software tools for techies
in this chapter you will:

• Learn which tools can help you in performing tasks as a student and a computing professional
• Review the tools you can use for creating documents
• Learn how presentation tools can make your presentations more dynamic
• Learn about tools for creating spreadsheets
• Get an overview of how project management software can help you keep projects on track
• See which tools are available for creating and modifying graphics
• See how an integrated development environment and diagramming tools can make software development easier and faster
• Learn about database management tools
• Learn how file compression works and what tools are used for this task
• Understand how files can be transferred and shared with FTP tools
• See what tools are available for developing Web sites and pages
Working with computers isn’t as easy as some people might suppose. Sure, we get paid big bucks to sit in
air-conditioned offices and do what we love all day. We always have the fastest computers and the newest
versions of every program. And nobody appreciates the value of a game ending with the word “craft”
as much as we do.

It’s not all fun and games, however. Nobody knows the pain caused by the word “geeks” as we do. It hurts, man.
Come on, we’re people too. (Well, at least those of us who aren’t half-Klingon.)

As computer scientists, we need certain things to do our jobs. For example, how can a person be expected to
survive on a 40 GB hard drive? I mean, it holds only 13,321 MP3s, and I could download that many in my sleep.

Next, what “genius” thought of the 8-ounce can of Mountain Dew? That’s toddler size. I have to spend
5 seconds every 10 minutes to open a new can. Here’s an idea: How about a 384-ounce can of Mountain Dew?
I’d have to open only one can a day, which would increase my daily productivity by 4 minutes. In this
business, time is money.

Finally, every computer science department should have a dating service. Sure, chat rooms have their perks, but
contrary to popular belief, we do venture out of the house once in a while. We could really use a dating
service—or better yet, prearranged marriages! We could have a company lotto to draw a spouse. I’m guessing
the person who did away with prearranged marriages was probably the same genius who invented the 8-ounce
Mountain Dew.

Just imagine how productivity would skyrocket! Employers around the world, listen up: We’re not asking a lot.
These three requests are more like necessities. You would be wise to make us happy. If you play ball, you might
find out that it actually takes only about 10 seconds to get your e-mail back up and running.
You’re sitting in front of your computer, focused on saving the world from an alien race, when suddenly a fly begins buzzing around your face. Your first reaction is to get rid of it so that you can get back to saving the world. The task has been defined! Your eyes lock on the target as it hovers near the screen. At last, it takes a break from flying and lands on your monitor. You could use your hand to swat the fly, but you know from past experience that this approach usually ends in failure. Instead, you decide you need a tool to increase your chances of sending this fly to Insect Heaven. You look around and settle for a tool lying next to your chair. Why did you select this tool? It was nearby and easy to reach, and you’ve used it before for other tasks. You raise it above your head slowly and focus on the fly’s location. With the speed of a cheetah and the force of a rhinoceros, you swat the fly. As the hammer comes crashing down, you realize that you might have made a slight miscalculation in your tool choice. Then again, you did want a new flat-screen monitor.

Whether it’s in your personal life, school, or career, you have specific tasks you have to complete. With many tasks, the outcome and the time spent working on them can be improved by using the right tool—or to be more specific, a software product. This chapter recommends tools you should have in your computing toolbox. Choosing the right tool can improve your progress in completing a task, so you need to be informed about what tasks might be lying ahead and which tools are most useful for certain tasks.

different tools for different rules

As a student and in your future career as a computing professional, you’re confronted with many types of tasks and need the knowledge and skill to choose the right tool for each task. Using the right tool can mean the difference between success and failure. Think of yourself as a worker with a box full of tools you need to get your job done. This chapter explains how to choose the necessary tools for the variety of tasks you have to do.
Keep up with tools used in the industry. Software comes and goes quickly, and vendors sometimes stop technical support, so read computer news Web sites to stay up to date.

The most common tasks you encounter fall into three main groups: office tasks, programming tasks, and Internet or Web tasks.

