounts are available on your computer? Highest (32-bit) and Medium (16-bit) Other than the 256-color setting, there isn't a lot of difference between the other color settings in how Windows XP appears. So why the options? It has to do with system performance. Higher color choices run slower than lower color choices—more data has to be processed by the video adapter and system CPU, which means that Windows puts the elements of your display on the screen at a slower pace. This was a significant problem with older, slower computers. However, with today's extremely fast computers, the color settings have become virtually meaningless. If the list box is still open, close it.
56. Click on the *Advanced* button near the bottom of the *Display Properties* window. You will see a window similar to the one shown in Figure 16. There are several tabbed pages of properties. Let's take a look at one. Select the *Adapter* tab. Then, click on the *Properties* button, and then the *Driver* tab. This allows you to check the driver details and to update, roll back, or uninstall video display adapter drivers. List below the current adapter/driver information that is shown in your display.

Driver Provider (Manufacturer): Intel Corporation

Driver Date: 10/30/2007

Driver Version: 6.14.10.4885

Digital Signer: Microsoft Windows Hardware Compatibility Publ

60. Under Monitor Settings, be sure the checkbox labeled *Hide modes that this monitor cannot display* is checked, as shown in Figure 17. Then open the *Screen refresh rate* list box. Figure 18 shows a list box similar to what you should see. What frequencies are available? Most likely you will find something like 60 Hertz, 70 Hertz, 75 Hertz, and 85 Hertz. (This will vary with monitor types.)
61. Close the list box, clear the checkbox labeled *Hide modes that this monitor cannot display*, then open the *Screen refresh rate* list box once again. List any new refresh rates that weren't available before: 100 Hertz and 120 Hertz. (This will vary with monitor types.)

Lab 3-3

Exploring the ITT Tech Virtual Library

1. Locate the user name and password that was assigned to you so you can access the ITT Tech Virtual Library. Record this information below:

User Name (Varies from one student to the next.)

Password (Varies from one student to the next.)

6. When the ITT Tech Virtual Library appears as shown in Figure 1, enter the User Name and Password from Step 1 into the appropriate blanks. Then click on *Login*. The ITT Virtual Library Main Menu similar to Figure 2 will appear.

Along the left side of the screen you will find a list of several resource areas. There were ten at the time this course was written. To the right of this list is a brief description of these resource areas.

What type of material is provided in the Books resource area? Access to online reference books.

What type of material is provided in the Periodicals resource area? Magazines, journals, and newspapers.

What type of material is provided in the Reference Resources area? Access to encyclopedias, dictionaries, directories, and other reference resources.

7. To use the Basic Search, you enter a search phrase and then click *Search*. If you have *Search by subject* selected, you can choose all of the subject areas shown, or you can choose specific areas. Since we are concerned with computers in this course, which two subject areas would most likely have pertinent information? Electronics databases and Information Technology. If you have *Search by database* selected, you can choose all of the databases shown, or you can choose specific databases.
12. Of the books listed, Maran Illustrated Computers Guided Tour might have what we want, so click let's click on *Show the Table of Contents*.

14. Click on the *CPU* subheading to jump to that area of the chapter. Read all of the information about CPUs. What does it say about dual-core CPUs? A dual-core CPU contains two processors to greatly increase the speed and power of a computer.
21. Read the information about L2 Cache. According to the information provided, what are the available sizes of the L2 cache? Level 2 cache is available in 256, 512, and 1024 KB.
28. Click on *Computers and Electronics Engineering Technology (CEET)*. What are the four links shown? Professional Organizations, Textbook Support, Self Assessment, and Recommended Links.
37. Peruse each IT281 chapter until you find a list of minimum hardware requirements for the Windows Vista Capable operating system. NOTE: You may be able to save some time by checking the table of contents at the beginning of each chapter. List the minimum hardware requirements below:

800 MHz 32-bit or 64-bit processor

512 MB of RAM

A video card capable of at least 800 × 600 resolution and DirectX9

A hard drive that is at least 20 GB in size, with at least 15 GB of free space

Lab 4-1

Organizing the Desktop

13. Open the pull-down menu *View*. The group of five display options—Thumbnails, Tiles, Icons, List, and Details—are an example of what we call “exclusive options.” You can choose only one of the options at a time. A dot identifies the selected option. Click on the *Icons* option.

Notice that the sequence of the icons did not change. However, because the size of each icon is smaller, the icons fit into a smaller area, perhaps many more now fit on the same line. For that reason, you should be able to see all of the files in the root directory now. If you still can't see all of the files, widen the window as necessary until you can, or until you can't make it any larger.

When you choose this option, you gain the ability to see more files at one time. What do you lose? A miniature view (thumbnail) of the file contents.

