



សាកលវិទ្យាល័យភូមិន្ទភ្នំពេញ

ROYAL UNIVERSITY OF PHNOM PENH

CHAPTER

4

Software and Mobile Applications

MIS

Chea Daly



Why Learn about Software and Mobile Applications?

- ❑ Software is indispensable for any computer system and the people using it.
- ❑ The operating system is sometimes called the “soul of the computer,” and without it, you would be unable to enter data into your computer, perform meaningful work, or display results.
- ❑ You use application software to help you accomplish tasks that enable you to accomplish tasks efficiently and effectively.



Why Learn about Software and Mobile Applications?

- ❑ Sales representatives use software on their smartphones and tablet computers to enter sales orders and help their customers get what they want.
- ❑ Stock and bond traders use software to make split-second decisions involving millions of dollars.
- ❑ Scientists use software to analyze the threat of climate change.



Why Learn about Software and Mobile Applications?

- ❑ Regardless of your job, you will likely use software to help you advance in your career and earn higher wages.
- ❑ You can also use software to help you prepare your personal income taxes, keep a budget, and stay in contact with friends and family online.
- ❑ Software can truly advance your career and enrich your life.



An Overview of Software

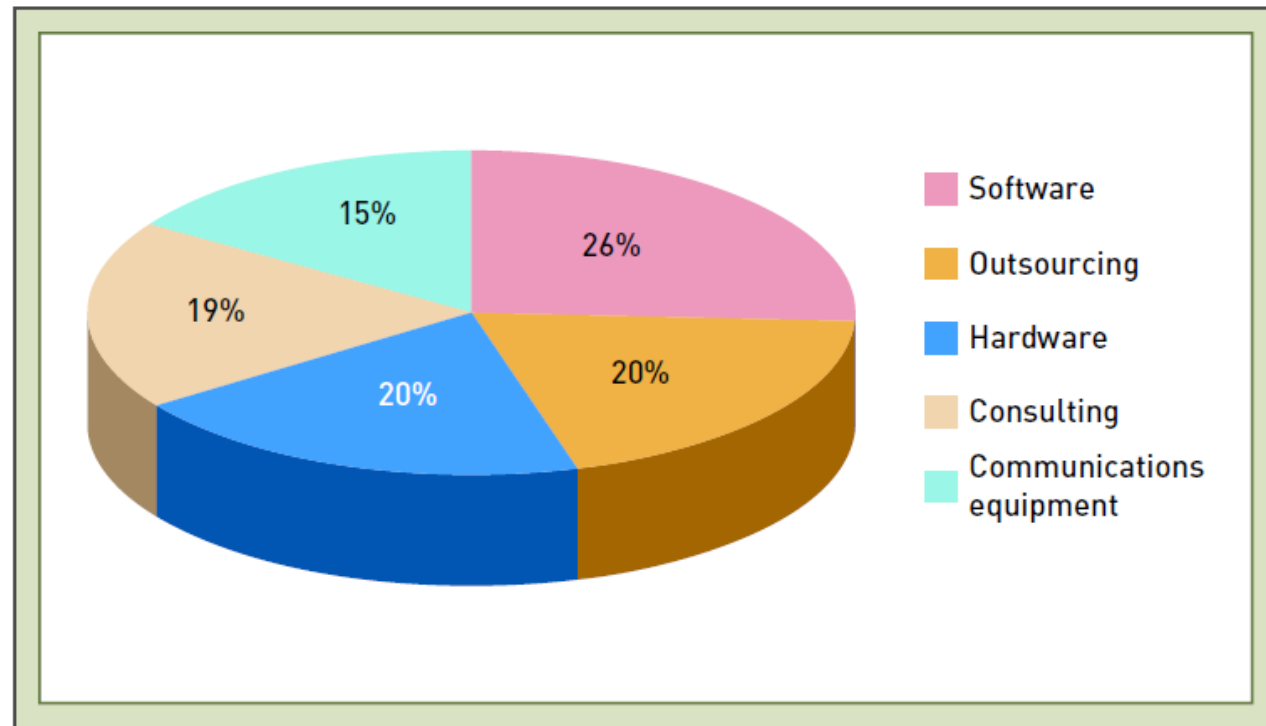
- ❑ **Software** consists of computer programs that control the workings of computer hardware.
- ❑ Software can be divided into two types:
 - ❑ Systems software
 - ❑ Such as operating systems, drivers.
 - ❑ Application software
 - ❑ Such as Microsoft office, photoshop.



