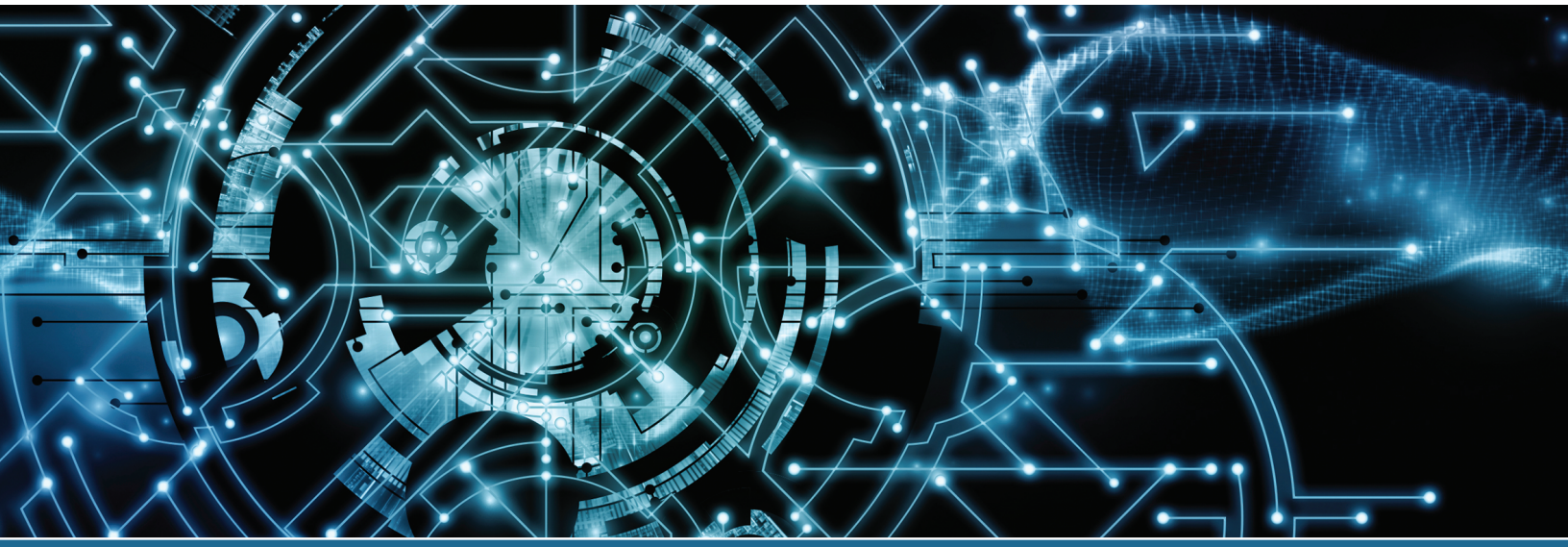
1 Intro to the World of IT



In this chapter you will learn:

- Qualities a technician should have
- Basic skills needed to function in the Windows environment and in the technical world
- Important computer parts
- Basic computer terms

CompTIA Exam Objectives:

What CompTIA A+ exam objectives are covered in this chapter?

- ✓ 901-1.12 Install and configure common peripheral devices.
- ✓ 902-5.1 Given a scenario, use appropriate safety procedures
- ✓ 902-5.4 Demonstrate proper communication techniques and professionalism.

Who Needs This Book?

More types of people than you would first think need this book. People who obviously need this information are those who will fix computers or work on a help desk or support desk. However, there are other types of users who might not be so obvious. Many folks who break into the information technology (IT) world do so through jobs that require the A+ certification. Consider medical electronics technicians who repair common equipment used in hospitals. These technicians need this course because so many of their devices connect to a PC or have the PC-based software that controls the medical device. Further, the medical devices commonly attach to the wired and wireless network.

Another related field that must get A+ certified includes programmers. Programmers are expected to be able to install and remove software and hardware as part of their job. Similarly, database administrators might need to upgrade a server. Web developers might want to build their own machines. Look at Figure 1.1 to see the types of jobs of people who need the information in this book. It might also give you ideas about something you might like to do for a career.

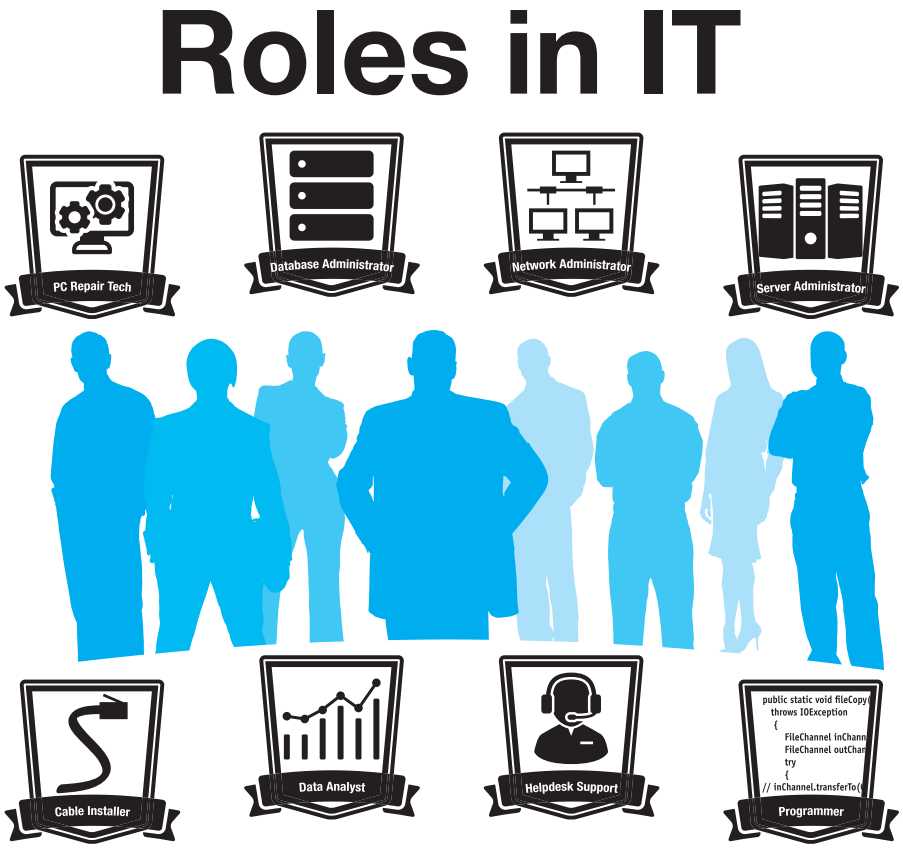


FIGURE 1.1 IT roles

Technician Qualities

Each chapter includes a small bit of space on qualities a technician should possess or strive toward. Spending a little brain power on improving what many call your "soft skills" will pay off in promotions and divergence into other IT-related fields. Three of the most important qualities that a technician can have are active listening skills, a good attitude, and logic. Active listening means that you truly listen to what a person (especially one who is having a problem) is saying. Active

listening skills involve good eye contact, nodding your head every now and then to show that you are following the conversation, taking notes on important details, and avoiding distractions such as incoming cell phone calls or text messages. Clarify customer statements by asking pertinent questions and avoid interrupting. Allow customers to complete their sentences. Many technicians jump into a problem the moment they hear the first symptom described by the user. Listen to the entire problem. Do not act superior because you know terms and things that they do not. Ask open-ended questions—questions that allow the user to expand on the answer rather than answer with a single word, such as *yes* or *no*. Figure 1.2 illustrates this point.

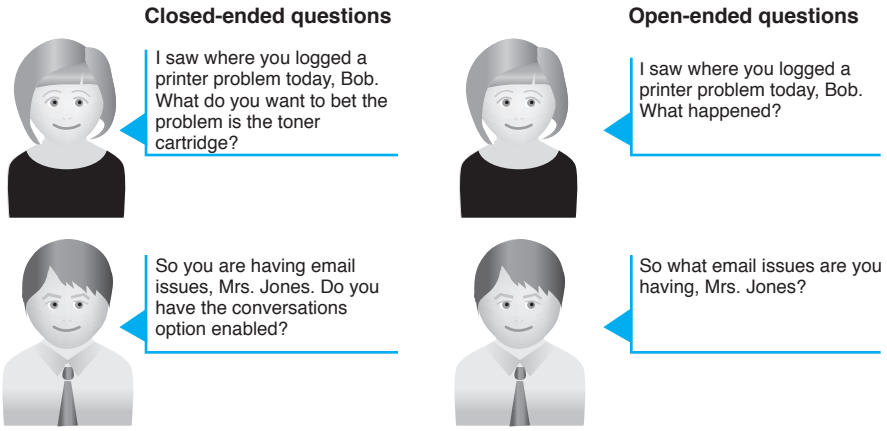


FIGURE 1.2 Asking technical questions

A positive attitude is probably the best quality a technician can possess. Many technicians treat customers abruptly, not taking the time to listen to their problems or to find the best solutions. A good attitude is helpful when a user is upset because a computer or an attached device is not working properly. A technician with a positive attitude does not diminish the customer's problem; every problem is equally important to the computer user. A positive attitude is critical for being successful in the computer service industry. Figure 1.3 shows how negative attitudes affect your success.

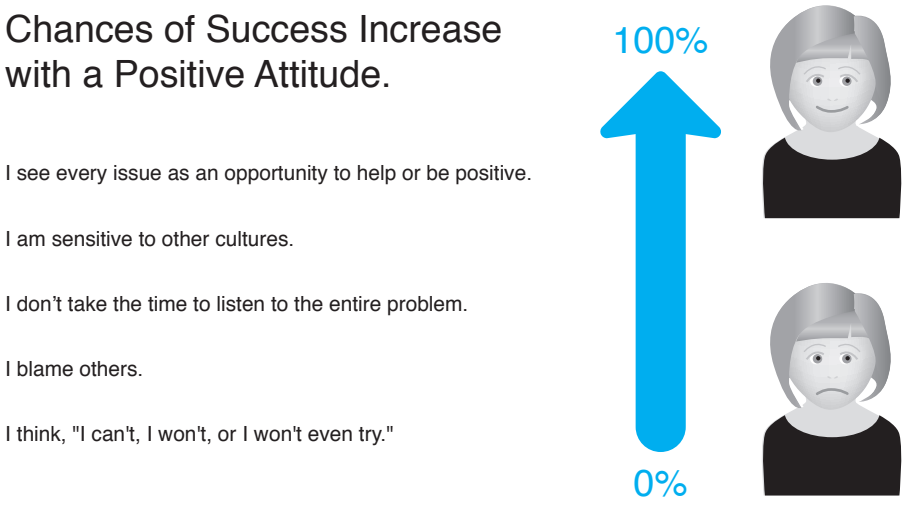


FIGURE 1.3 Have a positive attitude

A technician must be familiar with and thoroughly understand computer terminology to (1) use logic to solve problems; (2) speak intelligently to other technical support staff in clear, concise, and direct statements; (3) explain the problem to the user; and (4) be proficient in the field. Changes occur so frequently that technicians must constantly update their skills. Develop a passion for learning the latest information and searching for information that helps you solve problems. Do not develop tunnel vision in that you think the answer can be only one thing. Step back and look at the problem so that all possible issues can be evaluated. Be logical in your assessment and methods used to troubleshoot and repair. This book will help you with all of this by explaining computer terminology in easy-to-understand terms and providing analogies that can be used when dealing with customers.

Before delving into computer topics, you should remember that a class can't fully prepare you for every aspect of a job. You must learn things on your own and constantly strive to update your skills so you do not become obsolete. The IT field changes rapidly. Figure 1.4 illustrates this concept.