14. Open the pull-down menu *View*. Click on the *List* option. What's the difference between the Icons view and the List view? The List option has the files listed vertically.
22. Now that your head is bursting with all this wonderful new knowledge, click on the *OK* button to close the Folder Options window. Examine the directory file/folder listing again. Are there any changes? In general terms, describe what is different. The files now have extensions, several hidden files and folders are now visible, and the title bar of the directory listing now shows the computer path to the directory rather than just the directory name.
25. What is the title of the open window? Windows Do most of the files still have a file extension? No What display option is selected in the pull-down menu *View*? Details

Lab 4-2

Working with Files and Folders

14. After that little refresher, let's use the first option to make a copy of the selected Cursor window files. Left-click on one of the selected files and continue to hold the left button down. Then, press and hold the *Ctrl* key. Notice that as you start to drag the mouse, a small box with a plus (+) symbol appears next to the mouse pointer. This indicates that you are copying, rather than moving, the files. Before the pointer leaves the Cursors window, release the mouse button. What happened? Nothing obvious. Scroll down to the bottom of the window. What do you see? Windows duplicated the two files in the same window. It changed the names of the files to "Copy of ARROW RL" and "Copy of ARROW RM" so they did not conflict with the original names.
27. Let's now learn a little more about the My Own Folder. First, close the open folder, then right-click on the *My Own Folder* icon. Now, select the *Properties* option to open a window similar to Figure 5.

What is the size of the folder? 303 KB What does the folder contain? 188 files and 1 folder What is the name assigned to the folder? My Own Folder Notice that this Properties window has three pages, General, Sharing, and Customize. The Sharing page gives you the option of sharing this folder with other users. The Customize page allows you to choose the type of folder, add a picture to the folder icon, and change folder icons.

34. Open the folder, *My Own Folder*. Select the four files, then press the *Delete* key. Click on the *Yes* button when you are asked if you really want to delete the files. What happened to the Recycle Bin icon? It changed to a full trash can.
35. Click on the *Cursors* folder and drag it over and drop it on the Recycle Bin icon. Did Windows ask if you wanted to delete the folder and its files? Yes Why? In case you accidentally drop an object onto the Recycle Bin. Also, because the Recycle Bin Properties has the delete confirmation dialog box turned on by default.
37. Right-click on the *My Own Folder* icon and select the menu option *Cut*. Nothing will happen to the icon at this time. Right-click on the *Recycle Bin* icon and select the menu option *Paste*. Did Windows ask if you wanted to delete the folder and its files? Yes Why? Again, in case you accidentally drop an object onto the Recycle Bin. Also, because the Recycle Bin Properties has the delete confirmation dialog box turned on by default.
39. Let's use a fourth method to delete the files. Close the Recycle Bin window. Right-click on the *Recycle Bin* icon. Then, select the menu option *Empty Recycle Bin*. Click on the *Yes* button when asked if you really want to delete the files. What happened to the Recycle Bin icon? It turned back into an empty trash can.
40. You still have one more object to delete. That's the Shortcut to Beta (D:). Right-click on the Shortcut to Beta (D:) icon. Then, press the Delete key. Click on the *Yes* button when you are asked if you really want to delete the folder, "Shortcut to Beta (D:)." What happened to the Recycle Bin icon? It turned back into a full trash can. Explain why that happened. More trash was placed in the can.

Lab 5-1

Windows XP Configuration

5. Go to the first Control Panel window. Once again, click on the icon *Date, Time, Language, and Regional Options*. Then click on the icon *Regional and Language options*. Did the *Regional and Language Options* window change? No. (It came to the front of the display, but did not otherwise change.)
6. Minimize all of the open windows except the *Regional and Language Options* window. Drag the *Regional and Language Options* window off to the side a little. Do you find a second *Regional and Language Options* window hiding underneath? No
8. A third way to open the Control Panel is the one you will probably use most often. Open the *Start* menu and click the icon *Control Panel*. How many Control Panel windows are open on your desktop? Only 1 This is a tricky question because the most recent Control Panel may replace the one you opened from within My Computer, or it may not—Windows XP is not always consistent in this matter.

Lab 5-2

The Windows XP File System

2. Open the *Start* menu and click *My Computer* to display the drives in your computer. Right-click on the *Alpha (C:)* icon and select *Properties*. You will see a properties window similar to Figure 1. What is the file system? NTFS How much drive space is used? Approximately 3 GB (3.36 GB)
5. Click on the *Check Now* button. What is the name of the application that provides error checking? Check Disk What tests may this application perform on a drive? Automatically fix file system errors, or scan for and attempt recovery of bad sectors.
6. Without placing a check mark in either of the option boxes, click the *Start* button to run the application. The program examines the file system for errors, but it does not fix them. If you want to fix any errors, you must put a check in the top option box. How many test phases were performed? Three Click *OK* to close the *Disk Check Complete* message window.
14. What is the purpose of the Backup Wizard (Advanced)? The Backup Wizard helps you backup programs and files.
15. What is the purpose of the Restore Wizard (Advanced)? The Restore Wizard helps you restore your data from a backup.

16. What is the purpose of the Automated System Recovery Wizard? The ASR Preparation Wizard helps you create a two-part backup of your system; a floppy disk (if your computer has a floppy drive) that has your system settings, and other media that contains a backup of your local system partition.
42. Minimize the *Computer Management* window. Then, restore the minimized Alpha (C:) window. Open the *View* menu and select *Refresh*. What tells you that you accomplished your task? Instead of a folder named Sigma, we now have a disk drive named Sigma. In other words, the folder icon has changed into a drive icon.
44. Make sure the drive letter is selected. Then click on the *Remove* button. Click *Yes* in the message window that opens. Do see any changes to the drive letter assignments in the Disk Management window, and if so, what? The drive is still shown, but it no longer has a drive letter assigned to it.
46. Restore Alpha (C:) from the taskbar. Is the *Sigma* folder displayed? Yes If so, what is its icon? A disk drive. Open the *View* menu and select *Refresh*. Is the *Sigma* folder displayed? Yes If so, what is its icon? It changed to the shape of a folder.