Software Expenditures

FIGURE 4.1
Software expenditures exceed spending on hardware

Since the 1950s, businesses have substantially increased their expenditures on software compared with hardware.





Software Expenditures

- As Figure 4.1 shows, companies recognize this impact; globally, spending on software now exceeds other IT expenditures, including spending on computer hardware.
- This is far different from when computers first were available; software was given away and customers paid only for the hardware.



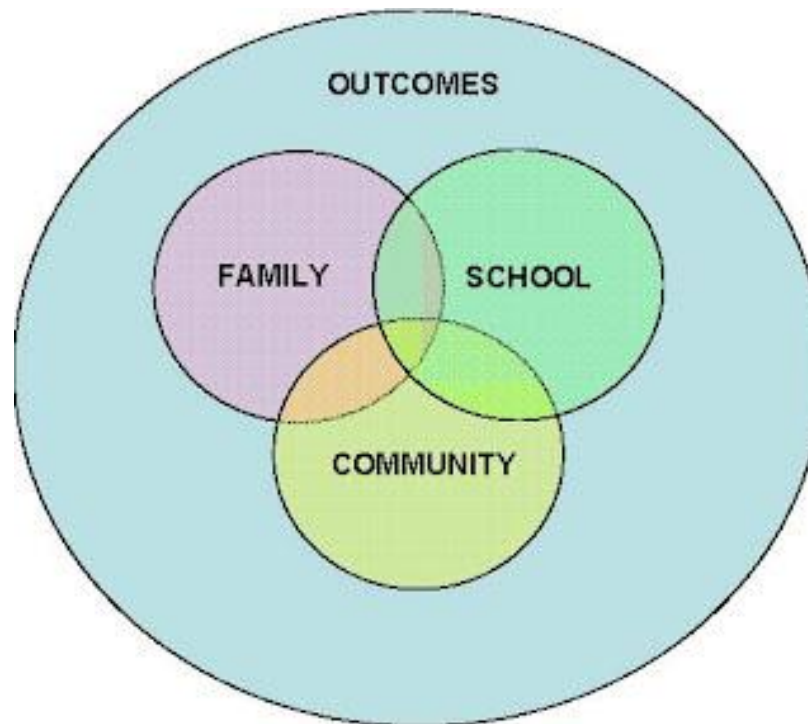
Sphere of Influence

- Every organization relies on the contributions of individuals and groups across the enterprise to achieve its business objectives.
- One useful way of classifying the many potential uses of information systems is to identify the **sphere of influence**.



Sphere of Influence

- The concept of spheres of influence is a systematic way to view how your surrounding environment influences who you are and who you will become.





Sphere of Influence

- ❑ As the diagram above illustrates how each part of your life overlaps and affects the outcomes in your life.
- ❑ Individuals fall somewhere in the smaller triangular shaped curve where all three spheres overlap.
- ❑ One can not insulate themselves from these affects but one can focus on one sphere more than another to create more productive outcomes.



Sphere of Influence

- ❑ In businesses, **sphere of influence** is a scope of problems and opportunities that are addressed by a particular organization.
- ❑ For most companies, the spheres of influence are personal, workgroup, and enterprise.



Personal Sphere of Influence Information Systems

- ❑ Information systems that operate within the **personal sphere of influence** serve the needs of individual users.
- ❑ These information systems help users improve their personal effectiveness, increasing the amount and quality of work they can do. Such software is often called **personal productivity software**.
- ❑ For example, VIP Organizer is personal productivity software designed to help users develop to do lists, categorize tasks, keep notes and records in a single database, report on performance, and set deadlines and priorities.