Office tasks:
- Creating documents
- Creating presentations
- Creating and using spreadsheets
- Scheduling and managing projects

Programming tasks:
- Creating graphics
- Diagramming and creating flowcharts
- Creating programs
- Creating and managing databases
- Providing technical support

Internet or Web tasks:
- E-mailing files
- Browsing the Web
- Uploading and downloading files
- Developing Web sites and pages

This list might seem overwhelming, but learning the tools of the trade, even though it takes some work, is better than struggling with the wrong tool, an outdated tool, or no tool at all. In the following sections, you examine the tools for these task categories to help you determine which tool is best suited to the job at hand.

Office tools

Not all tools that computing professionals use are for writing programs. Office tools are probably the most widely used software and are useful for students, professionals, and many others. No doubt you’re most familiar with this category of tools, used for creating documents, presentations, spreadsheets, and work schedules.
tools for creating documents

Creating documents is a basic task that almost everyone needs to do, and a good document-creating tool can help you in your career, your personal life, and your educational pursuits. Document tools include word processors, text editors, and desktop publishers.

word processors

A word processor, an essential tool in your toolbox, is used in creating a wide variety of documents. As a student, you use one now to create research papers, assignments, requests for letters of recommendation, resumes, and more. Documents you create in the business world might include the following:

• Letters and memos
• Reports
• Design documents
• Project proposals

A word processor is a multifunction tool, so it’s like having a screwdriver, hammer, pliers, and wrench all in one tool. You can choose fonts; apply text formatting, such as bold and underline; set margins; insert graphics; and use many other formatting options to make your documents look more professional and attractive. Most word processors include features such as a spelling and grammar checker and a simple drawing tool. Microsoft Word is one of the most widely used word processors (see Figure 1).

Figure 1, Microsoft Word is a popular word-processing tool
In UNIX and Linux, a popular word processor is OpenOffice Writer, part of the OpenOffice package (see Figure 2). A nice feature of OpenOffice is that it’s free, and it can also be used on Windows and Macintosh systems.

**Figure 2, OpenOffice Writer is part of the OpenOffice package**

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**Note**

Corel WordPerfect is another word processor that’s still popular because it can be used on a variety of platforms, including Windows, Macintosh, and Linux.

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**text editors**

A **text editor** is a stripped-down version of a word processor, so it has only basic text entering and editing options and few or no formatting options. You can do basic editing on a document, but you can’t change any character attributes, so the document doesn’t have a professional look. However, a text editor is a handy tool, especially for entering straight text without any formatting, such as when you enter program commands.

*For more information on using a text editor to create programs, refer to Chapter 14, “Programming I.”*
Text editors are often included as part of an operating system. Windows includes the Notepad text editor, for instance. Other operating systems include different text editors. For example, vi is included with UNIX and Linux. As shown in Figure 3, vi has a command-line interface, so there are no menus for choosing options.

Figure 3, The vi text editor is used in UNIX and Linux

Adobe Reader
Adobe Reader is free software for viewing and printing Adobe Portable Document Format (PDF) files on just about any type of computer. Formerly known as Adobe Acrobat Reader, this popular tool (available for download at www.adobe.com) is often used to view and exchange documents online across multiple hardware and software platforms.

You can also use a full-featured word processor to create and work with text files. Instead of saving a file as a Word document, for example, you can select the option to save it as a text file with the extension .txt.

desktop publishers
A desktop publisher is a tool for creating more sophisticated documents, such as brochures, newsletters, flyers, and others. It might not have some features that a full-fledged word processor has, such as checking spelling and grammar, but the line between word-processing and desktop-publishing tools is becoming blurred. A desktop publisher can often use a word-processed document as input and put it into a specific layout or template.

tools for creating presentations
You’ve probably had to make many presentations in class, and you’ll have to give presentations in almost any job you have in the future. These presentations might involve summarizing research on a particular topic, presenting ideas for a new product, explaining a marketing campaign, and a variety of other tasks.
Whatever the reason for giving a presentation, you want to make it informative and interesting by using a format that catches people’s attention and presents information in a concise, to-the-point manner. No doubt, you’ve been to a lecture given by a monotone presenter, and you and the other students would probably rather listen to a cat scratching the chalkboard than sit there another minute being bored to tears.