Lab 5-3

The Control Panel and Device Manager

20. Click on the *Resources* tab. This page allows you to adjust the resources used by the device, should that be necessary. With plug-and-play, you won't have to do this very much, except when you locate an old pile of network cards that have resource jumpers to accommodate different (available) IRQ (Interrupt Request) lines.

What is the IRQ setting for the floppy controller? 06 Click *Close* to close the Floppy Controller Properties sheet. Note that if you poke around in the resources sheet, when you close the sheet you will be prompted to restart the system, even if you didn't change anything.

Lab 6-1

Controlling Windows Access

1. Switch on the monitor and computer and run Windows. Did you have to enter a user name and password, or did you simply click on the name of the user you wished to logon to Windows, and enter a password? There are two possible answers if the student is using a “standalone” computer. One is the student had to enter a user name and password. The other is the student simply clicked on the name of the user, and then entered the password. A variation on these themes is the student didn’t have to enter a password.
4. Click on the user name of a *Limited account* user, if you have one. Otherwise, move on to the next step. Compare your task list to the task list shown in Figure 4. Are there any differences, and if so, what are they? There are two possible answers. The first is, there are no differences. The second is, the option to create a password has been replaced by the options to change the password and remove the password.
5. Click on the user name for the computer administrator. Compare the list of tasks that may be performed in this account to the list of tasks in Figure 4. What, if any, are the differences between the two lists? Two tasks have been added. These are to change my name and to change my account type.
19. In the left pane of the *Computer Management* window you will see several folders. Click on the *Disk Management* folder to open it. What happened? A message appeared that stated that I did not have access rights to the Disk Manager on this computer.
24. Click the *OK* button to close the *Properties* window. What happened? An error message appeared that stated that my authority to change the Guest account properties was denied.
28. What happened to the red and white X on the *Guest* account icon? This time the red and white X disappeared.
29. Does the *Guest* account have access to the computer? Before you make a rash statement, let’s see what the Control Panel User Accounts manager has to say about the Guest account. Open the *User Accounts* manager. What is the status of the *Guest* account? The Guest account is off.
33. Open the Control Panel User Accounts manager. What tasks can you perform as a Guest? Change the icon picture that is associated with Guest and setup an account to use a .NET Passport.

50. Click on the *OK* button to update the *Tiger* user account. What account or accounts is *Tiger* now a member of? Users and Power Users.
52. Log off the computer, then use your new user account, *Tiger*, to log back on. What happened after you entered your password, and attempted to log on to the computer? A message appeared that told me I am required to change my password at first logon.
54. Close the message that tells you *Your password has been changed*. After Windows finishes loading, clear any start-up messages. Then, right-click on the *Start* button and select *Explore* to open the Windows Explorer. Examine the contents of the *Documents and Settings* folder. What are the names of the account folders? Administrator (if not deleted after the initial Windows XP installation), All Users, Buzz, Guest, Tiger, and any other folders that existed prior to this lab, including the administrator account folder that was created after the initial Windows XP installation.
55. Examine the contents of user account folder *Tiger*. Is it the same as the *Guest* folder you examined earlier? No Can you open the *Guest* folder to verify this? No Can you open the Administrator (John Smith) folder? No

Remember, the only right assigned to Tiger is to look in Tiger's user account folder.
58. Open the Computer Manager. Then click on the *Disk Management* folder to open it. What happened? The folder opened as usual. How does this compare to the last time you attempted to open the *Disk Management* folder? The last time I received an error message that stated that I did not have the authority to open this folder. Why is it different this time? This time I belong to the Power Users group and Power Users apparently have the authority to open this folder and perform disk management operations.

Lab 6-2

Windows Security

8. Open the *Start* menu, then click on the *My Documents* icon. Is there a copy of the *Tiger's Test* file inside? Yes Close *My Documents*.

9. Open the *Start* menu, then click on *My Computer*. Double-click on the *Alpha (C:)* icon to open it. Double-click the *Tiger Test* folder to open it. Is there a copy of the *Tiger's Test* file inside? Yes Double-click on the *Tiger's Test* file. What happened? The file opened in WordPad.
10. Close WordPad. Close the *Tiger Test* folder window. Log off Windows. Then log on as the *administrator* user (remember, that's John Smith). Is the file *Tiger's Test* on the desktop? No
11. Open the *Start* menu, then click on the *My Documents* icon. Is there a copy of the *Tiger's Test* file inside? No Close *My Documents*.
12. Open the *Start* menu, then click on *My Computer*. Double-click on the *Alpha (C:)* icon to open it. Double-click the *Tiger Test* folder to open it. Can the Administrator user see a copy of the *Tiger's Test* file inside? Yes
13. Double-click on *Tiger's Test* file. Does it open? Yes Close all of the open windows.
15. Clear any start-up messages. Is the file *Tiger's Test* on the desktop? No
16. Open the *Start* menu, then click on the *My Documents* icon. Is there a copy of the *Tiger's Test* file inside? No Close *My Documents*.
17. Open the *Start* menu, then click on *My Computer*. Double-click on the *Alpha (C:)* icon to open it. Double-click the *Tiger Test* folder to open it. Can the user Buzz see a copy of the *Tiger's Test* file inside? Yes
18. Double-click on *Tiger's Test* file. Does it open? Yes
22. Log off Windows. Then log on as the user *Tiger*. Is the file *Buzz's Test* still on the desktop? No Is *Tiger's Test* file on the desktop? Yes
23. Open *My Documents*. Is the file *Buzz's Test* still in *My Documents*? No Is the file *Tiger's Test* in *My Documents*? Yes How do you account for this? The My Documents folder and the Desktop for every user can only be seen by that user and none of the others. Close all of the open windows.
38. Click on the user *Buzz* to highlight the line. This will display the *Permissions for Buzz*. You should see a dialog box similar to the one shown in Figure 7. Right now, what is Buzz allowed to do to files and folders in the *Tiger Test* folder? Read and Execute files, List Folder Contents, and Read files.