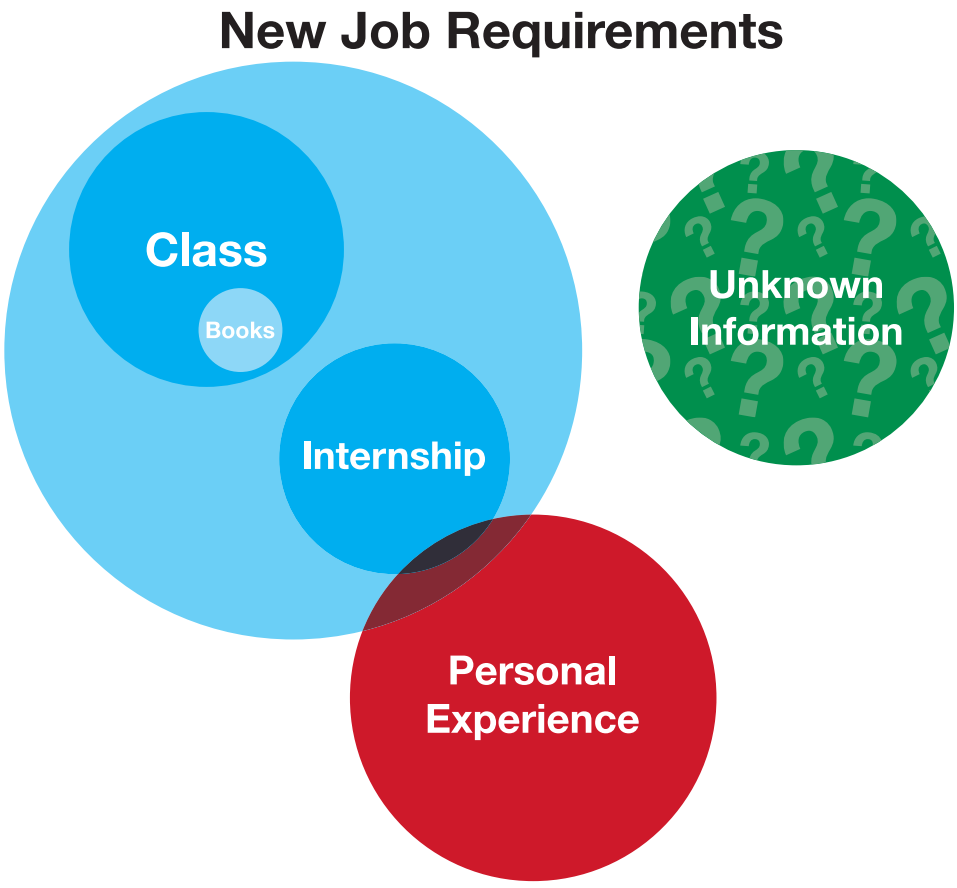


FIGURE 1.4 Preparing for IT job requirements

Finally, if you do break into the IT profession as a computer technician or as a helpdesk support person, you will find that you must be a jack-of-all-trades, as shown in Figure 1.5.

FIGURE 1.5 Computer technician skills

Breaking into IT with the CompTIA A+ Certification

Many information technology (IT) jobs require the A+ certification. Even if not required, the certification shows that you have a good understanding of how computers work. This certification does not guarantee you a job, but it does open doors in that a company may interview you in the absence of IT experience.

A+ certification requires that you take two exams (220-901 and 220-902). You do not have to take both of the exams on the same day. You do not have to take the 220-901 exam before you take the 220-902 exam. Each exam covers specific material. Table 1.1 shows the major categories for the 220-901 exam and how they map to information in this book. Table 1.2 is for the 220-902 exam.

TABLE 1.1 CompTIA 220-901 A+ Certification Topics

Domain	Percentage of Examination	Chapter(s)
1.0 Hardware	34%	1–10, 12
2.0 Networking	21%	13–14
3.0 Mobile devices	17%	11
4.0 Hardware and network troubleshooting	28%	1–14

TABLE 1.2 CompTIA 220-902 A+ Certification Topics

Domain	Percentage of Examination	Chapter(s)
1.0 Windows operating systems	29%	15–16
2.0 Other operating systems & technologies	12%	17
3.0 Security	22%	18
4.0 Software troubleshooting	24%	15–18
5.0 Operational procedures	13%	19

"What are the exams like?" you might ask. The exams have multiple choice and performance-based questions. Performance-based questions might be a drag-and-drop scenario or ask you to do something specific on a particular device or within a particular operating system environment. Each exam is 90 minutes long and contains a maximum of 90 questions. The testing system allows you to bookmark questions that you might want to return to at the end if you have time. Successful candidates will have the knowledge required to do the following:

- Assemble components based on customer requirements.
- Install, configure, and maintain devices, PCs, and software for end users.
- Understand the basics of networking and security/forensics.
- Properly and safely diagnose, resolve, and document common hardware and software issues.
- Apply troubleshooting skills.
- Provide appropriate customer support.
- Understand the basics of virtualization, desktop imaging, and deployment.

More information can be found on the CompTIA website (www.comptia.org).

At the beginning of each chapter, you will see a listing of which of the CompTIA A+ exam objectives are covered in that chapter. At the end of each chapter, I've provided some A+ Certification Exam Tips—tips to definitely pay attention to if you plan on taking the A+ exam. By the end of this course, you will have learned all the topics covered on the certification exam; however, before you actually take the exam, I recommend that you dedicate some time to review the chapters in this book thoroughly, study the objectives, and take some practice exams. Pearson IT Certification, the publisher of this book, develops many different certification exam prep resources that will suit your study style. See the back of this book for more information or go to http://pearsonitcertification.com/aplus to browse the options.

Basic Skills for This Course

In order to repair a computer, you need a few basic skills that include being familiar with the keyboard and inputting information, searching for information on the Internet, and capturing information. Just because you may not be a good typist does not mean that you will not be good in an IT-related field.

Searching for Information on the Internet

IT people need to use all available resources including online resources. As noted, you need to be capable of searching for information online. Figure 1.6 illustrates various online resources that IT people search all the time.

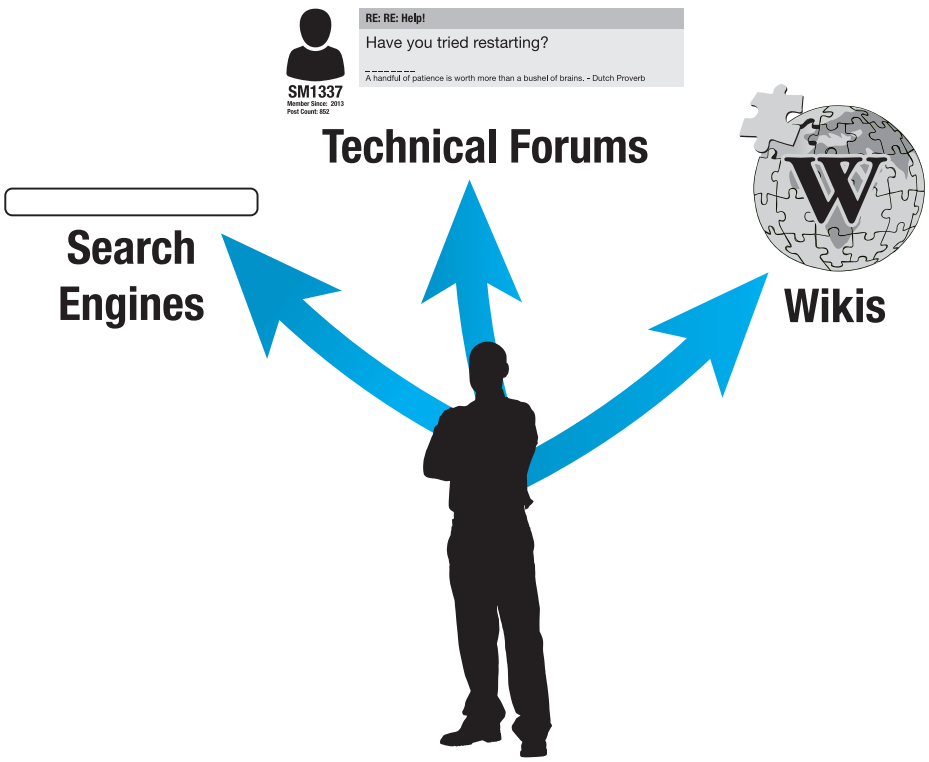


FIGURE 1.6 Search skills

Each chapter in the book has an activity at the end of it that enables you to practice searching the Internet for information relevant to the chapter. Tips for searching include the following:

- Search engines use different algorithms, so if one does not work, try another one. Examples of search engines are Google, Bing, Yahoo, AOL, Ask, and Lycos. To access a search engine, open a web browser and type one of the search engine names followed by "`.com`." Figure 1.7 shows `www.Lycos.com` entered in the address bar.
- Use descriptive key words.
- Do not include common words like *the*, *in*, *at*, or *for* because search engines tend to skip these words anyway. If you do want to use them, put a plus sign (+) in front of the word.
- Avoid using the plural or past tense of a word to avoid elimination of pages that are relevant. For example, to search for how to install a Bluetooth headset, avoid using the word *installation*, *installed*, or *installing* in the search window. Simply include the word "*install*."

- If there are several words used together (an exact phrase) such as Windows 10, put quotations around the phrase—"Windows 10".
- Use as many distinguishing words as possible.
- If two words mean the same and are commonly used, use the word "or" in the search. For example, if you were searching for generic information on a dot matrix printer, which is sometimes called an impact printer, the search would be as follows: `"dot matrix" or impact printer`. Note that the vertical bar (|), which is the key above the ↵Enter key, can be used instead of the word "or."
- If a particular term can have two meanings such as the word *memory* relating to something inside a computer or else relating to a brain function, then you can use the minus sign in order to keep that information from being displayed. Memory –brain is an example of such a search.
- If a particular term such as memory is generic, you can add a word and use the word *AND* in order to clarify the search, such as computer AND memory.
- When searching for technical information, include the hardware or software manufacturer. A search for `Microsoft Windows 10` provides different results than simply a search for `Windows 10`.
- If nothing relevant is on the first page of links, change the key words used in your search.

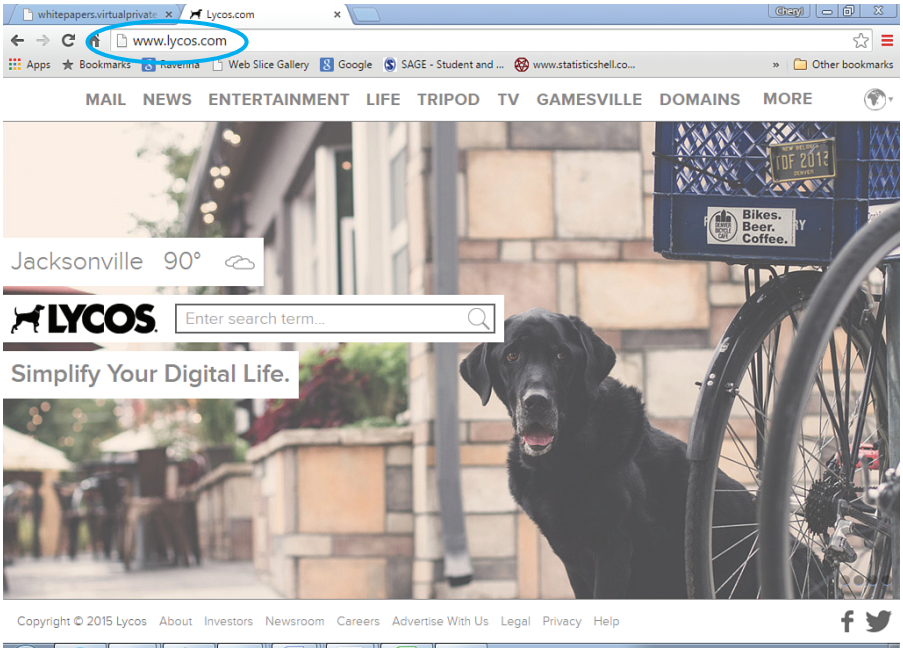


FIGURE 1.7 Lycos search engine

Take the situation of a keyboard that intermittently works on a Microsoft Surface computer. The keyboard does not come standard as part of a Surface purchase. You do not own a Surface yourself and are unfamiliar with the tablet, but must support it. An example of what might be typed into a search engine is `Microsoft Surface intermittent keyboard`. A lab at the end of the chapter demonstrates search techniques.

Capturing Files

Sometimes, part of technical documentation is being able to capture what is on the screen. Windows Vista (any version but Home Basic) and higher comes with a great tool for doing just

that. The Snipping Tool makes documenting problems easy. It is also easy to copy what you capture into other applications. No matter what IT job you may have when you enter the workforce, documentation is a part of all IT jobs. A lab at the end of the chapter shows how you might use this tool.

Creating a Text File

Another part of documentation might involve creating or using a text file known as a .txt file. You might need to send it as an attachment or you might need to create a text file as part of the documentation process or as part of the job. Sometimes a text file is the easiest way to create a file, especially on a mobile device. Text files can be created using a word processor and the *Save As* process, or can be created using specific text software or an app. Text files are popular because they can be opened by so many applications or other mobile apps. Text files commonly include only text, but not multiple fonts or graphics. Windows ships with a basic application called Notepad that can be used to create or open text files. A lab at the end of the chapter helps with this skill.

Types of Computers

The simplest place to start to learn about computer technical support is with the devices themselves. Computer devices come in many shapes and sizes. The **PC**, or personal computer, comes in desktop, tower, and all-in-one models, as well as mobile models such as a laptops, tablets, and ultrabooks. Figure 1.8 shows some of the computing devices technical staff are expected to support.

FIGURE 1.8 Types of computers

Basic Computer Parts

Computer systems include hardware, software, and firmware. **Hardware** is something you can touch and feel—the physical computer and the parts inside the computer are examples of hardware. The monitor, keyboard, and mouse are hardware components. **Software** interacts with the hardware. Windows, Linux, OS X, Microsoft Office, Solitaire, Google Chrome, Adobe Acrobat Reader, and WordPerfect are examples of software.

Without software that directs the hardware to accomplish something, a computer is no more than a doorstop. Every computer needs an important piece of software called an **operating system**, which coordinates the interaction between hardware and software applications. The operating system also handles the interaction between a user and the computer. Examples of operating systems include Windows 7, 8, 8.1, and 10, OS X, and various Linux systems, such as Red Hat and Ubuntu.