Dynamic speakers find a way to keep the audience’s interest and present information in an easy-to-understand way. You’ve heard the saying “A picture is worth a thousand words,” and a tool that incorporates interesting visuals is one way to make your presentations more dynamic. You could spend hours using a programming language to create a presentation, but you’d have to include statements that make the computer act like a slide projector and make sure you removed any glitches that might stop the system from working. You might be able to create a presentation with a word processor, but it wouldn’t have the look and feel of a slide show. Why not use a tool specifically designed for creating presentations? A presentation tool can save you time and money and help make your presentation dynamic and interesting.

A widely used presentation tool that you're no doubt familiar with is Microsoft PowerPoint. You can use it to create slides containing text, images, sound, and video and combine them into presentations by adding transitions. After the presentation is created, PowerPoint acts as a slide projector, displaying the presentation on your monitor or to larger audiences with a data projector connected to your computer. Figure 4 shows a PowerPoint slide.

Figure 4, A presentation tool helps you present information in an organized, attractive way
An alternative to PowerPoint is OpenOffice’s Impress, which has the same features as PowerPoint (see Figure 5).

Figure 5, Impress is the OpenOffice presentation tool

The main purpose of a presentation tool is to help you present information in an interesting, organized way. Slide transitions, which are used between slides, are one way to spice up a presentation. You can add effects such as one slide fading into another or a gradual dissolve, for example. Adding multimedia is another good way to make your presentation more interesting. You can include sound clips, music, animation (such as each line of a bulleted list appearing separately), still images, video, and more.

**note**

Use transitions and multimedia features wisely. Going overboard with them is tempting, and when that happens, your information can get lost.

**tools for creating spreadsheets**

A spreadsheet is a document consisting of rows and columns for organizing information into logical groupings. With all the other tools you need to learn how to use, why on earth do you need to know how to use a spreadsheet? Spreadsheets are useful when you need to work with numbers, such as budget figures. As a project leader or manager, for example, you need to know how to
allocate your group’s funds to ensure that you work efficiently and productively. You can use a spreadsheet to store and work with dollar amounts and expense categories.

Spreadsheet software also includes functions for performing calculations (as long as you specify them correctly) as well as graphing and charting capabilities so that you can compare numbers and double-check the results. The most well-known spreadsheet tool, Microsoft Excel, is quite powerful. For example, if you’re creating a budget, you can use rows and cells to define budget categories, allocate dollar amounts, and insert calculations to perform mathematical operations and functions on the numbers. You can even graph the information in your spreadsheet to make it more descriptive. Figure 6 shows an Excel spreadsheet.

Figure 6, With a spreadsheet, you can organize information in rows and columns and perform calculations.

<table>
<thead>
<tr>
<th></th>
<th>Day 1 Activities</th>
<th>Day 2 Activities</th>
<th>Day 3 Activities</th>
<th>Day 4 Activities</th>
<th>Day 5 Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Quantity</td>
<td>Food</td>
<td>Quantity</td>
<td>Food</td>
<td>Quantity</td>
</tr>
<tr>
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<td>1</td>
<td>Bread</td>
<td>1</td>
<td>Cheese</td>
<td>1</td>
</tr>
<tr>
<td>Bagel</td>
<td>2</td>
<td>Bagel</td>
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<td>Bagel</td>
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<tr>
<td>Donut</td>
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<tr>
<td>Pastry</td>
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<tr>
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<td>Sandwich</td>
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<tr>
<td>Bagel</td>
<td>16</td>
<td>Bagel</td>
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<td>Bagel</td>
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</tr>
</tbody>
</table>

The free OpenOffice alternative to Excel is called Calc (see Figure 7).
Figure 7, Calc is the OpenOffice spreadsheet tool

Although your toolbox has become quite heavy, there’s another essential tool to add. As a software developer, you need a tool to keep track of a project’s status and define and organize the major tasks to be completed.

Project management is discussed in more detail in Chapter 13, “Software Engineering.”