Workgroup Sphere of Influence Information Systems

- When two or more people work together to achieve a common goal, they form a **workgroup**.
- Workgroups include large, formal, permanent organizational entities, such as sections or departments, as well as temporary groups formed to complete a specific project.



Workgroup Sphere of Influence Information Systems

- Information systems that operate within the **workgroup sphere of influence** helps workgroup members attain their common goals.
- Example: IBM Notes provides collaboration features such as team calendars, email, to-do lists, contact management, discussion forums, file sharing, instant messaging, etc.



Enterprise Sphere of Influence Information Systems

- Information systems that operate within the **enterprise sphere of influence** support an organization in its interactions with its environment, including customers, suppliers, shareholders, competitors, government agencies, etc.
- For example, IBM's Cognos software is used as a centralized Web-based system where employees, stakeholders and partners can submit and study enterprise's financial data.



Software Sphere of Influence

A table below shows how various kinds of software support these three spheres.

TABLE 4.1 Software supporting individuals, workgroups, and enterprises

Software Type	Personal	Workgroup	Enterprise
Systems software	Smartphone, tablet, personal computer, and workstation operating systems	Network operating systems	Server and mainframe operating systems
Application software	Word-processing, spreadsheet, database, and graphics programs	Email, group-scheduling, shared-work, and collaboration applications	General-ledger, order-entry, payroll, and human-resources applications



Systems Software

- ❑ The primary role of system software is to coordinate and control the operations and functions of computer hardware and other programs.
- ❑ System software can be divided into three types:
 - ❑ Operating systems
 - ❑ Utility programs
 - ❑ Middleware



Operating Systems

- ❑ Operating system (OS) is a set of computer programs that controls the computer hardware and acts as an interface to application software.