A **device driver** is a special piece of software designed to enable a hardware component. The device driver enables the operating system to recognize, control, and use the hardware component. Device drivers are hardware and operating system specific. For example, a printer requires a specific device driver when connected to a computer loaded with Windows 7. The same printer will most likely require a different device driver when using Windows 8 or 10. Each piece of installed hardware requires a device driver for the operating system being used. Figure 1.9 shows how hardware and software must work together.

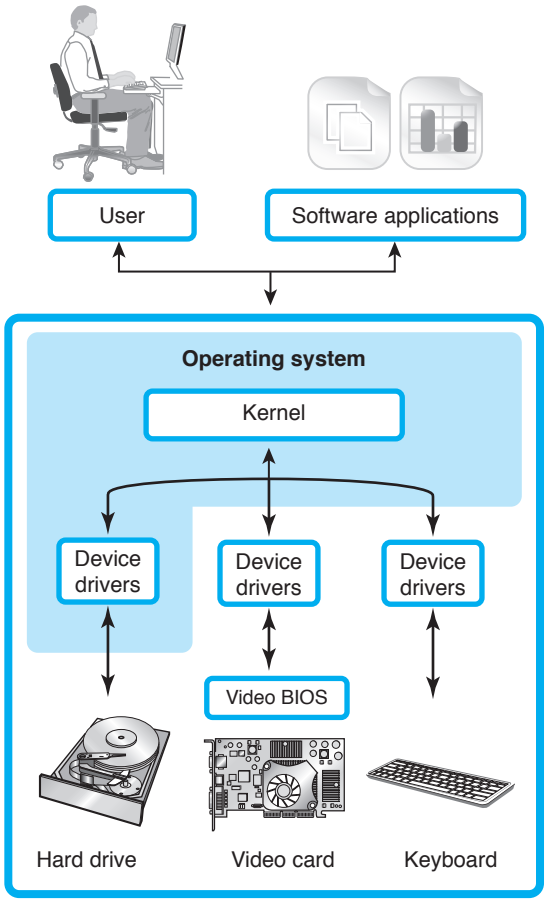


FIGURE 1.9 Hardware and software

Notice in Figure 1.9 the operating system kernel. The kernel is the central part of an operating system. The kernel is the connection between hardware and the applications being used.

Software applications are normally loaded onto the hard drive. When a user selects an application, the operating system controls the loading of the application. The operating system also controls any hardware devices (such as the mouse, keyboard, monitor through the video adapter, and printer) used with the application.

Firmware is a combination of hardware and software such as when electronic chips contain software inside them. The chip is physical, which is hardware, and it has software built into the chip. An example of firmware is the basic input/output system (**BIOS**) chip. The BIOS always has startup software inside it that must be present for a computer to operate. This startup software locates and loads the operating system. The BIOS also contains software instructions for communication with input/output devices, as well as important hardware parameters that determine to some extent what hardware can be installed. For example, the system BIOS has the ability to allow other BIOS chips that are located on adapters (such as the video card) to load software that is loaded in the card's BIOS.

A PC typically consists of a case (chassis), a keyboard that allows users to provide input into the computer, a monitor that outputs or displays information, and a mouse that allows data input or is used to select menus and options. An input device is used to put data into the computer. A microphone, keyboard, mouse, and your finger (when used with a touchscreen or touch-enabled device) are great examples. Also, biometric devices can be input devices. Common biometric devices are a finger swipe reader and an integrated camera that can be used for facial recognition to gain access to a device.

An **output device** such as a display accepts data from the computer. A **display** is the monitor screen. Figure 1.10 shows a computer display that could be called a flat panel, monitor, display, or screen.

FIGURE 1.10 Computer display

Some devices can be both input and output devices, such as a smart TV, set-top box (the box used to connect a TV to a cable or satellite system), musical instrument digital interface- (MIDI) enabled devices (which are electronic musical devices), touch screen, or printer. In the case of a printer, data is sent from your computer to the printer, and the printer can send data (information), such as an out-of-ink message, back to the computer. Figure 1.11 contains common input and output devices.

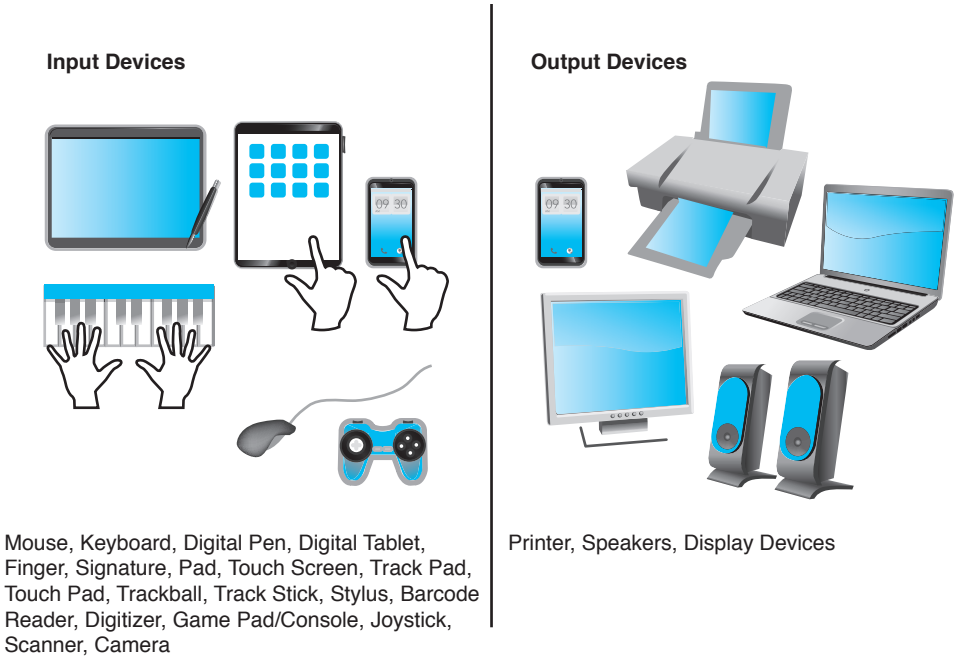


FIGURE 1.11 Input and output devices

A device that can be both an input device and an output device is a **KVM switch**. KVM stands for keyboard, video, mouse. A KVM switch allows connectivity of multiple devices so they can be shared between computers. For example, one keyboard, one mouse, and one display could connect to a KVM switch. A KVM switch has cables that allow it to connect or output to two or more computers. Figure 1.12 shows the back side of a KVM switch.

FIGURE 1.12 KVM switch

Once the computer cover or side is opened or removed, the parts inside can be identified. The easiest part to identify is the **power supply**, which is the metal box normally located in a back corner of the case. A power cord connects the power supply to a wall outlet or surge strip. One purpose of the power supply is to convert the outlet AC voltage to DC voltage used in the PC. The power supply distributes this DC voltage using power cables that connect to the various internal computer parts. A fan located inside the power supply keeps the computer cool, which avoids damage to the components.

A personal computer usually has a device to store software applications and files. Two examples of storage devices are the hard drive and optical drive. The **hard drive**, sometimes called hard disk, is a rectangular box normally inside the computer's case that is sealed to keep out dust and dirt. An **optical drive** holds discs (compact discs, or CDs), digital versatile discs (DVDs), or Blu-ray discs (BDs) that have data, music, video, or software applications on them. Figure 1.13 shows the major components of a tower computer. Figure 1.14 shows a hard drive as it would look before you install it. Figure 1.15 shows an optical drive. Figure 1.16 shows a power supply. Figure 1.17 shows a tower computer case.

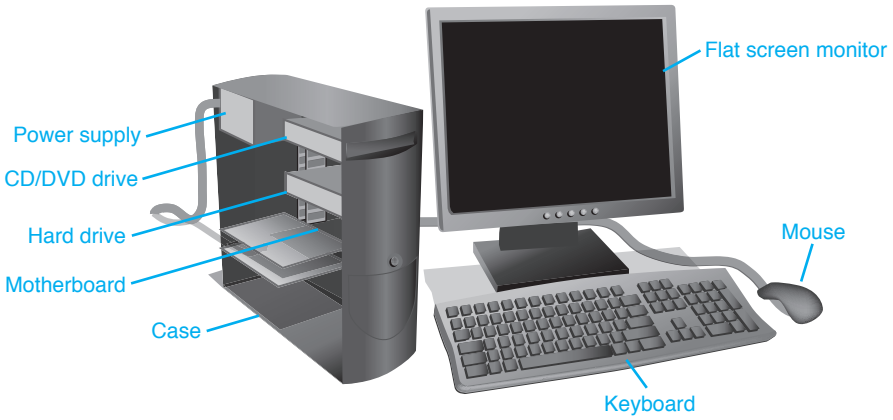


FIGURE 1.13 Tower computer

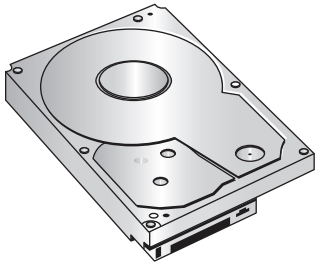


FIGURE 1.14 Hard drive

FIGURE 1.15 Optical drive

FIGURE 1.16 Power supply

FIGURE 1.17 Tower case

The **motherboard** is the main circuit board located inside a PC and contains the most electronics. It is normally located on the bottom of a desktop or laptop computer and mounted on the side of a tower computer. Other names for the motherboard include mainboard, planar, or system board. The motherboard is the largest electronic circuit board in the computer. The keyboard and mouse frequently connect directly to the back of the motherboard. Figure 1.18 shows a motherboard when it is not installed inside a computer.

The motherboard holds memory modules. **Memory** is an important part of any computing device. Memory modules hold applications, part of the operating system, and user documents. Random access memory (**RAM**) is the most common type of memory and is volatile—that is, the data inside the module is lost when power is removed. When a user types a document in a word processing program, both the word processing application and the document are in RAM. If the user turns the computer off without saving the document to removable media or the hard drive, the document is lost because the information does not stay in RAM. (Note that some applications have the ability to periodically save a document, but this is not a guarantee that it has the latest information.) Figure 1.19 shows some memory modules when they are not installed into the motherboard memory slots. Look back to Figure 1.18 to see the memory modules installed in the motherboard. Memory is covered in great detail in Chapter 7.

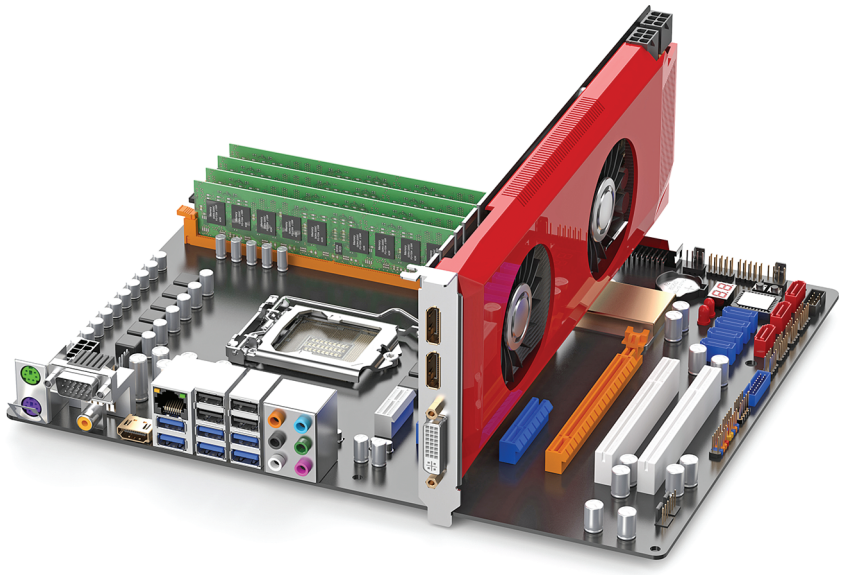


FIGURE 1.18 Computer motherboard

FIGURE 1.19 Memory modules

A device may have a cable that connects the device to the motherboard. Other devices require an adapter. **Adapters** are electronic circuit cards that normally plug into an **expansion slot** on the motherboard. Other names for an adapter are controller, card, controller card, circuit card, circuit board, and adapter board. Adapters allow someone to add a functionality that is not provided through the ports on the motherboard. An example is someone who wants better sound or video graphics, or additional ports of some type in order to connect external devices. Figure 1.20 shows an adapter. Notice how the contacts at the bottom are a particular shape. Chapter 3 goes into more detail about the types of expansion slots and adapters. You can also look back to Figure 1.18 to see a video adapter installed into a motherboard expansion slot.

FIGURE 1.20 Adapter

TECH TIP

How to identify an adapter's function

Tracing the cable(s) attached to an adapter or looking at a device connected to an adapter can usually help with identifying an adapter's function. For example, typically a monitor has a cable going between it and a video adapter or motherboard.