The project manager is the rudder that keeps a project on course. A project manager uses project management software to map the course the project must follow by defining tasks and milestones. This tool can also be used to organize and motivate developers, make sure the project meets its requirements, and keep the project on time and within budget. Time is money, and companies want to account for the time spent on projects and evaluate how productive the development effort has been. Project management software can help keep management informed of a project’s progress and generate reports that can be used in the future to learn from mistakes and become more efficient.
Microsoft Project, shown in Figure 8, is a widely used project management tool that enables you to create productivity charts, define and assign tasks, log the time and costs for tasks, and produce status reports showing the work accomplished. Reports showing how efficiently the project is being done can then be created and distributed.

**Figure 8, Tracking tasks with Microsoft Project**

Serena Software OpenProj ([http://openproj.org/openproj](http://openproj.org/openproj)) is a free open-source project management tool that can be used in Windows, Macintosh, and Linux/UNIX, and it supports Microsoft Project files.

Learning and using project management software require a big commitment in time and effort. Keeping accurate records of the work being completed is essential but time consuming. Project management software can be a powerful tool and might be quite expensive, but if you become the leader of a project or a group of developers, you need a basic knowledge of project management software.

**programming tools**

Your programming toolbox contains many tools for different program components and processes. Some programming tasks supported by these tools include creating graphics, diagrams, and flowcharts; creating and managing databases; and providing technical support.
creating graphics

Many times you need a picture of an object or action to illustrate your text. Whether you use a logo, a photo, a cartoon, or a map, graphics play an important part in information sharing.

You can buy or download images and predrawn artwork usually packaged as clip art collections.

The Internet gives you access to many images you can download and use in presentations, documents, programs, and Web sites. (Always be sure you have permission for using these images.) What if the image doesn’t exactly meet your needs, however? Unless you have a graphics designer at your disposal, you have three options: Draw it by hand, modify a graphic someone else has created, or create your own image with graphics software. For any of these options, you need the right tools.

graphics formats

You can buy or download so many images that figuring out the right one for your purpose can be difficult. Images are available in many different graphics formats, too, and each has advantages and disadvantages for particular tasks. The following are some common graphics formats:

- BMP
- GIF
- JPG
- TIF

The BMP (bitmap) format is the Windows bitmap format and is suitable for images up to 24 bits or 16.7 million colors that aren’t animated. Bitmap files tend to be very large, so they aren’t recommended for use on Web sites. A common use for a bitmap image is as your desktop background image, and many programs use bitmaps in the interface.

GIF (Graphics Interchange Format), pronounced “jif” or “gif,” was developed by CompuServe as a way to standardize graphics. GIF images are mainly used for buttons, banners, simple images, and animated images. Only 256 colors are allowed, but unlike other formats, GIF supports a transparency feature. You can specify an area of a GIF image as transparent so that when it’s displayed, the background color comes through. GIF images aren’t suitable for photos because of the limited color palette.
A common mistake is using animated GIFs on Web sites because they’re cute. They tend to clutter a site and actually make it less attractive and effective.

**JPEG (Joint Photographic Experts Group)** – A commonly used graphics format with the most efficient storage method; supports up to 16.7 million colors and is well suited for photos and use on Web sites.

**TIFF (Tag Image File Format)** – A graphics format widely used in professional photography and publishing because of its high image quality; however, the file size is quite large.

**freeware** – Software offered to users at no cost.

**shareware** – Software distributed on a trial basis with the understanding that you must pay for it later.

**Note**

**JPEG (Joint Photographic Experts Group)**, pronounced “jay-peg,” has the most efficient storage method of all graphics formats and supports up to 16.7 million colors. This format is great for photos and Web sites, particularly when you want a small file, but a JPEG file loses a little image quality each time it’s changed and saved. JPEGs are widely used on the Internet because of their small size and accurate color rendition, but if you want the image to have sharp edges, you should use another format, such as GIF.

**TIFF (Tag Image File Format)** from Adobe is widely used in professional photography and in publishing because there’s no loss or degradation of quality when working with these images. TIFF files are sharp and clear, but they’re very large, so they’re usually not suitable for use on Web sites or sharing by e-mail.

**Graphics tools**

You can transform an image in many ways, such as cropping, resizing, touching up imperfections, adding 3-D effects, and more, and a good tool gives you more control over how the image is displayed. You can choose from many graphics tools. Some are free (called freeware), and some are shareware, meaning you can use the software for a trial period with the understanding that you have to pay for it later. Other tools are available for purchase, and some offer a trial version that allows you to see whether you like the product before you buy it. Trial versions often don’t include all the features of the commercial version, however.