39. Change Buzz's permissions to none. You do that not by unchecking the checkboxes in the *Allow* column, but by checking all of the checkboxes in the *Deny* column. And it takes only one check. Place a check in the checkbox *Full Control*, in the *Deny* column. That will cause the other *Deny* column checkboxes to be checked—all except *Special Permissions*, because it is grayed-out, and therefore not available to Buzz. What happened to all of the *Allow* column checkboxes? All of the checks in the Allow column checkboxes disappeared.
42. Log off, then log back on as the *administrator* user. Use *Windows Explorer* to locate and open the *Tiger Test* folder in the root directory of drive C. Then, double-click the *Tiger's Test* file to open it. What happened? Tiger's Test file opened as expected. Why did that happen? The permissions for the Administrator User were not changed.
43. Close *WordPad*. Log off, then log back on as the user *Buzz*. Open the *Windows Explorer* in the root directory of drive C. Is the *Tiger Test* folder visible? Yes. Double-click the folder to open it. Is the *Tiger's Test* file visible? No. What happened when you tried to open the folder? An error message appeared that stated access was denied. Why did that happen? All access privileges for the user Buzz were removed a few steps ago. Close the error message box.
53. Click on the icon for the user *Buzz*. Enter the password for *Buzz* and press the *Enter* key. The user *Buzz* is now the active user for your computer. How can you verify this? There are two ways to do this. The first option is to right-click on the Start button and select the option Explorer. The Windows Explorer will open in the Documents and Settings folder, with the current user's folder (Buzz) expanded. The second option is to open the Control Panel and select the category User Accounts. The user account that opens will be the current user. And if all of the user account names appear, you know the current user is the computer administrator.
54. Open the *Control Panel* and click on the category *User Accounts*. What user account is displayed? Buzz
55. Without closing any windows, open the *Start* menu and click on the *Log Off* button. Then, click on the *Switch User* button. Again, all of the users are listed with their icons. How many users are active? Two. How can you tell? The two users have running programs—the administrator one, and Buzz two.

56. Click on the icon for your computer's *administrator* user. Is the *Control Panel* program still running? Yes If you don't see it, look at the task bar, it may have minimized while the *administrator* user was inactive.
58. Remove the check from the checkbox *Use Fast User Switching*. Click on the *Apply Options* button. What happened? An error message appeared that stated I could not turn off Fast User Switching with multiple users logged on.

Lab 7-1

Hard Disk Recovery

4. Read the *Windows Setup* message box, then click *Yes*. The setup wizard will try to download the latest Windows files and fail because there is no Internet connection. Select the option to skip this step, then click *next*. At the end of the installation, the *Microsoft Windows XP Professional Setup* message box will appear. Read its message, then click *OK*. Where do you go for help running the Recovery Console? Type HELP at the command prompt.
5. Restart Windows. When the boot menu appears, press the spacebar to turn off the countdown counter. Otherwise, you have to respond within 30 seconds, or Windows will boot automatically. Examine the display. How many boot options do you now have, and why? Originally, there was only one option, boot Windows, so the option was never displayed. We now have two options to boot the computer. You are given 30 seconds to choose one or the other. The second option was added when the Recovery Console was installed.
9. Type the word *help* at the *C:\WINDOWS>* command prompt and press the *Enter* key to display the available Recovery Console commands. Read the messages at the top and bottom of the display. Do you recognize any of the commands? Yes Which ones don't you recognize (use the *Enter* key to scroll through the list)? This list depends upon the student's DOS background. At the very least, the student should know the Exit and Help commands.
10. How many lines do you scroll through when you press the *Enter* key? 1
12. Type *dir* (for directory listing), then press the *Enter* key. What is your computer displaying? It is displaying the directory, or contents listing of the C:\WINDOWS folder. The list included the date and time each file and folder was created, the attributes set for each file and folder, and the size and name of each file and folder.

13. Press the spacebar, how many lines did you scroll through? 32 lines (one page)
16. Type *dir*, then press the *Enter* key. What did your computer display? It displayed the folders and files that are stored in the root directory of local drive C.
17. In the directory just displayed, how do you know that WINDOWS is a directory? When I used the *help dir* command, I learned that the attribute d is used to identify folders, and the attribute d is set for the WINDOWS folder.
18. At the display prompt, type *help dir* and press the *Enter* key. Read the help information. In the following blanks, fill in the meanings of the symbols.