The following are the generic steps for installing adapters:

Step 1. Always follow the manufacturer's installation directions. Use an antistatic wrist strap when handling adapters. Electrostatic discharge (ESD) can damage electronic parts. (See Chapter 5 for more details on ESD.)

Step 2. Be sure the computer is powered off and unplugged.

Step 3. Remove any brackets from the case or plastic covers from the rear of the computer that may prevent adapter installation. Install the adapter in a free expansion slot and reattach any securing hardware.

Step 4. Attach any internal device cables that connect to the adapter, as well as any cables that go to an external port on the adapter, if necessary.

Step 5. Attach any internal or external devices to the opposite ends of the cable, if necessary.

Step 6. Power on any external devices connected to the adapter, if applicable.

Step 7. Reattach the computer power cord and power on the computer.

Step 8. Load any application software or device drivers needed for the devices attached to the adapter.

Step 9. Test the device(s) connected to the adapter.

See Figure 1.21 for an illustration of a motherboard, expansion slots, memory, and an adapter in an expansion slot.

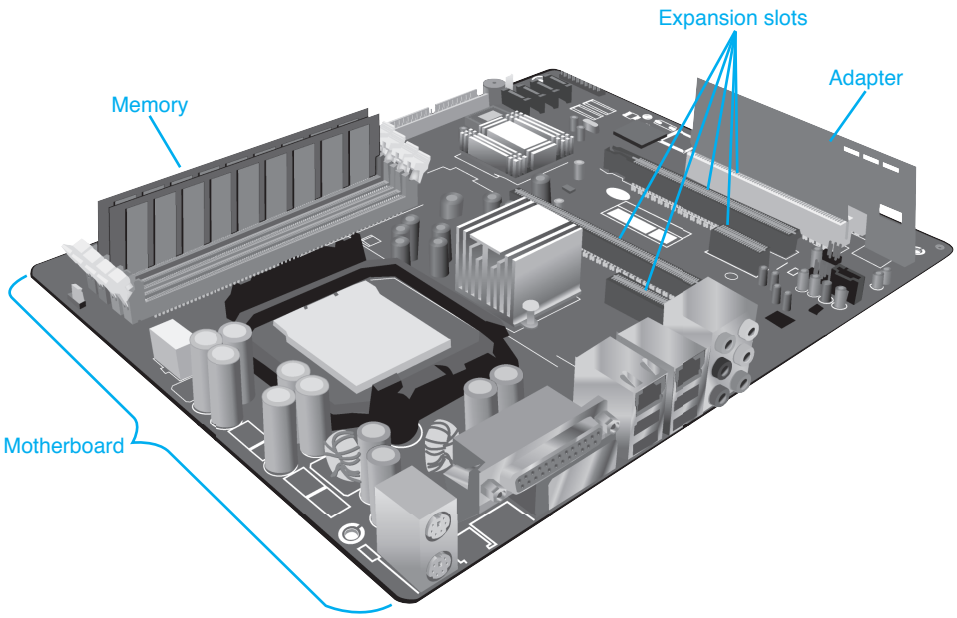


FIGURE 1.21 Motherboard with expansion slots and an adapter

Mice and Keyboards

Input devices, such as the mouse and keyboard, attach to the motherboard. The most common type of mouse is an **optical mouse**, which has optical sensors that detect the direction in which the mouse moves. It uses reflections from light-emitting diodes (LED) from almost any surface to detect the mouse location. Mice commonly can be adjusted for sensitivity—how far you have to move the mouse for how far it moves on the screen. Mice are rated in dots per inch (DPI). The higher the number, the more sensitive the mouse is. Mouse sensitivity can range from 500 to 3500 DPI. Figure 1.22 shows a photo of the bottom of an optical mouse.

FIGURE 1.22 Optical mouse

Keyboards are input devices that connect to a port on the motherboard or attach wirelessly. Features users look for in a keyboard include a separate numeric keypad for those that have to input a great deal of numbers, adjustable tilt legs, and spill-resistance. Figure 1.23 shows a keyboard and mouse that are commonly used with a tower, desktop, or all-in-one computer.

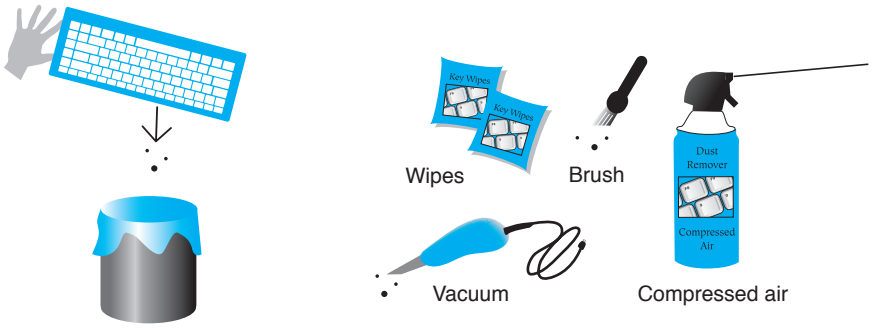
FIGURE 1.23 Keyboard and mouse

Mouse and Keyboard Preventive Maintenance

Mouse cleaning kits are available in computer stores, but normal household supplies also work. Use the following procedures to clean an optical mouse:

- Wipe the bottom with a damp, lint-free cloth.
- Use compressed air to clean the optical sensors.

Keyboards also need periodic cleaning. Figure 1.24 shows keyboard-cleaning techniques.



1. Turn keyboard upside down and gently shake out debris

2. Clean the keyboard (several options shown)

FIGURE 1.24 Keyboard cleaning techniques

Keyboard/Mouse Troubleshooting

One of the easiest ways to determine whether a keyboard is working is to press the Caps Lock or Num Lock key and watch to see if the keyboard light illuminates. Sometimes an application setting may be causing what appears to be a keyboard problem. Use another application to see if the keyboard is the problem. Keyboards can have LED lights that indicate a particular function. Table 1.3 contains the most common ones. Note that different vendors can label the lights in various ways.

TABLE 1.3 Common keyboard lights

Associated toggle key	Keyboard light	Description
Num Lock	Number lock (NUM LOCK)	Toggles the 10-key pad between digits 0 through 9 and various functions such as HOME, PG UP, PG DOWN, END, and various arrow keys.
Caps Lock	Capital letters lock (CAPS LOCK)	Toggles between all uppercase and lowercase letters.
Scroll Lock	Scroll lock	A rarely used key used to prevent scrolling and use the arrow keys to progress through information displayed.

TECH TIP

One key doesn't work

If a particular key is not working properly, remove the key cap. The chip-removal tool included with a PC tool kit is great for this. A tweaker (small, flat-tipped) screwdriver also does a good job. After removing the key cap, use compressed air around the sticky or malfunctioning key.

If coffee or another liquid spills into the keyboard, all is not lost. Many people have cleaned their PC keyboard by disconnecting it and soaking it in a bathtub or a flat pan of water. Distilled or boiled water cooled to room temperature works best. Afterward, the keyboard can be disassembled and/or scrubbed with lint-free swabs or cloths. PC keyboards and mice are normally considered throw-away technology. The customer's cost to pay a technician to keep cleaning a keyboard over and over again would pay for a new keyboard. Keep this in mind when troubleshooting such inexpensive devices.

1s and 0s

Computers are digital devices. That means they understand 1s and 0s. One 1 or one 0 is known as a **bit**. In actuality, a "1" is simply a voltage level to the computer. So, when we type characters into a word processing application, for example, those letters get translated by the keyboard into voltage levels. Figure 1.25 shows this concept. Notice that each letter is represented by a combination of eight 1s and 0s. Each 1 will be a voltage level sent to the motherboard (and components on it). Each 0 is simply the absence of a voltage level.

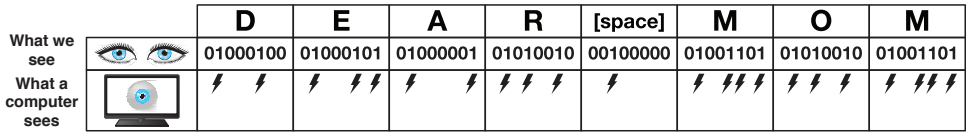


FIGURE 1.25 Binary bits

Technicians need to be able to describe capacities such as hard drive capacities or available drive space. Eight bits grouped together are a **byte**. See Figure 1.26 to see how the hot dog is divided into eight sections (eight sections make a big old "byte").

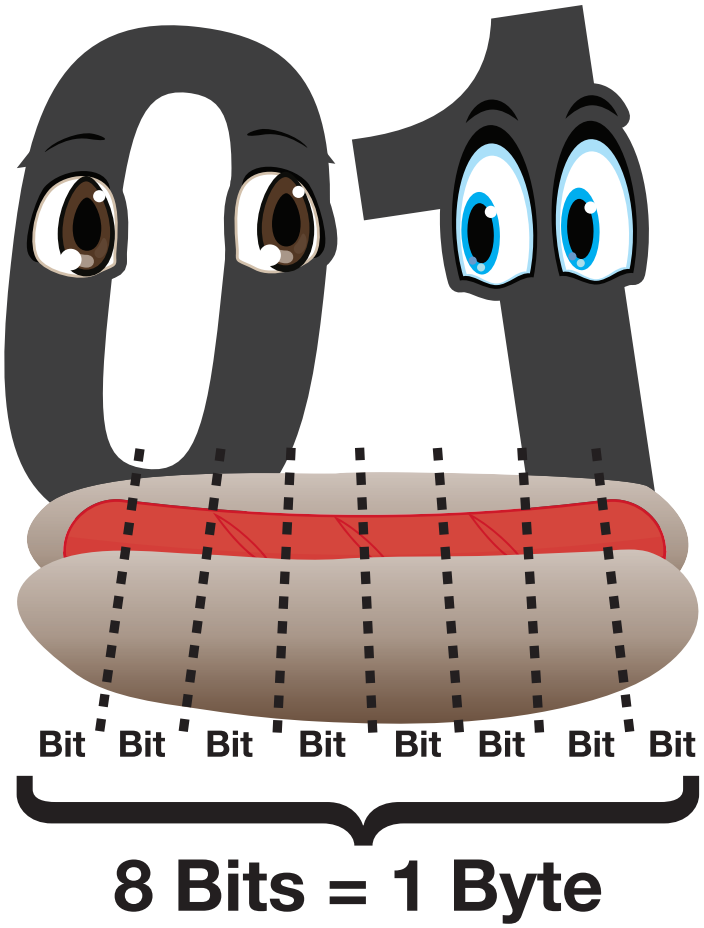


FIGURE 1.26 A byte

Approximately 1,000 bytes is a **kilobyte** (kB) as seen in Figure 1.27. 1kB is 1,024 bytes to be exact, but industry folks simply round off the number to the nearest thousand for ease of calculation.

Approximately 1 million bytes is a **megabyte** (MB), but a true megabyte is 1,048,576 bytes. 540 megabytes is shown as 540MB, or 540M. Notice in Figure 1.28 how a megabyte is a lot more storage of 1s and 0s than a kilobyte.