Operating Systems

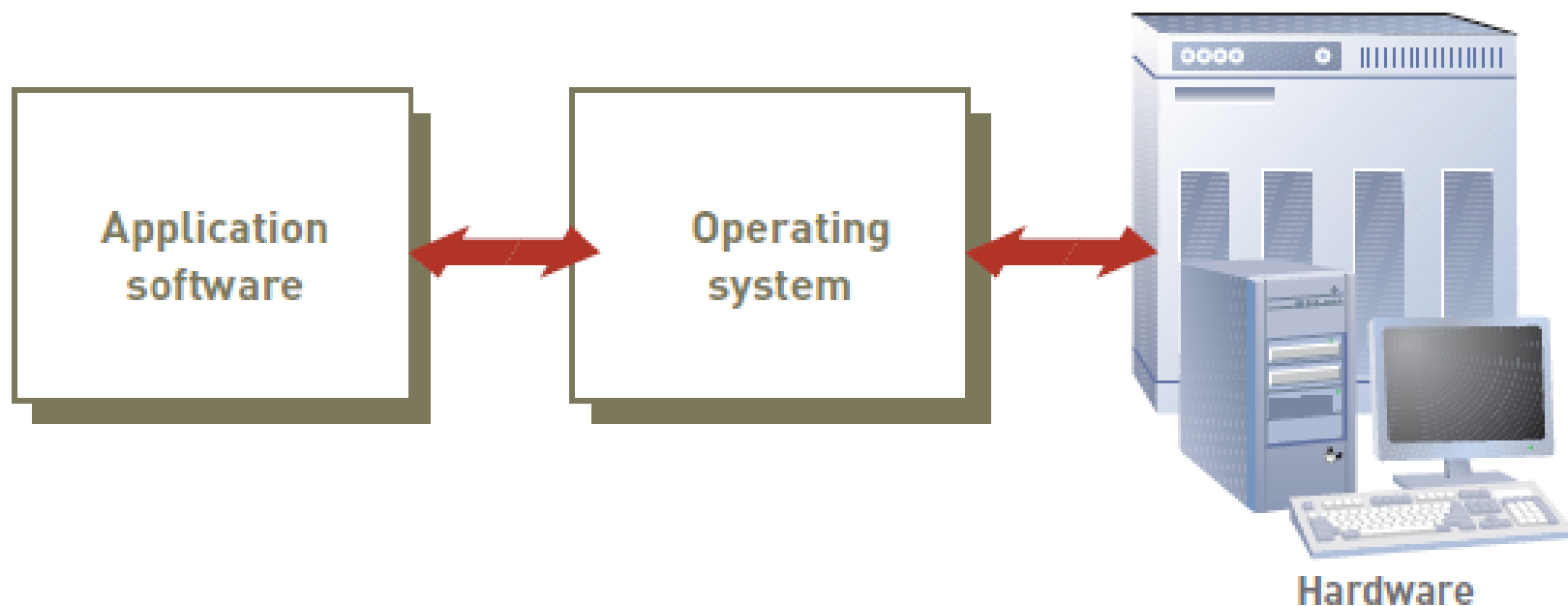


Figure 4.2

The Role of Operating Systems

The role of the operating system is to act as an interface between application software and hardware.



Operating System Components

- Most of the operating systems share similar OS system components:





Current Operating Systems

- Today's operating systems incorporate sophisticated features and impressive graphic effects.



Current Operating Systems

TABLE 4.2 Operating systems by sphere of influence

Personal	Workgroup	Enterprise
Microsoft Windows	Microsoft Windows Server	Microsoft Windows Server
Mac OS X, iOS	Mac OS X Server	
Linux	Linux	Linux
Google Android, Chrome OS	UNIX	UNIX
HP webOS	IBM i and z/OS	IBM i and z/OS
	HP-UX	HP-UX

Table 4.2 classifies a few current operating systems by sphere of influence.



Current Operating Systems

- ❑ From time to time, software manufacturers drop support for older operating systems—meaning that although computers and software running under these operating system will continue to run, the operating system manufacturer will no longer provide security fixes and updates.
- ❑ Without such patches, the users' computers are more susceptible to being infected by viruses and other malware.



Current Operating Systems

- For example, Google announced that in 2016 it would be ending its support for its Chrome browser on Windows XP and Vista as well as on Mac OS X 10.6, 10.7, and 10.8.
- Google chose to drop support for these operating systems because they are no longer actively supported by Microsoft and Apple, respectively.



Current Operating Systems

- ❑ Discontinuance of support is a strong reason to upgrade to new software.
- ❑ For example, on November 7, 2015, planes were grounded for several hours at Paris' busy Orly airport when a computer that links air traffic control systems with France's main weather bureau stopped working. The computer was running on Windows 3.1, a 23-year-old operating system dropped from support by Microsoft over a decade ago.



Mobile Operating Systems

- Smartphones now employ full-fledged personal computer operating systems such as the Google Android, Apple iOS, and Microsoft Windows Phone that determine the functionality of your phone and the applications that you can run.



Mobile Operating Systems

TABLE 4.5 Comparison of smartphone operating systems

Smartphone Operating System	Worldwide Market Share of Sales during 2Q 2015	Estimated Total Number of Applications	Estimated Rate of Increase in Number of New Applications
Google Android	82.8%	1,824,500 (Nov 2015)	980/day
Apple iPhone OS (iOS)	13.9%	1,500,000 (July 2015)	667/day
Microsoft Windows Mobile (to be replaced by Windows 10 Mobile)	2.6%	300,000 (June 2014)	550/day
Blackberry OS	0.3%	Not available	Not available



Mobile Operating Systems

TABLE 4.6 Worldwide market share of tablet computer operating systems

Table Computer Operating System	Worldwide Market Share
Android	67%
iOS	28%
Windows	5%