Some popular graphics tools are Adobe Fireworks, Corel Paint Shop Pro, and Adobe Photoshop. Each product has advantages and disadvantages, and everyone has different opinions about them. It’s like asking your friends “What’s the best car to buy?” The best way to decide which product meets your needs is to download a trial version and try it. You can also check magazines or the Internet for reviews. Keep in mind that the more features a tool offers, the steeper the learning curve is.

Graphics tools are usually tailored for specific tasks and users. For example, Fireworks is aimed at Web designers, and Paint Shop Pro is a good choice for people who want many creating and editing features but a lower cost than for other graphics software. Photoshop, a standard professional graphics tool, is geared more toward graphics designers or people who want a lot of control over image properties. Many people say that if you can’t do it in Photoshop, you probably don’t need to do it!
OpenOffice includes a graphics package called Draw for creating charts, diagrams, and more.

creating diagrams and flowcharts

Just as a builder needs a set of blueprints to construct a building, a software developer needs blueprints to construct a program. These blueprints are made up of Unified Modeling Language (UML) diagrams and flowcharts created with diagramming tools.

As you learned in Chapter 13, a flowchart is a diagram consisting of standard symbols that illustrate the logical steps in creating a program. Software developers use flowcharts as a roadmap for how a system should be developed. One diagramming tool that incorporates many of the features they need is Microsoft Visio (see Figure 9). It enables you to create not only flowcharts, but also a multitude of other diagrams that can be used in the software development process. Some diagrams you can create in Visio include networking layouts, organizational hierarchies, charts and graphs, maps, and software processes.

Figure 9, Creating a flowchart with Visio
You can create flowcharts in Microsoft Excel by using the Drawing toolbar and selecting the AutoShapes feature to create geometric shapes.

using IDEs

In Chapter 14, you learned that an integrated development environment (IDE), also called a programming environment, consists of the workspace and programming tools that support the language you’re using. An IDE for a programming language, for example, might include a text editor, compiler, and debugger, all of which are started from a common menu.

Have you ever gone shopping for an item and found yourself staring at rows and rows of similar items, unsure which one would work best for you? Choosing a programming environment can create a similar dilemma. There are so many different languages, and each vendor or creator of a language claims it solves all the problems of application development. Some claim their languages are easier to use, and others claim their languages are more efficient. In reality, each language has its own strengths and weaknesses. Not all people like the same languages, and some languages are better for certain tasks than others.

Chapter 14 gave you an overview of some programming languages you might learn in your career, such as C/C++, Java, Perl, Visual Basic, and more. Many programmers learn more than one language but often have a preference for one to write programs. Sometimes you don’t get to choose the language for a project, however, because the client or your company dictates the programming environment.

Some supporting tools to consider when choosing an IDE are as follows:

- Program editor
- Component or object editor
- Graphics editor
- Compiler and linker
- Project manager
- Debugger
- Help system

Choosing the right programming tool for your project is essential. Otherwise, you might end up using an outdated or unsuitable tool that simply won’t create a product that’s acceptable to end users. You wouldn’t use a hammer to remove a screw, right? In the same way, using the right programming tool helps you get your job done more efficiently. One way to determine which programming languages you should learn is examining the current job market. Find which languages are listed most often in job postings. This information can be a good indicator of what you need to learn to make yourself marketable.
Programming tools are everywhere: free tools, ones you can try before you buy, and expensive packages that do every programming task imaginable. Throughout your computing education, you'll learn to use some of these tools, but keep in mind that you'll have to continue learning new tools in your career. The world of software development changes constantly. If you learn only one tool, you'll soon find that your knowledge is out of date, and your skills aren’t marketable.

Some widely used IDEs include the following:

- Embarcadero C++ Builder
- Embarcadero Delphi
- Embarcadero JBuilder
- Microsoft .NET platform (includes VB .NET, C# .NET, and C++ .NET)
- Microsoft Visual Studio
- CodeWarrior (Macintosh and Linux)

Each has advantages and disadvantages, and developers staunchly support their preferred tools. Selecting a programming environment is much like buying a car. You need to test-drive quite a few before you know which one you’re most comfortable with.