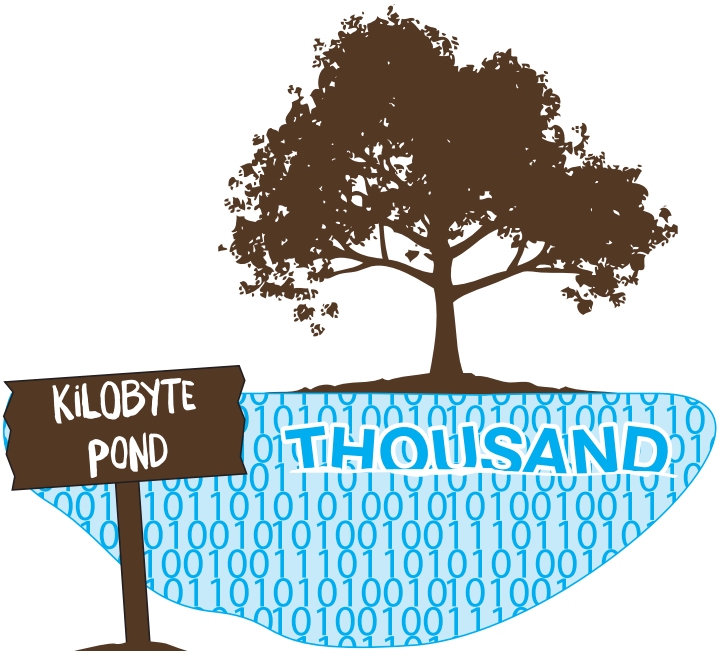


FIGURE 1.27 A kilobyte

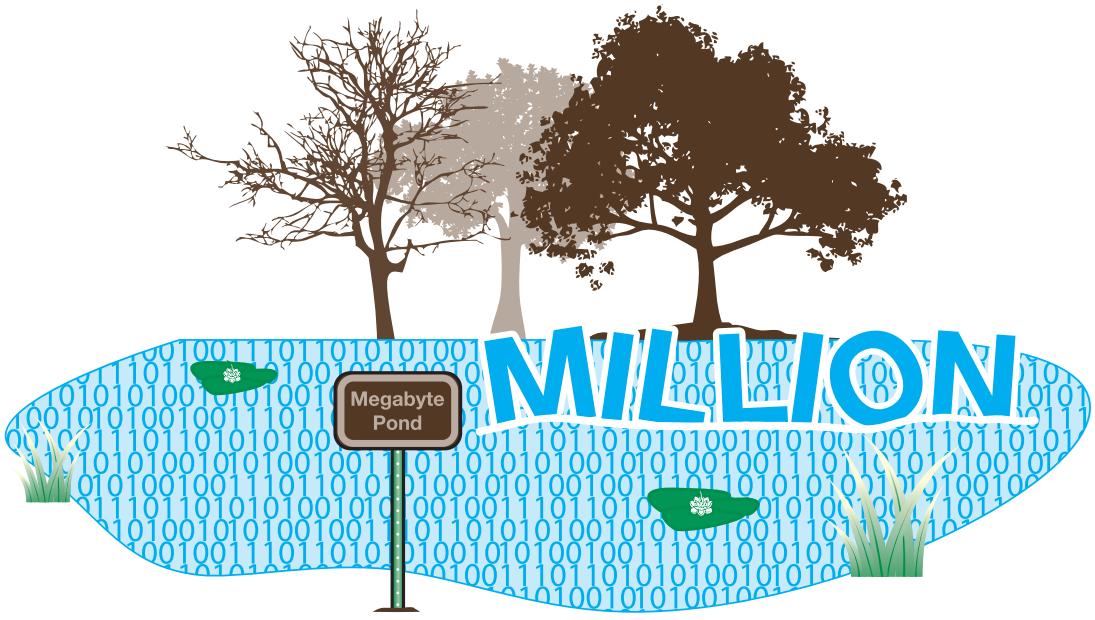


FIGURE 1.28 A megabyte

Approximately 1 billion bytes (1,073,741,824 bytes) is a **gigabyte** (GB) and is shown as 1GB or 1G. Approximately 1 trillion bytes (1,099,511,627,776 bytes) is a **terabyte** shown as 1TB or 1T. Figures 1.29 and 1.30 show how storage capacities get larger.

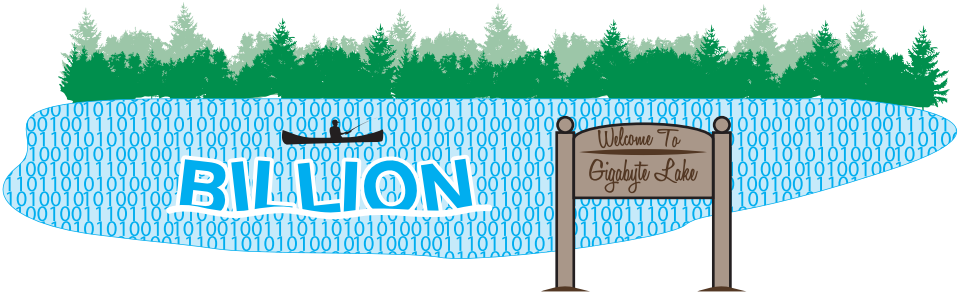


FIGURE 1.29 A gigabyte

FIGURE 1.30 A terabyte

When information needs to be expressed exactly, binary prefixes are used. For example, when describing a value of 2^{10} (1,024), instead of saying that it is 1 kilobyte, which people tend to think of as approximately 1,000 bytes, the term kibibyte (KiB) is used. When describing a value of 2^{20}, or 1,048,576, the term mebibyte (MiB) is used. Table 1.4 shows the terms used with computer storage capacity and binary prefixes when exact measurements are needed.

TABLE 1.4 Storage terms and binary prefixes

Term	Abbreviation	Description
Kilobyte/kibibyte	kB/KiB	~1 thousand bytes/2^{10} bytes
Megabyte/mebibyte	MB/MiB	~1 million bytes/2^{20} bytes
Gigabyte/gibibyte	GB/GiB	~1 billion bytes/2^{30} bytes
Terabyte/tebibyte	TB/TiB	~1 trillion bytes/2^{40} bytes
Petabyte/pibibyte	PB/PiB	~1,000 trillion bytes/2^{50} bytes
Exabyte/exbibyte	EB/EiB	~1 quintillion bytes/2^{60} bytes

Term	Abbreviation	Description
Zetabyte/zebibyte	ZB/ZiB	~1,000 exabytes/2^{70} bytes
Yottabyte/yobibyte	YB/YiB	~1 million exabytes/2^{80} bytes

Frequencies are also important measurements in computers because everybody wants to know how fast their computer, processor, memory, and other parts are operating. Frequencies are shown in similar measurements, but instead of bits (b) or bytes (B), speeds are shown in Hertz (Hz). A hertz is a measurement of cycles per second. Something that operates at approximately one million cycles per second is known as 1 megahertz (1 MHz). For one billion cycles per second, 1 gigahertz or 1 GHz is seen. Transfer speeds are commonly shown in bits per second such as gigabits per second or Gb/s or bytes per second such as in megabytes per second or MB/s. Notice the capital letter B when bytes are used compared to the lowercase b when bits are used. These measurements are used in a lot of IT-related hardware and software.

Safety Notes

As a parting note into your journey into computer hardware and software, let's take a moment to just mention safety. Safety is covered in each chapter, especially in Chapter 5, but no book on computer repair can begin without stating that both the technician and the computer can be harmed by poor safety habits. Before beginning any PC service, remove jewelry. To protect yourself and the computer, make sure to power off the computer and remove the power cord when disassembling, installing, or removing hardware, or doing preventive maintenance (cleaning).

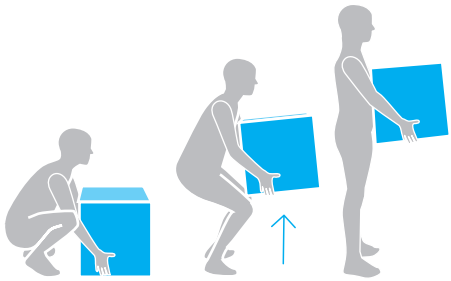
TECH TIP

Some things should be left alone

Never take an older CRT monitor or power supply apart unless you have been specifically trained on these components.

Technicians can also be harmed in doing menial tasks such as lifting a computer or heavy laser printer. Lifting is a common requirement listed in IT job advertisements or explained during interviews. Technical jobs frequently specify a maximum lifting requirement of 40 to 50 pounds. Use proper safety precautions, such as those shown in Figure 1.31. The type of equipment you need and things that you can do to prevent harm to the computer are covered more explicitly in Chapter 5, on power and disassembly.

Remove jewelry before working inside of a computer



- Bend at the knees
- Use your legs to lift
- Use lifting aids when possible
- Ask for assistance when possible

FIGURE 1.31 Safety tips

Chapter Summary

- Many IT roles require detailed knowledge of PC hardware and software.
- Computer technicians should actively listen, have a positive attitude, and use logic when solving problems.
- The CompTIA A+ certification requires two exams: 220-901 and 220-902. Many people break into the IT field with this certification.
- IT staff must be proficient at searching for information on the Internet, capturing files, and documenting technical information.
- Computers consist of hardware (the physical parts), software (the operating system and applications), and firmware (hardware that contains software).
- Identify important computer parts installed in a computer and as standalone parts: case, keyboard, mouse, motherboard, monitor, power supply, hard drive, optical drive, adapter, riser board, and memory.
- Input devices provide data into the computer. The computer sends data to output devices. Some devices can be both an input and an output device.
- Mice, keyboards, and touch screens are important input devices. Mice and keyboards can be wired or wireless.
- Safety is important when working on a computer. Power it down and remove the power cord before working inside it.
- Use proper lifting techniques when servicing equipment.

A+ CERTIFICATION EXAM TIPS

- ✓ Get a good night's rest the night before the exam.
- ✓ Ensure that you are knowledgeable and proficient with all of the terms and technologies listed in the official CompTIA A+ exam objectives.
- ✓ Ensure that you can identify the basic parts of the computer and explain the purpose of each one. Ensure that you know the following parts: hard drive, optical drive, power supply, motherboard, and RAM.
- ✓ The following communication and professionalism skills are part of the 220-902 exam: (1) use proper language; (2) maintain a positive attitude/project confidence; (3) actively listen (take notes) and do not interrupt the customer; (4) be culturally sensitive.

Key Terms

adapter.....X
BIOS X
bit X
byte.....X
device driver.....X
display X
expansion slot.....X
firmware X
gigabyte.....X
hard drive X
hardware.....X
keyboard.....X
kilobyte X
KVM switch.....X
megabyte X
memory X
motherboard.....X
operating system X
optical drive.....X
optical mouse X
output device X
PC.....X
power supply X
RAM X
software.....X
terabyte.....X

Review Questions

1. Match the part to the description.

____ motherboard	a. Converts AC to DC
____ RAM	b. Holds the most data
____ optical drive	c. Has the most electronics
____ hard drive	d. Fits in an expansion slot
____ adapter	e. Contents disappear when power is off
____ power supply	f. Holds a disc

2. Which career choice(s) would probably *not* need the information in this book? (Select all that apply.)
[PC repair technician | database administrator | programmer | helpdesk support | office manager | network cable installer | PC power supply reseller]

3. Which of the following are important suggested Internet search tips? (Choose two.)

A. Try another search engine when the first one does not provide satisfactory results.

B. Use as many common words as possible like the, in, at, or for.

C. Put quotations around two or more words that might be found consecutively in output.

D. Use as few words as possible.

E. Avoid using the name of the equipment manufacturer.

4. Which type of memory is commonly found on a motherboard? _____

5. When lifting a heavy computer, you should squat, bend at the knees, and use your legs to lift. [T | F]

6. How many tests must a person take in order to be A+ certified? [0 | 1 | 2 | 3 | 4]

7. Is the following question open-ended or closed-ended? You say your computer has been running slow since Monday. Which applications have you installed this week?
[open-ended | closed-ended]

8. List one example of having a positive attitude. _____

_____

_____

_____

9. Which of the following devices are commonly output devices? Select all that apply.
[digital piano | speakers | display | stylus | track stick | barcode reader | printer]

10. People who work with computers might be expected to lift up to how many pounds? _____

11. Which Microsoft Windows application could be used to create a text file?
[Textpad | Notepad | WriteIt | NoteIt]

12. Which Windows tool can be used to capture the screen?
[Notepad | Bluetooth | Internet Explorer | Snipping Tool]

13. Rewrite the following conversation into an open-ended question.

Technician: Good morning. I have a service log that states you are getting an error message whenever you access a PDF file. Have you done your Acrobat updates lately?

_____

_____

_____

14. List one procedure you would do to help an erratic optical mouse.

_____

15. Match the capacity to the description.

____ bit	a. 8 bits
____ kilobyte	b. a 1 or a 0
____ megabyte	c. approximately 1,000 bytes
____ byte	d. approximately 1 million bytes
____ gigabyte	e. approximately 1 trillion bytes
____ terabyte	f. approximately 1 billion bytes

Exercises

Exercise 1.1 Identifying Tower Computer Parts

Objective: To identify various computer parts correctly

Procedure: Identify each computer part in Figure 1.32.

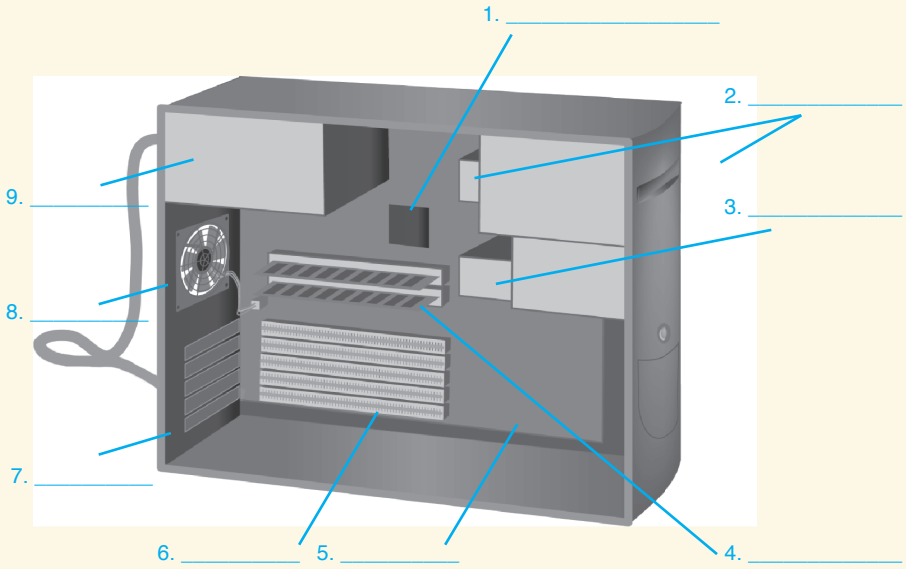


FIGURE 1.32 Tower computer parts identification

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____

Exercise 1.2 Identifying Computer Parts

Objective: To identify various computer parts correctly

Procedure: Identify each computer part in Figure 1.33.