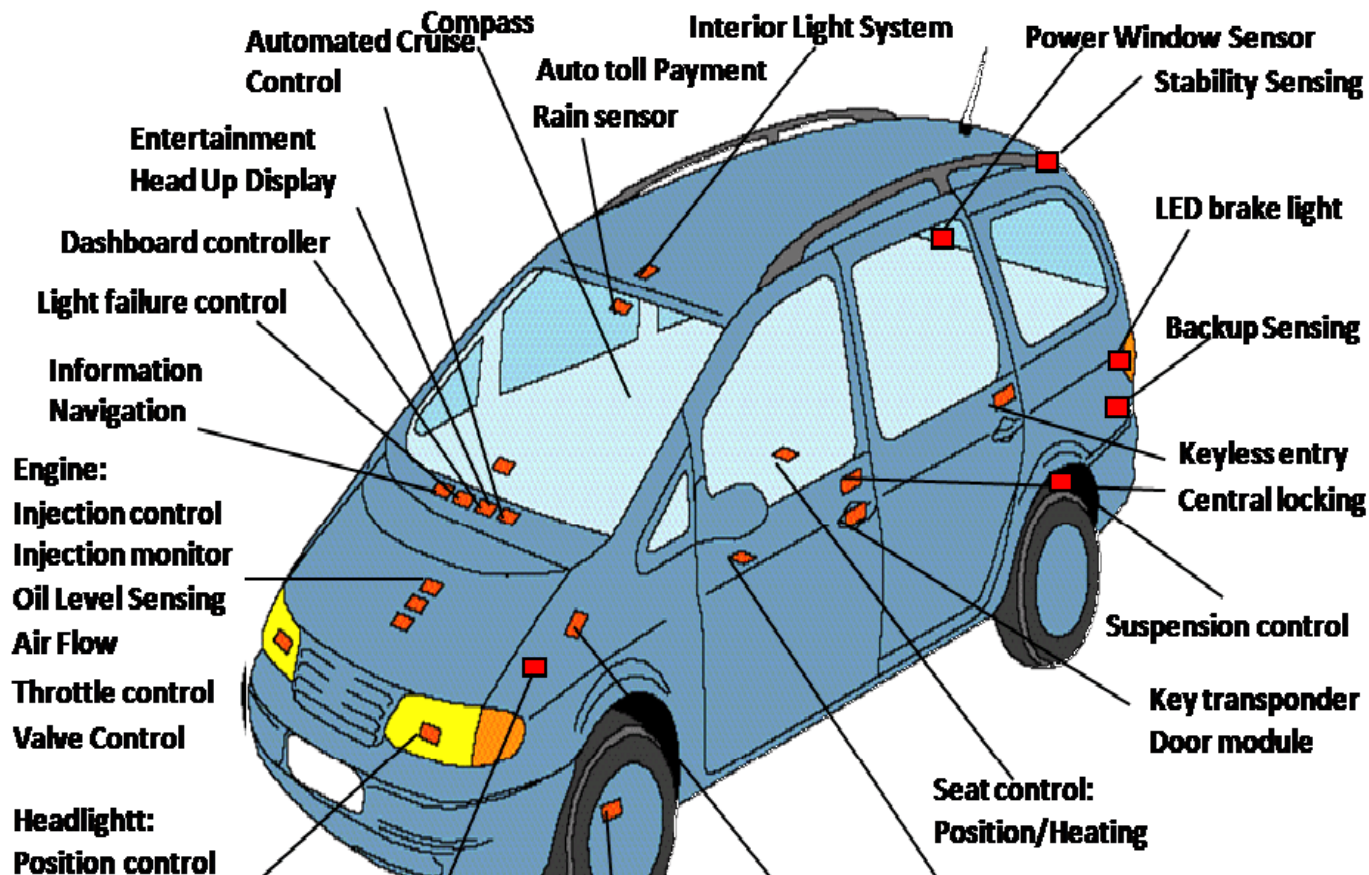
Embedded Systems

- ❑ An embedded system can be an independent system or it can be a part of a large system.
- ❑ Embedded systems are designed to do some specific task, rather than be a general-purpose computer for multiple tasks.
 - ❑ For example, an embedded system in an automobile provides a specific function as a subsystem of the car itself.
- ❑ Modern embedded systems are often based on microcontrollers.