**working with databases**

Another tool to add to your computing toolbox is one for working with databases. You learned the basic components of databases in Chapter 6: tables, rows (records), and columns (fields). Databases are used in many different applications and Web sites to store information and work with it more efficiently. Can you imagine creating and maintaining the data in a phone book as a text file? Every time a phone number was added, dropped, or changed, you would have to search for it manually, and after you finally found it, enter the changes. Retrieving specific data, such as listing all phone numbers in one town, would be almost impossible. With databases, these tasks are a snap when you use a database management system (DBMS) to extract, organize, and maintain the stored data.

As with programming languages, there’s a wide variety of database formats distinguished by popularity, price, and functionality. Many companies and schools use Oracle, SQL Server, and sometimes Microsoft Access. Oracle and SQL Server are the most widely used DBMSs in business; SQL Server is less expensive than Oracle, an important factor for many companies. MySQL, an open-source version of SQL Server, is becoming popular for Web development.

For smaller databases, Microsoft Access, which is included with the Office suite, is often used. It has a visual interface for working with data (see Figure 10). Although it doesn’t have the sophisticated features of DBMSs such as Oracle and SQL Server, it’s suitable for home and small office use and is easy to use.
A free alternative to Access is OpenOffice’s Base, which also has a visual interface and many of the same features as Access (see Figure 11).

Figure 10, Access has a visual interface for working with databases

Figure 11, Base is the OpenOffice database tool
providing technical support

If you write a program, you're probably going to end up supporting it. If you do, you might want to use a remote access tool, such as pcAnywhere, which enables you to connect over the Internet to another person's computer and take control of it as though you were sitting in front of it. With remote access tools, all the work you do is displayed on both your computer and the remote computer. As long as both computers have the tool installed, one can access the other, which is useful when a support technician is trying to help an end user with a technical problem. The support technician can take control of the remote computer to solve problems and even offer technical training.

A similar option is using a service, such as LogMeIn.com, that gives you remote access to your computer via the Internet. It's safe, secure, and convenient when you need to grab a file or use an application but aren't sitting in front of your computer.

**note**

Virtual Network Computing (VNC) is a free open-source remote access tool that you can download at [www.realvnc.com](http://www.realvnc.com).

**Internet tools**

The Internet is pervasive in your daily life, and it plays a major role in almost all businesses. No doubt you use it for research on school and personal projects and for communicating via e-mail and instant messaging. Computing tasks that make use of the Internet include Web browsing, e-mailing, transferring files, and developing Web pages. Because you're already familiar with Web browsing and e-mailing, this section focuses on transferring files and developing Web pages.

**compressing files**

Before you get into transferring files, you should know a little about compressing them. Sending large files by e-mail can be frustrating, especially if you don't have a high-speed connection. Even if you do have a fast connection, some e-mail programs have limits on the size of file attachments. As you learned in Chapter 10, file compression is used to reduce file size, which makes sending files via e-mail faster. You can also use compression to reduce file size when you're storing files on removable media, such as USB drives. To restore a compressed file to its original format, you uncompress it.
Many different compression algorithms are used to compress files. Some common ones include run-length encoding (RLE), Lempel-Ziv-Welch (LZW), Deflate (used in the .zip format), and Huffman. These algorithms, which are based on mathematical functions, are quite complex. Although average users don't need to know which algorithms they're using, computing professionals often need to compare their advantages and disadvantages to make sure they're using the correct one for the job at hand.

In addition, several compression tools have their own format, including the following:

- **.zip**—The most widely used format; used in Windows, Macintosh, and UNIX
- **.tar.gz**—Used in UNIX/Linux, typically for distributing source code
- **.lzh or .lha**—Format used in LHA, a freeware compression utility; most popular now in Japan
- **.rar**—Used in the WinRAR compression tool (described in the following paragraph)
- **.sit**—Format used in StuffIt, a Macintosh compression utility

A popular Windows compression tool is WinZip (www.winzip.com). This tool supports .zip, .tar, and other formats. It's easy to use, inexpensive, and dependable. Another popular, inexpensive compression tool is WinRAR (www.rarlab.com). It supports a wide range of compression formats.