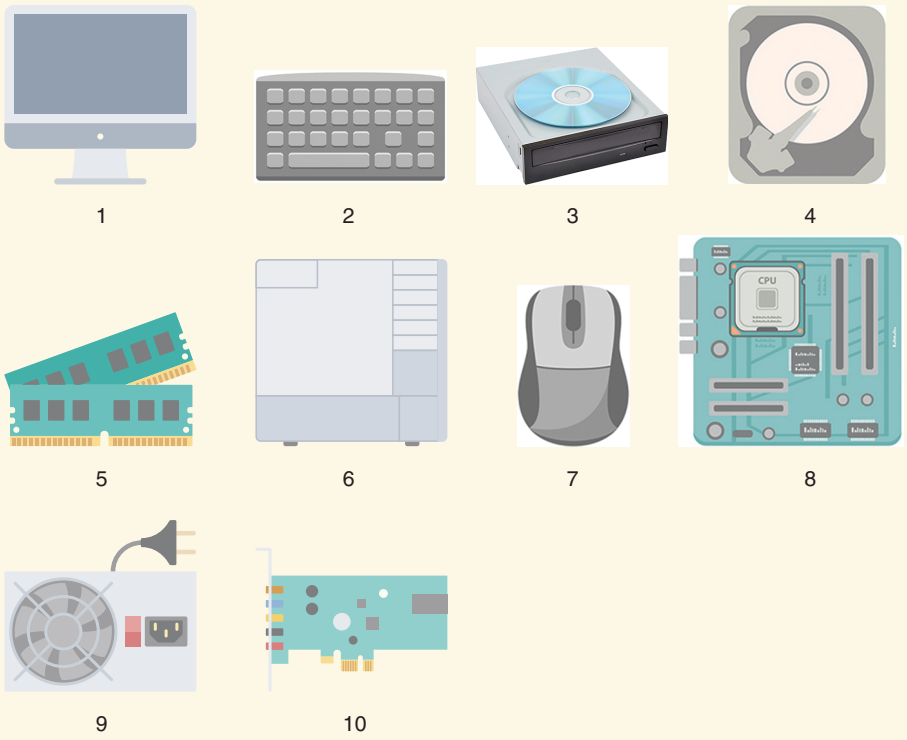


FIGURE 1.33 Computer parts identification

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____
7. _____
8. _____
9. _____
10. _____

Activities

Internet Discovery

Objective: To obtain specific information from the Internet regarding a computer or its associated parts

Parts: Computer with Internet access

Procedure: Using the Internet, locate technical information about a computer. Answer the following questions based on the retrieved information. Note that you may need to open more than one document in order to answer the questions.

Questions:

1. What is the name of the computer for which you found technical information? _____
2. How much RAM comes with the computer? _____
3. Which URL did you use to find this information? _____
4. Which search term(s) would you use for the following scenario? An HP Windows 7 computer has a Samsung ML-2160 laser printer attached. This printer supports both wired and wireless printing. The computer that is wired to the printer can print just fine, but no wireless devices in the house can access or even see the printer.

   _____

   _____
5. Which search term(s) would you use in a search engine to help a friend who has accidently deleted a file on a Windows 7 computer? _____

   _____
6. Which search terms would you use to find a video that shows you how to add an application to a Windows 8.1 desktop? _____

   _____

Soft Skills

Objective: To enhance and fine-tune a future technician's ability to listen, communicate in both written and oral forms, and support people who use computers in a professional manner

Procedure:

1. In a team environment, list three qualities that are important in a computer technician. Create scenarios that demonstrate these qualities. Share these findings in a clear and concise way with the class.
2. In a team environment, list three qualities that are not good practices for computer technicians. Create scenarios that demonstrate these qualities. Share these findings in a clear and concise way with the class.

Critical Thinking Skills

Objective: To analyze and evaluate information as well as apply learned information to new or different situations

Procedure:

1. Find an advertisement for a computer in a local computer flyer, in a newspaper, in a magazine, in a book, or on the Internet. List which components you know in one column and the components you do not know in the other column. Select one component you do not know and research that component. On a separate piece of paper, write a description of the component based on your research, and then share it with at least one other person. Write the name of the person with whom you shared.

2. Why do you think that many computer components are considered "throw-away" technology? List your reasoning. In groups of three or four, share your thoughts. Nominate a spokesperson to share your group reaction in two sentences or less.
3. One device touts a transfer speed of 100Mb/s, whereas another device advertises 50MB/s. Compare the two devices' transfer speeds and indicate which one is faster. Locate a component you have or would like to have. Compare products paying particular attention to the transfer speed. Document your findings.

Labs

Lab 1.1 Getting Started in Windows 7

Objective: To be able to use Windows 7 to locate and launch applications.

Parts: Windows 7 computer

Procedure: Complete the following procedure and answer the accompanying questions.

1. Power on the computer and log in. You may need to contact an instructor or student assistant for the userid and password.
2. Click the *Start* button in the bottom left corner of the screen. The Start button is used to launch applications and utilities, search for files and other computers, obtain help, and add/remove hardware and software. The Start button menu is configurable, as shown in a later lab. Figure 1.34 shows a sample Windows 7 Start button menu.

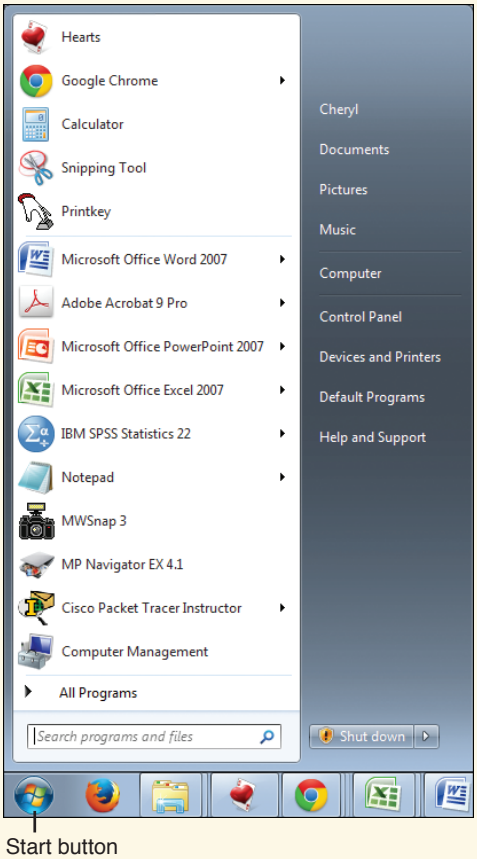


FIGURE 1.34 Windows 7 Start button

3. The left panel of the Start button window contains a list of commonly used applications. Items that have arrows to the right of the name have a submenu that contains recently used application files that can be accessed by holding the pointer over the right arrow and clicking on the file name in the right panel. A recently used file does not have to be used. You can simply click the name of the application and it will open.

   List one application found in the left panel of the Start button menu.

   _____

4. There are several other ways to access applications from the Start button menu especially if it is not shown in the left panel. Explore one way by clicking on the *All programs* link at the bottom. The All Programs Start button option contains applications and folders that contain other applications. Notice the scrollbar on the right (see Figure 1.35) that enables you to scroll through the installed applications.

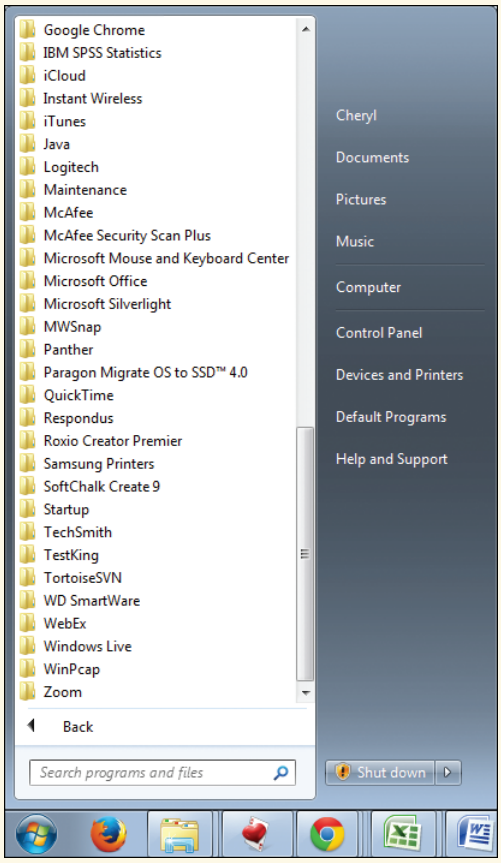


FIGURE 1.35 Windows 7 All Programs menu

What is the name of the last All Programs application or folder shown on your computer?

_____

5. Examine the available applications located throughout the list.

   Which application do you think you might use the most?

_____

6. To access an application within a folder, you must first click on the folder, then click on the application. Locate and select the *Accessories* folder.

   List three applications found in the Accessories folder.

_____

_____

7. Another way of accessing applications is through the *Search programs and files* textbox accessed from the Start button. Click on the *Start* button. Right above the Start button is this textbox. Click once inside the textbox and start typing the word **`note`**. Notice how at the top of the screen a couple of programs that have the word "note" in them appear.

   List one application found using the keyword "note."

_____

8. Click on the *Notepad* application at the top of the list. The Notepad application opens.
9. Notice the three buttons in the top right corner. These three buttons are common in a window and shown in Figure 1.36. Table 1.5 details the purpose of these buttons.

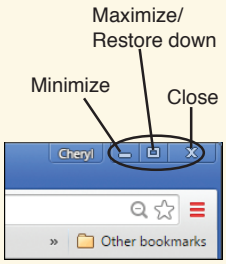


FIGURE 1.36 Windows 7 window buttons

TABLE 1.5 Windows top right window buttons

Button	Purpose
Minimize (straight line)	Keeps the program running, but removes it from being active on the screen. Use the Alt + Tab buttons to re-access the app.
Maximize/Restore Down (rectangle)	Used to make the window that holds the app full screen (maximize) or, if you size the window, restore it to its default size.
Close (X)	Used to close an app.

10. Click on the far right close button to close Notepad.
11. Use the *Search programs and files* text box to locate and launch the *Calculator* application.

    Which three menu items are available with the Calculator application?

    _____

12. Whenever you use an application, the open application icon appears on the Windows 7 taskbar at the bottom of the screen. The taskbar is customizable and this skill is taught later in the book. Notice how a small calculator icon appears on the taskbar. Click on an icon and that application appears on the desktop.
13. Minimize the Calculator application by clicking on the *Minimize* button (straight line) in the top right corner. Notice how the calculator is still loaded as indicated by the icon on the taskbar.
14. Use the *All Programs* Start button item to locate the *Sticky Notes* application accessory. Remember you must first access the Accessories folder to locate the applications within that folder. Notice how the Sticky Notes application icon is on the taskbar.

15. An easy way to move between applications is by using the Alt + Tab keys. Hold down the Alt key. While keeping that key held down, tap once on the Tab key. A window with all open applications appears. While keeping the Alt key depressed and tapping the Tab key once, the cursor cycles through the open applications. When it highlights the application you want to re-access, let the Alt and Tab keys go. Use the Alt and Tab key to re-access the Calculator application.

Instructor initials: _____

16. Close the Calculator application by using the *Close* button.
17. Click on the *Sticky Notes* application icon on the taskbar. Close the Sticky Notes application by using the *Close* button.
18. Easily access the Windows 7 Start button menu at any time by pressing the  key.

Lab 1.2 Getting Started in Windows 8

Objective: To be able to use Windows 8 to locate and launch applications and locate control panels used in future labs.

Parts: Windows 8 computer

Procedure: Complete the following procedure and answer the accompanying questions.

1. Power on the computer. Windows 8 was designed for mobile (touch) devices so the Windows 8 desktop is different from previous Windows versions. However, some people bought computers and laptops that did not have touch monitors. The method used to unlock a Windows desktop depends on the type of computer you have.
   - Touch screen—Press your finger on the screen and move upward.
   - Desktop computer—Press any key and release, click the mouse anywhere, click the mouse near the bottom of the screen, or hold the mouse button down while moving the cursor upward.
   - Laptop—Press any key and release, click the mouse anywhere, hold down the left track pad section or button, or move the cursor upward.
2. Type the password. Contact the instructor or lab assistant if the password is unknown.

   Note: Anywhere in this lab when the direction is to "click" something, if a touch screen is available, you can tap with your finger instead.
3. The Windows Start screen appears. Figure 1.37 shows a sample Windows Start screen. You can press the Windows key () at any time to bring up the Start screen. You can also point at the bottom left corner of the screen until a small Start screen display appears so you can click on it.