D	<u>Directory</u>	R	<u>Read-only</u>
H	<u>Hidden file</u>	A	<u>Files ready for archiving</u>
S	<u>System file</u>	C	<u>Compressed</u>
E	<u>Encrypted</u>	P	<u>Repase point</u>

21. What are the options listed?

Safe Mode

Safe Mode with Networking

Safe Mode with Command Prompt

Enable Boot Logging

Enable VGA Mode

Last Known Good Configuration (your most recent settings that worked)

Directory Services Restore Mode (Windows domain controllers only)

Debugging Mode

Disable automatic restart on system failure

Start Windows Normally

Reboot

Return to OS Choices Menu

25. Press the minimize button near the top right corner of your display. Where are your icons on the desktop? For that matter, where is the desktop? The desktop and the desktop icons are not visible because you chose a version of *Safe Mode* that runs from the DOS Prompt. The desktop is not supported in DOS.

66. Just to be certain our changes are permanent, reboot Windows. Is the desktop background still different? Yes Is NOTEPAD still renamed? Yes Be sure to scan through the C:\Windows folder for other possible copies of NOTEPAD. Check with your instructor if either answer is no.
72. Was the desktop background restored to its original setting? Yes
73. Open My Computer and go to the Windows folder. You'll have to change the view back to details, because that setting was lost in the restoration. What do you notice about NOTEPAD? NOTEPAD has been restored, and is now present in the folder.

Lab 7-2

System Inventory

3. You can save all the information that has been gathered into a single large text file, or it can be saved as a special file that System Information can open. The idea is that you can save the status of your system as of some specific date and refer back to it if something goes wrong later. In this lab, we simply want a list of a few key items.

In the space provided, write the contents of the Value column for each item listed. Note that your system may be unique, your values may be different than those shown in Figure 1, and they may be different than the other computers in your lab.

<i>Section</i>	<i>Item</i>	<i>Value</i>
System Summary	OS Name	Microsoft Windows XP Professional
	Version	5.1.2600 Service Pack 3 Build 2600
	System Model	DG31PR
	Processor	x86 Family 6 Model 22 Stepping 1 Genuine Intel 1600 MHz

Bios Version/Date	Intel Corp. FR63110H.86A.0053. 2008.1301, 7/15/2008
Total Physical Memory	2,048.00 MB
Available Physical Memory	1.68 GB

5. As before, write the contents of the value column for the items specified. You will need to expand other subcategories to reach them all.

<i>Section</i>	<i>Item</i>	<i>Value</i>
Components > Sound Device	Name	Realtek AC'97 Audio
	Adapter RAM	128.00 MB (134,217,728 bytes)
Display	Name	Intel G33/G31 Express Chipset Family
	Driver Version	6.14.10.4885
	Resolution	1024 x 768 x 85 Hertz
	Bits/Pixel	32
Modem	Name	(none)
Storage > Drives	Drive	C
	Drive	D

	Drive	(none)
Storage > Disk	Model	WDC WD800AAJS – 22 PSA0
	Size	74.53 GB (80,023,749,120 bytes)
	Partition Size	19.53 GB (20,974,431,744 bytes)
	Partition Size	54.99 GB (59,041,059,840 bytes)
	Partition Size	(none)

9. You should see a dialog box similar to Figure 3, but yours will have fewer programs listed. On the lines that follow, list all of the installed applications:

Intel Graphics Mode Accelerator Driver

MSXML 40 SP2 Parser and SDK

RealTek GbE & FE Ethernet PCI-E NIC Driver

RealTek High Definition Audio Driver

11. The next thing we want to document is a list of the programs that are configured to run every time Windows is launched. This list is useful for determining what might be causing startup troubles, and for diagnosing problems after other programs are installed. Click *Start, All Programs* and hover your mouse pointer over the *Startup* option. List all the items shown, in the following space:

(none)

19. In the space below, make a list of all the programs located in the *Run* key of the registry:

(Default) REG_SZ (value not set)

23. Examine the front of your computer's case carefully. In the space below, list any connectors or other electrical or optical interfaces you see:

Two USB sockets

24. Look at the DVD-ROM drive closely. DVD drives have specific logos to tell us if they handle re-writeable media, DVD-ROM, DVD-R, or any of a dozen or so optical media standards. Record the words in the logos on your DVD-ROM drive below:

DVD ROM Compact Disk

25. Look at the rear of the computer. List all the electrical or optical interfaces you see. You should list the mouse/keyboard connectors and type, USB interfaces, network interfaces, audio connectors, video connectors, and anything else.

AC Power

Mouse and Keyboard

Monitor connector

Speaker output, microphone input, line input

4 USB ports

RJ-45 Ethernet port

27. Examine the motherboard carefully, and look for the name of the company that manufactured the board and its model number. Some motherboards have large, easy-to-read markings, and others seem to keep their identity secret. If you can't locate this information, ask your instructor to point you in the right direction. Record the motherboard name and model number here:

Intel CPU DG31PR(B)

28. How many memory slots are in the computer? 2
29. How many of the memory slots are empty? None
30. Are there any adapter cards installed in the PCI or PCX expansion slots? No If yes, list them below. Be sure to record the type of card, and its brand and model number. If you cannot read this information from the card without removing it, check with your instructor. Do not remove any cards without your instructor's approval.