Current versions of Windows have built-in file compression tools. In Windows XP and Vista, for example, you simply open Windows Explorer, right-click the file or folder you want to compress, point to Send to, and then click Compressed (Zipped) Folder. The file or folder is then compressed in a zip file in a new folder shown with a zipper icon (see Figure 12). To see all the compressed files in this folder, just double-click it (see Figure 13). You can create a compressed file and then add files to include in the compressed file. To uncompress a zipped file, typically you just double-click it to open it. You can then extract all files or just selected files from the compressed file.

In UNIX and Linux, file compression is slightly more cumbersome. If you want to combine more than one file in a larger file and then compress it, you have to perform a couple of steps. First, you use the tar utility to combine files into one larger file. Second, you compress the larger file with the compress or gzip utility. The final result is a compressed file, containing one or more files, with the extension tar.gz. To uncompress the file, you use the uncompress or gunzip utility.
Even though most current operating systems have built-in compression tools, sometimes they’re not adequate for compressing files from several different folders. In this case, a compression tool, such as WinZip or WinRAR, is a must-have in your toolbox. Now if only someone could come up with a compression tool for body fat!

**transferring files**

Sometimes e-mailing attachments just doesn’t work because the e-mail account you’re sending to has a limit on the size or type of files it can receive.
In addition, placing files in a common location where many users can
download and have access to them is more efficient sometimes. Instead of
e-mailing files and worrying about viruses, attachments, and blocked trans-
fers, many computing professionals use a File Transfer Protocol (FTP) tool to
transfer files and to store programs, documents, and other files.

FTP is used to send files across an Internet connection to a storage location
called an FTP site, which is defined by an FTP address in this basic format:

```
```

In this address, `myftpsite` is the FTP site location, and `filename` is the
name of the file you want to access. Some FTP sites require logging on with a
username and password. Other sites don’t restrict who can access the files. As
with e-mail attachments, you can compress files you want to post (upload) to
an FTP site.

You can think of an FTP site as another directory on your computer that you
access through the Internet with an FTP tool. In this way, an FTP site can act
as a network drive, allowing you to upload files to the network and download
files to your computer.

Many FTP software packages are available, such as Windows Secure Copy
(WinSCP, `http://winscp.net/eng/index.php`), a free FTP tool (see Figure 14). It
uses the Secure Shell (SSH) protocol to send files over a secure channel or path.

Figure 14, Logging on to an FTP site with WinSCP
Some operating systems have built-in FTP tools, such as the `ftp` command in UNIX and Linux, but generally, they’re not as user friendly as commercial tools.

**developing Web sites and pages**

Another tool for your toolbox is one for creating and maintaining Web sites and pages. In the early days of the Internet, developers had to write code by hand to create Web pages, but Web development software has made this task much easier. Millions of people have their own Web sites, from your grandmother to your 8-year-old next-door neighbor. Creating a professional-looking Web site, however, takes a little more effort and, of course, the right tool.

Oh, what a tangled Web we weave when first we practice to write Web pages. Well, Sir Walter Scott wasn’t talking about Web pages, but if you choose the right Web development tool, you can create Web pages that look good. Many different tools are available, but using one with a visual interface that shows you what a page will look like in a browser is more efficient.

One widely used software package for developing Web sites is Adobe Dreamweaver CS4 (www.adobe.com/products/dreamweaver/). Dreamweaver is targeted more to professional Web designers because of its many sophisticated features and supporting tools. However, some understanding of the source code it generates is useful. Much of Dreamweaver’s power comes from designing your pages in a *What You See Is What You Get (WYSIWYG)* format, and then enhancing Web pages by modifying the underlying code.

Before you choose a Web development tool, contact your Internet service provider and see what it recommends and supports. Many ISPs offer free tools and technical support.

**extra Web tools**

In addition to Web development tools, other tools can enhance your Web site. Users like dynamic, attractive features, and tools such as Adobe Flash MX can help you spice up how your site delivers content to visitors. You use Flash to create animation and interactive features that capture visitors’ attention and make them want to come back for more.