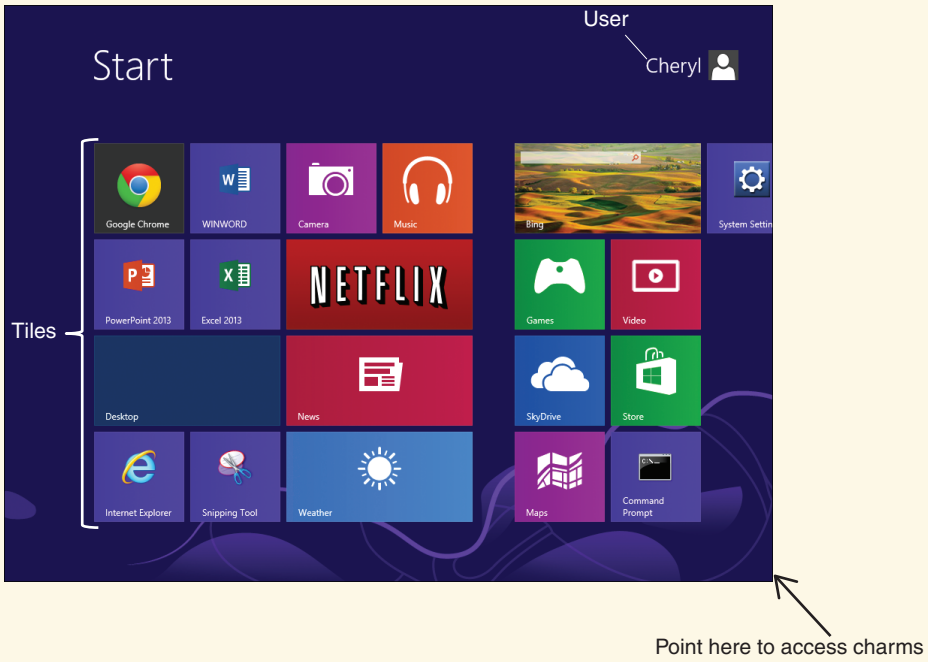


FIGURE 1.37 Windows 8 Start screen

4. The Start screen has the user listed in the upper right corner. This icon can lock the computer and sign out of the user account.

   What user account is being used to do this lab?

   _____

5. The Start screen also contains tiles. Tiles are used to access apps, such as the current news, weather, or traditional applications such as a web browser or word processing software. Tiles are rectangular or square and fill the Start screen. Use the scrollbar at the bottom of the screen to access the tiles to the right.

   What is the name of the last app shown on the right?

   _____

6. Examine the available tiles.

   Which app do you think you might use the most frequently?

   _____

7. Parts of the Start screen that are not immediately evident are the charms. Charms are little icons that are used to quickly access apps. The charms that will appear depend on the manufacturer and are software-dependent. The charms seen from the Start screen commonly include charms to perform a search and access some common Windows settings. Figure 1.38 shows a sample of Windows 8 Start screen charms.

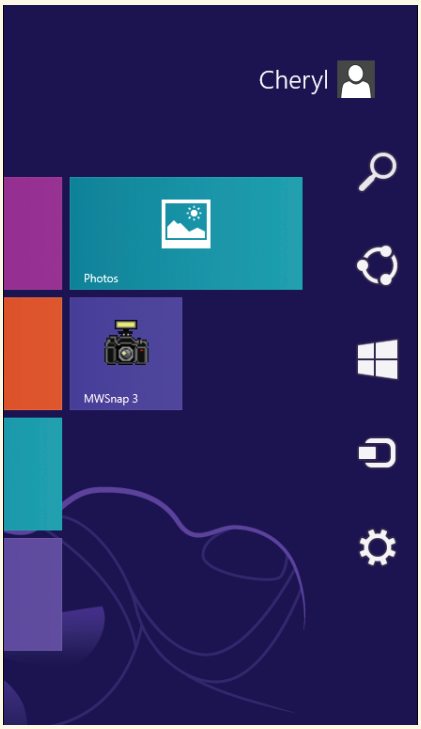


FIGURE 1.38 Windows 8 Start screen charms

8. Access the Start screen charms by pointing to the bottom right corner of the screen. Click the *Search* charm. Figure 1.39 shows an example of the menu that appears.

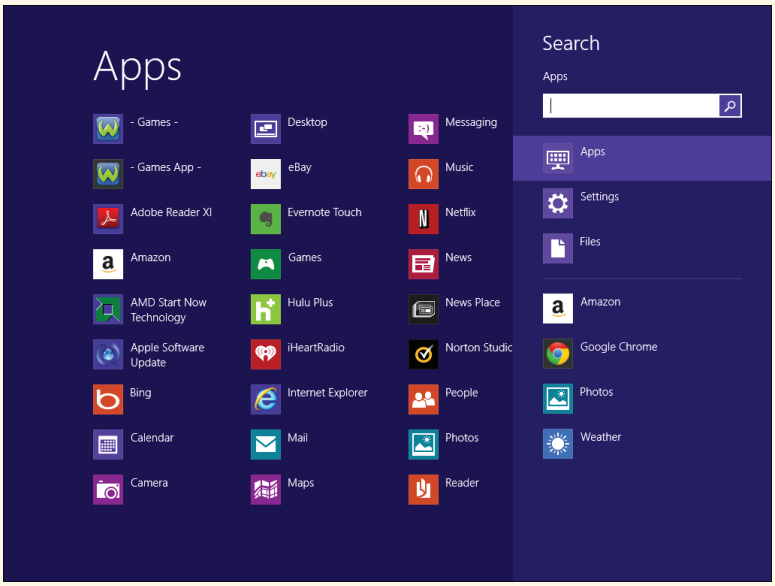


FIGURE 1.39 Windows 8 Search Apps window

9. The options below the Search text window are selectable items to designate where you want to search. When learning to configure, maintain, and repair Windows, you will commonly use the default selection of Apps. In the Search textbox, type **`notepad`** and *do not* press ↵Enter. Notice how the Notepad application appears to the left.

10. Click once on the *Notepad* app. The Notepad app opens.

11. Notice the three buttons in the top right corner. These three buttons are common in a window. Look back to Figure 1.36 in Lab 1.1 to see them. Table 1.5 (also in Lab 1.1) details the purpose of these buttons.
12. Click on the far right *Close* button to close Notepad.
13. Sometimes the application you need is not one you remember. When you click on the Search charm, all apps display in the left panel and you can use the scrollbar at the bottom of the screen to search through them. Once found, click the app to open.
14. Access the *Search* charm. Do not type in the Search charm text box. Instead, access it by clicking one time in the panel to the left where all apps display. Locate the Sticky Notes app by scrolling through the apps. Open the *Sticky Notes* app.

    Which symbol is in the top left corner of the Sticky Notes app?

    _____

15. Close the Sticky Notes app by using the *Close* button.
16. There are several ways to access the traditional Windows desktop. One way is to access the Desktop tile from the Start screen. Use one of the methods described to access the Desktop tile from the Start screen.

    What happened when you clicked or tapped the Desktop tile from the Start screen?

    _____

Instructor initials: _____

17. Re-access the Windows 8 Start screen by pressing the  key, clicking the *Windows* icon in the bottom left corner, if available, or pointing the mouse to the bottom left corner of the screen and clicking on the small *Start* screen that appears.

Lab 1.3 Getting Started in Windows 10

Objective: To be able to use Windows 10 to locate and launch applications and locate control panels used in future labs.

Parts: Windows 10 computer

Procedure: Complete the following procedure and answer the accompanying questions.

1. Power on the computer. The method used to unlock a Windows desktop depends on the type of computer you have.
   - Touchscreen—Press your finger on the screen and move upward.
   - Desktop computer—Press any key and release, click the mouse anywhere, click the mouse near the bottom of the screen, or hold the mouse button down while moving the cursor upward.
   - Laptop—Press any key and release, click the mouse anywhere, hold down the left track pad section or button, or move the cursor upward.
2. Type the password. Contact the instructor or lab assistant if the password is unknown.

   Note: Anywhere in this lab when the direction is to “click” something, if a touch screen is available, you can tap with your finger instead.

3. Windows 10 was designed for both traditional desktop and mobile (touch) devices. The Windows 10 desktop is different from previous Windows versions and it is a mixture of Windows 7 and Windows 8, as shown in Figure 1.40. You can press the key on the keyboard at any time to bring up the desktop.

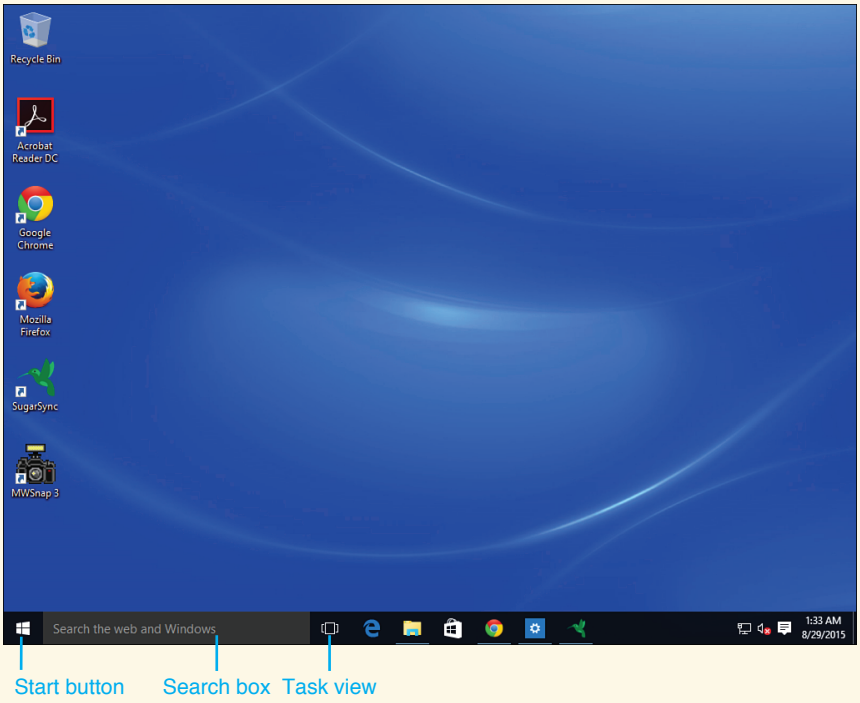


FIGURE 1.40 Windows 10 desktop

4. Notice the *Start* button in the right corner. Click on the *Start* button to access the tiled apps similar to the Windows 8 Start screen, as shown in Figure 1.41.

FIGURE 1.41 Windows 10 Start button

5. Click the *Windows* icon again in the lower left corner to return to the desktop. The desktop has a new look to it along the bottom. The Start button is different. The text area to the immediate right of the Start button used to be in the Start button menu or part of charms in Windows 8. There is an area for the icons of the most commonly used applications. To the far right is the notification area.

   List one icon of a commonly used application that is on your desktop.

   _____

6. Click the *Start* button. Locate and select the *All apps* option. Scroll through the options. Notice the list contains both applications and folders.
7. Locate and select the *Windows Accessories* folder to expand it. Locate and select the *Notepad* app to launch it.

   What is the name of the last menu item shown on the far right inside the Notepad app?

   _____

8. Notice the three buttons in the top right corner in the Notepad window. These three buttons are common in a window. Look back to Figure 1.36 in Lab 1.1 to see them. Table 1.5 (also in Lab 1.1) details the purpose of these buttons. Use the Minimize button (straight line). Notice how the application icon displays at the bottom of the screen in the taskbar as a small blue spiral notebook.
9. Click on the *Notepad* application icon at the bottom of the screen. The Notepad application opens on the screen. Use the *Close* button (X) to close the application.
10. Another way to locate and launch an app is by using the *Search the web and Windows* textbox. Click once inside this textbox and type the word **`note`**, but do not press ↵Enter. Notice that at the top of the screen the Notepad desktop app is listed. The Sticky Notes app also shows.

    List one other app that is shown that has the letters "note" in its name.

    _____

    _____

    Note: When you have two or more applications open in Windows 10, you can hold the Alt key down and press the Tab key to cycle through any open applications. Windows 10 has a Task View icon on the taskbar that serves the same purpose. Refer back to Figure 1.40 to see that useful icon.
11. Select and launch the *Sticky Notes* app. The Sticky Notes app opens.

    What symbol is in the top left corner of the Sticky Notes app?

    _____

12. Close the *Sticky Notes* app.
13. Click on the *Start* button in the bottom left corner. Click in the tiled apps area. Launch one of the apps by clicking on a tile.

    Which app did you choose?

    _____

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14. Close the application using the *Close* button.

Lab 1.4 Using a Search Engine

Objective: To use Google to effectively search for information

Parts: Windows 7, 8, or 10 computer with Internet access

Procedure: Complete the following procedure and answer the accompanying questions.

1. Power on the computer. Log in or unlock the screen.
2. Windows 7 users, click on the icon (*Start* button) in the bottom left corner, select *All Programs*, and then select a web browser.

   Windows 8.1 users—Access and launch a browser app such as Windows Explorer, Google Chrome, or Mozilla Firefox from the Windows start screen. If one is not readily visible, click on the Windows icon in the bottom left corner to get a customized view of the applications. (On a mobile device this may be a Windows symbol you touch on the front side of the device to access these apps. You can then click the ⓓ that is inside the circle in the bottom left to view All Apps and pick a browser app from there.)