Lab 8-1

Backing Up Your Data

10. Click the check box next to the Movie Maker folder to select the folder. Then, click on the Movie Maker folder icon so the contents of the folder opens in the right window pane. Of the files and folders shown in the right window pane, how many are selected (the checkbox next to each item is checked)? 11
11. Click *Next*. Your screen should now look similar to Figure 4. This screen allows you to indicate where you want to store the backup, and also lets you give the backup a name. Where is the Wizard suggesting you save your backup files and folders? It doesn't (blank)
12. We want to save the backup to drive D, so be sure the listbox *Choose a place to save your backup* is pointing to drive D. To do so, click the *Browse* button. In the Save As dialog box, double-click the My computer icon. Then double-click the drive D icon. The Wizard will suggest a backup file name of *Backup*. That's fine for now. Click the *Save* button to save the selection. What is the name of the drive now displayed in the *Choose a place to save your backup* listbox? D:\
23. When the backup completes, click on the *Report* button. A backup report similar to Figure 9 will appear. This report shows you when the backup began, when it ended, how many files were backed up, and how much disk space was used. The report also shows similar information about the backup verification. What is the name of the backup file, including its path? D:\My Backup.bkf (or the name the student chose as the backup name).

Lab 8-2

Drive Interfaces

4. Locate the DVD-ROM drive inside the chassis. Describe the cables that are attached to the rear of the DVD-ROM drive: There is a 4-wire power cable attached to the right side of the drive, and a 40-conductor ribbon data cable attached to the drive, next to the power cable. The ribbon cable stripe is next to the power cable.
5. What type of drive interface is used for the DVD-ROM drive? EIDE
6. Does the data cable have any type of mark to identify one end as pin 1? Yes What kind of marking is used? There is a paint stripe down the side of the ribbon cable on the conductor that goes to pin 1. Is this striped wire closer to you, or the back of the computer chassis? It is closer to me.

7. Grasp the white power connector shell as shown in Figure 1. *Do not pull on the wires!* Because the connector is normally tight, you may have to slightly rock it from side-to-side as you pull on the connector. Once the connector is unplugged, look at the end of the shell. Notice that two of the corners are square and two of the corners are beveled. Could this cable be attached backwards, by accident? No
9. Look closely at the 40-pin connector and the matching pins on the drive. Notice that a pin is missing on the drive, as shown in Figure 8. Why do you think this pin is missing? It serves as a key to prevent the connector from being plugged in backwards. Could this cable be attached backwards, by accident? No, unless you bent a pin or two.
14. All EIDE devices use configuration jumpers. The three configuration options for a DVD-ROM drive are cable-select (CS), master (MA), and slave (SL). Which configuration option is the DVD-ROM drive set for now? Most likely, it is set for master (MA), but it could be set for slave (SL).
15. Set the DVD-ROM drive safely aside for a moment. Then follow the loose end of the EIDE ribbon cable back to the motherboard. Again, note whether the stripe on the cable is oriented up, down, left, or right. Which way is the stripe located? Down
16. Look carefully at the motherboard and the connector where the cable is attached. How many EIDE connectors are located on this motherboard? One
17. Is the EIDE connector identified by any markings on the motherboard? Yes Look carefully at the bottom of the connector, and compare what you see with Figure 6.
24. Locate the hard drive within the chassis. When you compare the hard drive cables to the DVD-ROM cables, what differences do you see? They look entirely different and are much smaller.
25. Does the cable have a stripe or marking of some type? No
27. Grasp the serial-ATA data cable as shown in Figure 7 and pull it straight out of the drive. If your connector has a metal latch on the top, you will need to press down on it while you pull the cable free. How would you compare the removal of this data cable with the removal of the DVD-ROM data cable? The drive cable is much easier to pull out than the DVD-ROM cable.

28. Grasp the drive's power cable and remove it. How does this compare with the DVD-ROM power cable? The connectors are entirely different, and the serial-ATA power cable has one more wire.
30. Can either of the serial-ATA cables be attached incorrectly to the hard drive? No, both are keyed to prevent that.
31. Follow the data cable back to the motherboard. How many serial-ATA connectors are on this motherboard? Four

How are the connectors identified? SATA0, SATA1, SATA2, and SATA3.

Lab 9-1

Hard Drive Maintenance

4. As you learned in an earlier lab, the top part of the defragmenter window shows all of the hard disk drives in the system. Depending upon your system, you should see one, two, or three drives listed. Notice that the defragmenter window provides several facts about each drive, including the file system, the capacity, and the amount of free space. How much free space is left on hard disk drive C? Approximately 16 GB (Unless the drive was configured differently.)
6. View the report. Are any fragmented files remaining? No Close the report. Note that if there any fragmented files listed, they are probably system files that are currently active and cannot be moved without causing problems.
29. Click on the *OK* button to close the *Start Counter* advanced settings window. This will uncover the *Scheduled Tasks* window. You should see your new scheduled task. Double-click on the task name. What happened? The Start Counter advanced settings properties window reappeared.
30. Log off, then log back on as the user *Tiger*. Did the calculator program run and display on the desktop? Yes
31. Log off, then log back on as the user *Buzz*. Did the calculator program run and display on the desktop? No

32. Open the *Windows Explorer*. In the left pane, expand the *Windows* folder. In the *Windows* folder subdirectory click on the folder called *Tasks*. Do you see the scheduled task *Start Counter*? No
34. Once again, open the *Windows Explorer*. In the left pane, expand the *Windows* folder. In the *Windows* folder subdirectory click on the folder called *Tasks*. Do you see the scheduled task *Start Counter*? Yes What is its *Status*? The scheduled task is running.