Embedded Systems Example





Utility Programs

- Utility program is a system application that executes a specific task, generally pertaining to optimal maintenance or operation of the system resources.
- Operating systems such as Windows, macOS and Linux come with their own set of utility programs to maintain and execute different utility functions such as formatting, compressing, scanning, exploring and much more.



Utility Programs



Deleting data



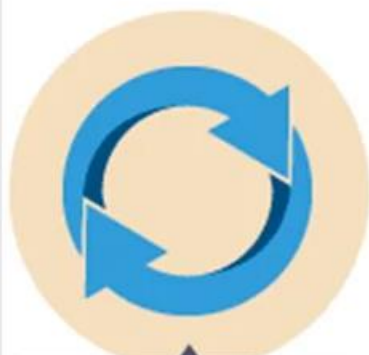
Disk defragmentation



User accounts and security



Anti-virus software



Software updates



System cleanup



Encryption/decryption



Formatting



Utility Programs

- ❑ **Utility programs** perform a variety of tasks typically related to system maintenance or problem correction.
- ❑ Common types of utilities:
 - ❑ Hardware utilities
 - ❑ Security utilities
 - ❑ File-compression utilities
 - ❑ Spam-filtering utilities
 - ❑ Network and Internet utilities
 - ❑ Server and mainframe utilities



Utility Programs

- ❑ Sysinternals Suite is a collection of Windows utilities that can be downloaded for free from the Microsoft Technet Web site.
- ❑ These utilities can be used to boost the performance of a slow PC, repair errors in the registry and on a hard drive, remove unnecessary files, improve system security and privacy, etc.



Middleware

- ❑ Middleware is software that provides messaging services that allow different applications to communicate and exchange data.
- ❑ It is implemented to address situations in which a company acquires different types of information systems that need to share data and interact.



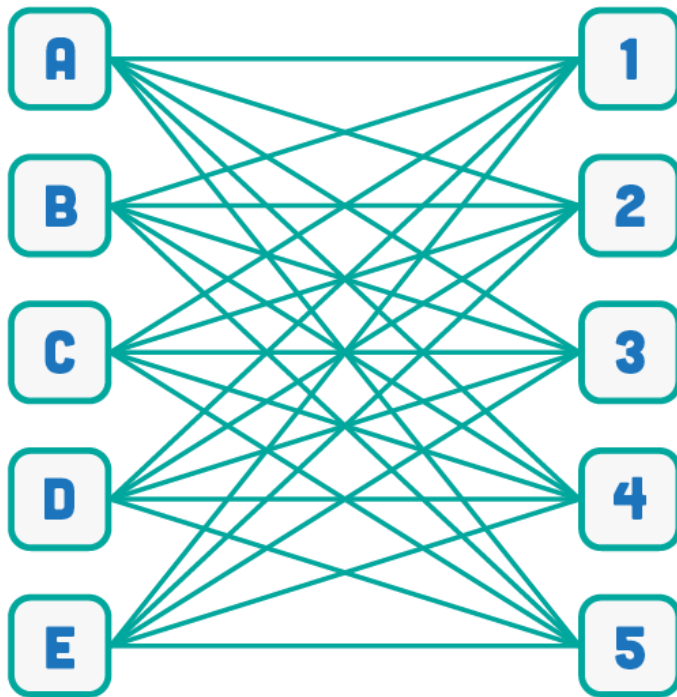
Middleware

- By using middleware, the two systems are not forced to talk directly to each other, but to communicate through the middleware.
- Because middleware is the communication channel between the systems, all monitoring of the integration takes place in one system. This allows you the opportunity to execute built-in redundancies, backups, alerts, and monitors within that one system.