   Windows 10 users—Access and launch a browser app such as Microsoft Edge, Microsoft Internet Explorer, Google Chrome, or Mozilla Firefox from the Windows start screen. If one is not readily visible, click *All apps* and scroll through the list to locate a browser app. Click on the browser app name to launch it.
3. In the browser window, type the following: **`www.google.com`**

   If a computer user has a Dell Windows 8.1 computer that the user complains is slow to boot, what search terms would you put in the browser window? List at least three.

   _____
4. In the search text box, type the following: **`Windows 8 computer problems`**

   Approximately how many results list at the top of the screen under the menu?

   _____
5. Change the search criteria to **`Windows 8 computer problem`**.

   Approximately how many results list at the top of the screen under the menu?

   _____
6. Go into the first three problems by clicking on the first title line. To return to the search results, click the Back arrow (←).

   Do any of the problems have anything to do with slow booting?

   _____
7. In the search text box, type the following: **`Windows 8.1 slow boot`**

   Access the first result by clicking on the title line.

   What was the resolution given in the resulting web link?

   _____
8. Sometimes computer resolutions contain links to software that might not be free after so many days and may contain malware or a virus. Only click on a link or use software tools from trustworthy vendors. Return to the search criteria by clicking on the Back arrow or retyping **`www.google.com`** in the search text box. Now change the search to the following: **`Microsoft Windows 8.1 slow boot`** and access the first result.

   Approximately how many results are available?

   _____

Which resolution was given?

_____

_____

_____

Do you think that this might be a good solution for the person who owns the Dell computer?
[Yes | No | I have no idea]

_____

9. Now add the word Dell into the search criteria. Make the search the following: **`Microsoft Windows 8.1 Dell slow boot`**

   Approximately how many results are available?

   _____

10. Access the first result by clicking on the title line.

    What resolution was given?

    _____

    _____

    _____

Lab 1.5 Screen Capture with Snipping Tool

Objective: To use the Microsoft Windows Snipping Tool to effectively capture information

Parts: Windows 7, 8, or 10 computer with the Snipping Tool application

Procedure: Complete the following procedure and answer the accompanying questions. If you are not familiar with launching an application, complete Lab 1.1, 1.2, or 1.3 before doing this lab.

1. Power on the computer. Log in or unlock the screen.
2. Access a web browser. Leave it on the screen.
3. Many times when you are solving a problem, performing a task, or simply helping someone else, a picture is worth a thousand words. Locate and launch the Snipping Tool. The Snipping Tool application starts as shown by a small window that opens (see Figure 1.42).

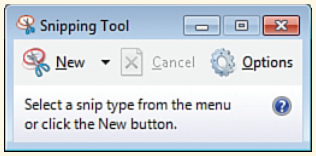

FIGURE 1.42 Snipping Tool application window

4. The Snipping Tool enables you to capture everything that shows on the screen (full-screen snip), a particular window that is open on the screen (window snip), a particular section of the screen that could be captured in a rectangle (rectangular snip), a particular part of the screen that is odd shaped, or when you simply want to capture an icon or symbol. Click the ▼ beside the *New* menu option. The four options display. The default one has a ◉ beside it.
5. Click on the *Options* menu item. One particular option that you can select by clicking inside a box is the Ink color and Show selection ink after snips are captured option. This option automatically creates a box around whatever information is captured. Do not select it yet. Click *Cancel*.
6. Ensure the browser window is not taking up the entire desktop area. You can use the Maximize/Restore Down button located in the top right corner to size the window. Look at Figure 1.36 in Lab 1.1 to see them. Table 1.5 (also in Lab 1.1) details the purpose of these buttons.

7. In the Snipping Tool window, click the ▼ beside the *New* menu option and select *Full-screen Snip*. The Snipping Tool application captures whatever is on the screen. If that is not what you want to capture and you only want to capture the search text box, click *New* and the Snipping Tool reverts to the small window.
8. Click on the ▼ beside *New* again and select *Window Snip*. With a window snip, you must do an additional step by clicking on the window that you want. Click anywhere in the browser window.

   What information is shown inside the Snipping Tool window?

   _____

9. Pretend this still is not what you wanted because it is so big and you want to just capture the search text box. Click the *Minimize* button (the button to the left of the Maximize/Restore Down button you used before). The Minimize button is the icon in the top right that has a single line at the bottom of the icon. It is to the immediate left of the Maximize/Restore Down button.
10. Re-access the browser window by clicking anywhere on it. In the browser window, type **`www.pearson.com`** in the text box at the top of the screen, but do not press the ↵Enter key.
11. With the browser window open, re-access the Snipping Tool by clicking on the *Snipping Tool* icon located in the taskbar (scissors within a red circle icon) at the bottom of the screen. If the taskbar is not there, such as on a Window 8 computer, hold down the Alt key and while continuing to hold it down, press Tab. The currently running programs appear. Press the Tab key again until the Snipping tool is selected. Let go of both keys and the Snipping Tool application window appears on the screen. Ensure the Snipping Tool application window is on a part of the desktop by itself (not on top of the browser window). In order to move a window, you can click on the top part of the Snipping Tool window and while continuing to hold down the mouse or touchpad, drag the window to a different part of the screen.
12. Click the *New* menu option and select *Rectangular Snip*. The screen appears grayed out. This is normal. A crosshairs symbol (that looks like a plus symbol) appears on the screen. Move the screen cursor (which, in turn, moves the crosshairs symbol) to the top part of the browser window that contains the search text box. Click and drag the crosshairs until it captures the part of the browser window that shows www.pearson.com.

    List one instance where you think an IT person might use the rectangular snip option.

    _____

13. After taking a screen capture, the Snipping Tool window has more menu options available. Click the *File* menu option.

    Which four menu options are available?

    _____

14. Click the *Edit* menu option. This option can be used to select *Copy* so you can simply paste into an email or word processing document. Select the *Tools* menu item. Point to the *Pen* option and select *Blue Pen* from the menu. Use the pen to circle the words *pearson.com*.
15. Access the *Tools* menu item again and select the *Highlighter* option. Highlight *www*.

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16. Close the Snipping Tool window by clicking on the *Close* button, which is located to the immediate right of the Maximize/Restore Down button. The Close button is in the top right of the Snipping Tool application window and has an X on the icon.
17. When asked if you want to save the snipped document, click *No*.

Lab 1.6 Creating a Text File

Objective: To use the various applications and apps to create a text file

Parts: Windows 7, 8, or 10 computer

Procedure: Complete the following procedure and answer the accompanying questions. If you are not familiar with launching an application, complete Lab 1.1, 1.2, or 1.3 before doing this lab.

1. Power on the computer. Log in or unlock the screen.
2. Locate and launch the *Notepad* application. The Notepad application starts, as shown in Figure 1.43.

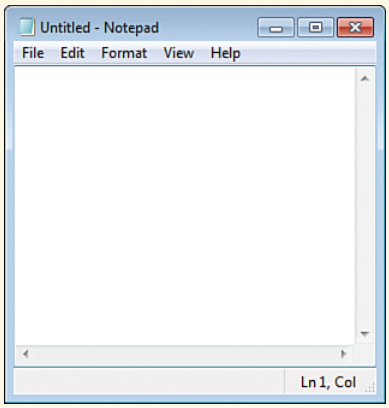

FIGURE 1.43 Notepad application

Which five menu options are available?

_____

Which menu options do you think would be used to automatically insert the date and time?

_____

3. Notepad can be used to document problems on a computer that does not have word processing applications loaded or that has other issues. Both Microsoft Notepad and WordPad ship with the Windows operating system. Notepad does not have as many capabilities as WordPad. One of the things you can do with Notepad is insert the date and time into the document. Click the *Edit* menu item to see the full Edit menu, as shown in Figure 1.44.

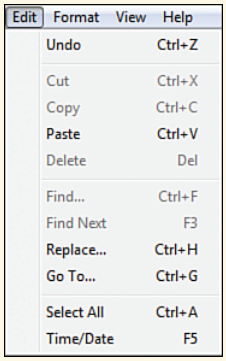

FIGURE 1.44 Notepad Edit menu

4. Notice the words on the left and the corresponding keystrokes to the right. This means you can either use the mouse to access the Edit menu and then select *Time/Date* or you can simply press the F5 key to do the same thing. Click away from the Edit menu so you can try the keyboard shortcut. Click inside the blank Notepad window. Now press the F5 key.

5. Click the *View* > *Status bar* menu option.

   What did this option do?

   _____

   _____

6. Click the *View* > *Status bar* menu option again and notice how there is a checkmark now by the Status bar option indicating that this option is enabled.
7. Notepad allows a few font modifications. To bold the date and time, click the *Format* > *Font* menu option to see the options as shown in Figure 1.45.

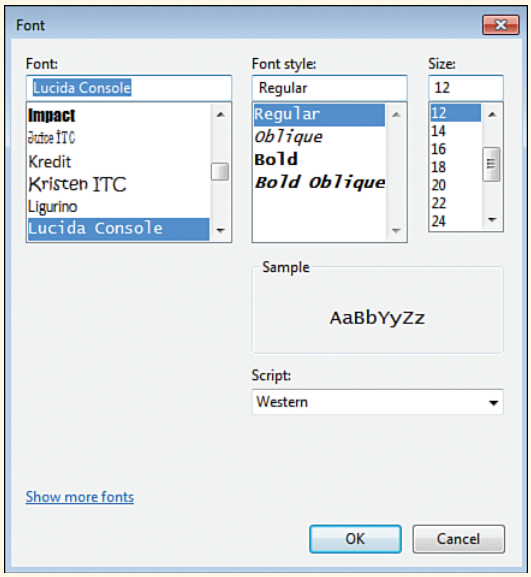

FIGURE 1.45 Notepad Font menu

What is the default font (the font that is selected and highlighted by default)?

_____

What are the names of the first and last font types? Use your mouse and the control bar to see the fonts.

_____

8. Click the *Bold* option in the Font style section. Click the *OK* button. You return to the Notepad window. Your date and time should have turned bold. Redo Steps 7 and 8 if the words are not darker (bolded).

   On your own, add the following message to the Notepad document. Ensure that you use the Verdana Regular 12 font type and size:

   ```
   Replaced display and tested. User confirms that the problem is solved.
   ```

9. Click the *Help* > *View Help* menu option.

   Which help topic would be of most interest to you?

   _____

10. Close the Help window by clicking on the *X* in the upper right corner.

11. A header is a part of a document that might not appear on the screen, but when the document is printed, the information inside the header prints at the top of the page. A footer is at the bottom of the document. To insert a header and a footer in Notepad, click on the *File* > *Page Setup* option. Note that when you change the information in the header and footer, that information stays there for the current Notepad document and future documents as well.

    Use Help to determine what the &f, the default setting for the header, and Page &p, the default setting for the footer, mean. Document your findings.

    _____

    _____

12. Close the Help window.

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13. To save the document, click the *File* > *Save* option. A window with several options appears, as shown in Figure 1.46.

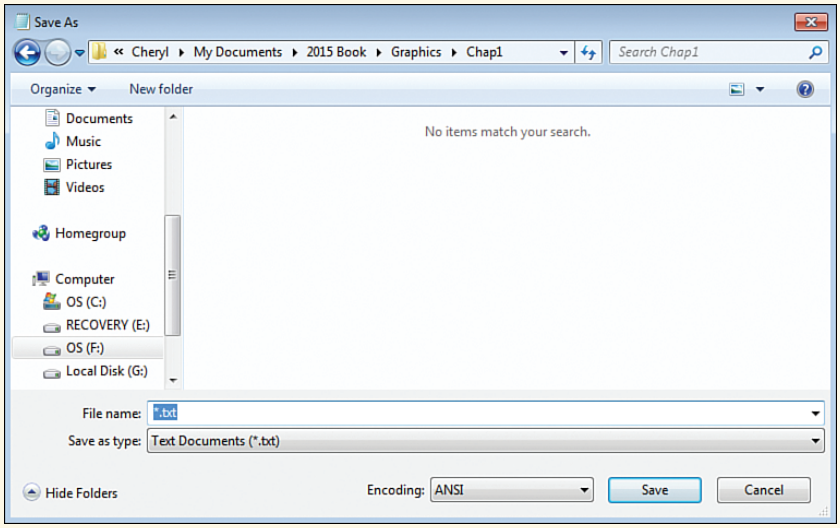

FIGURE 1.46 Notepad Save menu

14. When saving a file, you want to give it an appropriate name. That is entered in the File name text box. Start typing **`documentation`** in the File name text box. Notice how it automatically replaces the highlighted *.txt name. Do not press ↵Enter yet.

15. The current location is shown at the top of the screen. To change this location and save it onto your flash drive, for example, you must first select your flash drive from the left window. Note that drive letters change depending on the system. In Figure 1.46, the flash drive is G:. Click the *Documents* option in the left window. If any folders are on the drive, they appear. Click the *Cancel* button.

16. From the Notepad window, click the *Close* button (the button with a red X in the top right corner).

    What message appears?

    _____

17. Click the *Don't Save* button.