Lab 9-2

Display Color Levels and Resolution

5. You should now see a rectangle and a circle that contains a rainbow of several thousand different colors. Is the transition between the colors smooth, or can you plainly see where the colors change? Some of the color changes are barely visible, but most of the colors appear to blend together.
7. After changing the number of colors that can be displayed, what happened to the image in the display? There do not appear to be as many colors in the color spectrum, compared to the previous color level display. Some of the colors are covered with dots where the video circuit attempted to dither colors to create colors that no longer exist. The missing colors are very evident in the desktop taskbar.
11. Open the *View* pull-down menu and select *Ruler*, if it is not already checked. How wide is the page (use the ruler as a reference)? Approximately 6.5 inches.
12. Type the numbers 1 through 0 down the left side of the “page” until you have a number on each visible line. Figure 4 shows a *WordPad* window similar to what you should see. How many lines are on the visible page in your display? Approximately 18.
15. Maximize the *WordPad* window. Now how wide is the page (again use the ruler as your reference)? Approximately 8 inches. (Make a guess at that unmeasured section on the right.)
16. Notice that you have room for a few more numbers down the left side of the page. Fill in the remaining free space until you have a number on each visible line. Figure 5 shows a *WordPad* window similar to what you should see. How many lines are on the visible page with this display setting? Approximately 25.

18. How wide is the page (again use the ruler as your reference)? Approximately 10.5 inches. (Make a guess at that unmeasured section on the right.)
19. Notice that you have room for yet a few more numbers down the left side of the page. Fill in the remaining free space until you have a number on each visible line. Figure 6 shows a *WordPad* window similar to what you should see. How many lines are on the visible page with this display setting? Approximately 36.
22. Watch the *Display Properties* title bar as you click *Apply*. What happens? The title got much bigger.
24. Watch the *Display Properties* title bar as you click *Apply*. What happened this time? The title got smaller, but is still larger than before. Close the *Display Properties* window.
25. Maximize the *WordPad* window one last time. Do you see any changes? Yes You might notice that the *WordPad* application area, the area where you would create a document, has not changed much at all. The only difference is that the title is a little larger, and the last number you typed may now be below the bottom of the display. Otherwise, the *Appearance* setting did not change the application.

Lab 9-3

Adding a Second Video Display Adapter

11. In the right window pane, click on the “+” next to Display Adapters. What display adapter(s) are listed? NVIDIA GeForce 7300 SE/7200 GS
14. Open the *Display Properties* window and select the *Settings* tab. What Screen Resolutions are available? 800 x 600, 960 x 600, 1024 x 768, 1088 x 612, 1152 x 864, 1280 x 720, 1280 x 768, 1280 x 800, 1280 x 960, 1280 x 1024 pixels. What Color Qualities are available? Medium (16-bit) and Highest (32-bit).
16. Figure 1 shows a window similar to the one you might see. Do you notice anything unusual? Yes If so, what? There are two monitors shown in the window. Note that the monitor and video adapter names in your Properties window may not match those shown in Figure 1. In addition, you may only see a single monitor icon rather than two.

22. Disconnect the monitor cable from the new video adapter. Then connect it to the motherboard's video connector. Did you notice anything odd? Yes If so, what? The new adapter has no taskbar or icons, while the old adapter did.
23. We will assume you are now looking at two monitor icons in your Display Properties window. Open the *Display* drop-down list box. The two monitor images in the Display Properties window represent the two video systems listed in the drop-down box. What are the two video systems listed?
 1. Plug and Play Monitor on Intel G33/G31 Express Chipset Family.
 2. Plug and Play Monitor on NVIDIA GeForce 7300 SE/ 7200 GS.
25. Position the second video monitor to the right of the first monitor. Then connect the second monitor's cable to the new video adapter and turn the monitor on. After an image appears on the second monitor, observe the two monitors. Explain the difference between the images. The left monitor has normal Taskbar and Recycle Bin icon; the right monitor has only the background.
26. Move the mouse pointer off the right side of the first monitor. What happened? The pointer moved to the second monitor.
27. Move the mouse pointer back to the left and click and hold it on the Recycle Bin. Then drag the Recycle Bin off the right side of the screen and drop it. What happened? The Recycle Bin moved to the second monitor display.

Lab 10-1

The Peer-to-Peer Network

9. Look down the list and find *Network adapters*. Click on the + sign just to the left of the *Network adapters* icon. This will show you all the network adapters that are installed. How many adapters show up under *Network adapters*? One
11. At the *General* tab, record the *Device Type*, *Manufacturer*, and *Location* of the network adapter below. You should know that the adapter listed in Figure 2 is not located at PCI slot 3—it is part of the chip-set that controls the operation of the computer. However, the adapter does occupy space on the PCI bus, and it is assigned the same bus access rights as those assigned to PCI slot 3.

Device Type: Network Adapters or Realtek Semiconductor Corp.