As a Web developer, you should focus on two goals: getting users to visit your site and keeping them coming back. Adding interactivity with a tool such as Flash is one way to keep users excited about your Web site. If you want to gain an advantage over other Web developers, add Flash to your Web development toolbox.
For tips on designing Web pages, see Chapter 11, “The Human-Computer Interface.”

**one last thought**

Now that you’ve been introduced to the variety of tools available for the computing tasks you need to do, it’s time to start learning how to use ones you might not be familiar with. Learning how to use any tool takes commitment and an investment of time and effort. Downloading trial versions, if they’re available, is smart so that you can evaluate which ones you like before spending the money to buy the full version. Getting to know the tools that can help you do your job quickly and efficiently is important, but staying on top of new and changed tools is essential so that your knowledge and skills don’t become stagnant. In the field of computing, you can’t afford to have outdated knowledge because doing so can compromise your marketability.

**chapter summary**

- As a student and a computing professional, you need a variety of tools to perform different tasks.
- You can create documents with a word processor, a text editor, or a desktop publisher.
- To create presentations incorporating multimedia, spreadsheets, and other items of visual interest, you use presentation software.
- Spreadsheet tools are helpful when you’re creating budgets or other documents and you need to perform calculations on numbers.
- Project leaders often use project management software to define tasks, track progress, and manage costs and resources.
- You can use a variety of graphics formats, such as BMP, GIF, JPG, and TIFF. Each one is suitable for different purposes.
- An IDE or programming environment makes program development easier and contains several tools, such as compilers and debuggers, that support the programming language you’re using.
- Commonly used database tools are Oracle, SQL Server, Microsoft Access, OpenOffice Base, and MySQL.
- Files can be compressed to reduce their size, which is handy when you’re e-mailing or uploading files or storing them on removable media. Restoring compressed files to their original state is called uncompression.
- Most operating systems have built-in compression tools, but for some compression tasks, buying a tool such as WinRAR or WinZip is helpful.
• FTP tools are used to upload and download files at an FTP site and are useful when you want to share a file with several people or have a file that’s too large to e-mail.

• A WYSIWYG format is helpful for designing Web pages. To add visual interest to your Web site, you can include animation and interactive features with tools such as Flash.

**key terms**

- **BMP (bitmap)** (14)
- **desktop publisher** (8)
- **freeware** (15)
- **GIF (Graphics Interchange Format)** (14)
- **JPEG (Joint Photographic Experts Group)** (15)
- **presentation tool** (9)
- **project management software** (12)
- **shareware** (15)
- **spreadsheet** (10)
- **text editor** (7)
- **TIFF (Tag Image File Format)** (15)
- **What You See Is What You Get (WYSIWYG)** (24)
- **word processor** (6)

**digging deeper**

1. List as many features as you can think of that a good word processor should have.

2. What compression methods are used in recent versions of Windows?

3. If you’re saving compressed files to removable media, what do you do if the files are larger than the storage medium? Can the files be stored on more than one medium, such as several CDs or flash drives?

4. Name some other graphics formats in addition to the ones mentioned in this chapter. How and when should they be used?

5. Different protocols can be used when transferring files via FTP. What’s the difference between SFTP and FTPS?
discussion topics

1. If you could have only one tool discussed in this chapter, which one do you think would be the most beneficial for a computing professional?

2. What criteria should you use to determine the best tool for a task?

3. What do you think an essential tool will be for computing professionals in the future?

4. Why is continuing to learn about available tools important in your career?

5. Some tools discussed in this chapter are open source. With hackers and aggressive competition in the software industry becoming more prevalent, how can you feel confident in using an open-source tool? What’s the likelihood of potential risks from competitors or hackers having access to code and even participating in making changes to software tools?

Internet research

1. What are the advantages and disadvantages of using commercial compression tools, such as WinZip and WinRAR, compared with using built-in operating system tools?

2. What’s the process for participating in open-source projects, such as OpenOffice? How do you suggest changes in software?

3. What are the potential dangers of installing remote access software, such as pcAnywhere and LogMeIn, on your computer?

4. If you wanted to create your own video game, what kind of tools would you need? Are any free tools available for download? If so, share the URLs with the class.