Manufacturer: Intel

Location: PCI bus 5, device 8, function 0 or PCI bus 3, device 0, function 0 or some variation as determined by the motherboard and its BIOS

15. Click on the *Resources* tab. This page lists the computer resources used by the network adapter. The key idea here is that the network adapter must not use the same resources as any other device in the computer. If it does attempt to use the same resource as another device, a device conflict occurs and, most probably, neither device will work properly. Any conflict should be detected by Windows and listed at the bottom of the window. What message is in your *Conflicting device list*? No Conflicts
19. Have the other team members look at the Full computer name on the other computers in the workgroup. Does each computer have a unique name? Depending upon when the operating system was last restored on these computers, you could see most any name on each. Most likely they all say LABCOMPUTER.
28. Examine the connector on the end of the cable. This is called an RJ45 connector. Its clear plastic cover allows you to see the wires and contacts inside. How many contacts are there? Eight
29. As the name implies, the wires inside the cable are arranged as twisted pairs. How many pairs are inside the cable? Four
30. Each pair consists of a colored wire and a white wire with a matching color stripe. What are the four colors used by the wires in your cable? Green, Blue, Brown, and Orange.
39. Find the box entitled *This connection uses the following items:*. These network components are already installed by Windows as part of the installation process to support the on-board network adapter. Note that components are installed or uninstalled by using the appropriate button below the list. To see the type of components that can be installed, click on the *Install* button. What three types of network components can be installed? Client, Service, and Protocol. At least one of each of these types of components must be installed to complete the network connection.

Lab 10-2

Sharing Resources

15. Look at the *Guest1* folder icon in *My Documents*. Has the icon changed? Yes If so, describe how it has changed. The folder icon now has a hand holding it up. This indicates that sharing has been turned on for this folder.
28. On the *Green* computer, double-click on the *Red* icon. After a short delay, the screen should resemble that shown in Figure 8. Notice that there aren't as many shared folders. Why is that? We did not create any additional folders on the Red computer like we did on the Green computer.
29. Use the *Red* computer to list the shared folders on the *Blue* computer. How do the shared contents of the *Red* and *Blue* compare? They have the same shared components. (Note that there may be exceptions to the rule if one computer has shared something the other did not.
30. From the computer labeled *Blue*, double-click the *Guest1* folder. Now look at the *Address* line. What address is shown? \\Green\Guest1
31. Double-click on the *Fox1* file inside the *Guest1* folder. Were you able to successfully open it? Yes If so, what application opened it for you? Notepad Why did that application open the text file, *Fox1*? The original file was saved as a TXT file. By default, Notepad opens TXT files. (Had the file been saved as an RTF file, Wordpad would have been the default application to open the file. Also by default, Wordpad saves its files as RTF files.)
35. Double-click on the *Guest1* folder. Could you successfully open it? Yes
36. Attempt to open the *Fox1* file by double-clicking on it. Did you successfully open it? Yes Does the change that the *Blue* computer made appear in the message? Yes
38. Drag and drop the *Fox1* file into the Recycle Bin. Could you successfully delete the *Fox1* file? Yes Open the Recycle Bin by double-clicking on it. Is the *Fox1* file inside? No What happened to the *Fox1* file on the other two computers? It is no longer in the Guest1 folder and it is not in the Recycle Bin.
39. From the computer labeled *Red*, double-click on the *Guest2* folder. The *Guest2* folder should open, revealing the *Fox2* file. Double-click on the *Fox2* file. Were you able to open it? Yes

41. Attempt to save the file. What happened? An error message appeared that stated the path and file name were not correct. Why? The Guest2 folder has restricted permissions of read only. I cannot save a modified copy of the file in that folder.
42. Click on the OK button to close the message box. What happened? A Save As dialog box opened which give me the opportunity to save the file with a different file name or in a different folder. Click on the Cancel button to close the dialog box.
43. Exit Notepad. When asked if you want to save your changes click Yes. What happened? The same thing happened as when I tried to save the changes I made to the file.

Lab 10-3

Introduction to TCP/IP

3. Right-click on *My Network Places* and select *Properties*. Then, right-click on *Local Area Connection 2* and select *Properties*. The *Local Area Connection 2 Properties* dialog box will open as shown in Figure 2. Notice that the *Internet Protocol (TCP/IP)* is installed. Select *Internet Protocol (TCP/IP)* and read the *Description* at the bottom of the dialog box. What do the initials TCP/IP stand for? Transmission Control Protocol/Internet Protocol.
8. At the prompt, type *ipconfig* and press *Enter*. Your display should now resemble that shown in Figure 5, although some of the numbers will be different. Look at the line entitled *Autoconfiguration IP Address* and complete the following:

169.254. 93.83

9. Use the information gathered from each computer to complete the following table:

<i>Computer Name</i>	<i>Autoconfiguration IP Address</i>
Green	169.254. <u> * . ** </u>
Red	169.254. <u> * . ** </u>
Blue	169.254. <u> * . ** </u>

*NOTE: This IP address octet will vary from one network to another, but all three octets in must be the same.

**NOTE: This IP address octet will vary from one network to another, and each computer in the same network is different from the other.

10. Also, look at the subnet mask setting. Is it the same for all computers? Yes What is the subnet mask? 255.255.0.0
15. Enter the subnet mask in the box provided. What happened when you placed the cursor in the subnet mask box? The subset mask 255.255.255.000 appears.
24. One part of the response is quite useful, the Physical Address. This physical address is actually the MAC address, the number burned into the NIC by the manufacturer. Record the MAC address for each computer in the space below:

The Physical Address (MAC address) assigned to each computer will take the form:

__**_**_**_**

using a unique combination of hexadecimal numbers.

Appendix D

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Appendix E

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Appendix F

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Appendix G

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