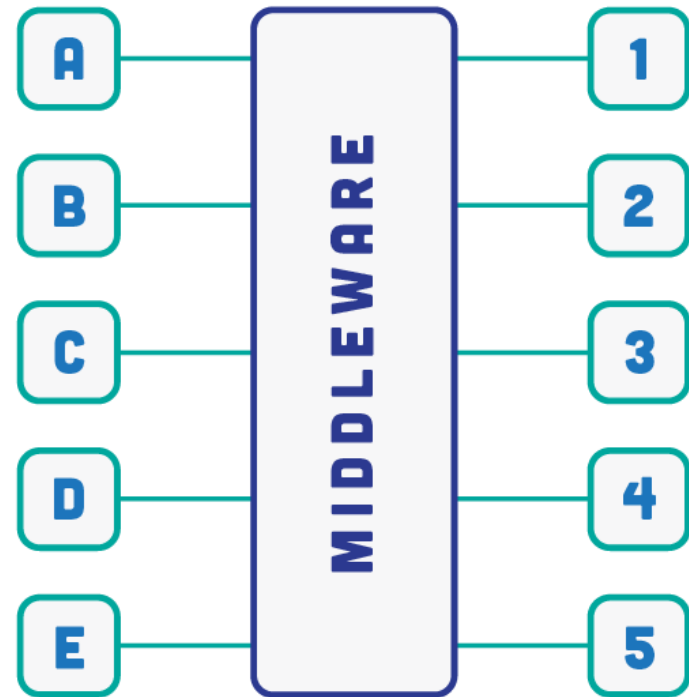


Middleware

WITHOUT MIDDLEWARE



WITH MIDDLEWARE





Middleware

- By using middleware, it allows both systems to operate independently. If one system is down for maintenance, the other system continues to operate. The messages between the two simply queue up in the middleware system until the other side becomes available.



Service-oriented Architecture

- The use of middleware to connect disparate systems has evolved into an approach for developing software and systems called SOA.
- **Service-oriented architecture (SOA)** is a software design approach based on the use of discrete pieces of software (modules) to provide specific functions (such as displaying a customer's bill statement) as services to other applications.



Service-oriented Architecture

- ❑ SOA is composed of **services**.
- ❑ A service is an application that offers **operations**.
- ❑ SOA Vs. OO:

Service-oriented

Services

Operations

Object-oriented

Objects

Methods



Service-oriented Architecture

- SOA defines a way to make software components reusable via service interfaces. These interfaces utilize common communication standards in such a way that they can be rapidly incorporated into new applications without having to perform deep integration each time.



Application Software

- ❑ **Application software** consists of programs that help users solve particular computing problems.
 - ❑ Examples include a spreadsheet program or a program that captures and displays data that enables monitoring of a manufacturing process.



Application Software

- The primary function of application software is to apply the power of a computer system to enable people, workgroups, and entire enterprises to solve problems and perform specific tasks.
- Millions of software applications have been created to perform a variety of functions on a wide range of operating systems and device types.



Application Software

- The following are some of the dozens of categories of applications:

Business

Communications

Computer-aided design

Desktop publishing

Educational

Entertainment

Genealogy

Language

Legal

Library

Multimedia

Music

Personal information manager

Photography

Science

Simulation

Video

Video games



Application Software

- ❑ In almost any category of software, you will find many options from which to choose.
 - ❑ For example, Microsoft Edge, Mozilla Firefox, Google Chrome, Apple Safari, and Opera are all Web browsers that enable users to surf the Web.
- ❑ The availability of many software options enables users to select the software that best meets the needs of the individual, workgroup, or enterprise.



Application Software

- For example, Procter & Gamble Company (P&G), a large, multinational organization, chose the SAP Enterprise Resource Planning software with its vast array of options, features, and functionality to meet its complex global accounting needs.
- However, a small, neighborhood bakery might decide that Intuit's QuickBooks, an accounting software package designed for small businesses, meets its simple accounting needs.



Application Software

- ❑ Application software can also be stored on CDs, DVDs, and USB flash drives.
- ❑ An increasing amount of application software is available on the Web.
- ❑ Before a person, a group, or an enterprise decides on the best approach for acquiring application software, they should carefully analyze computing goals, needs, and budget.



Application Software

- There are two important types of application software:
 - Proprietary software
 - Off-the-shelf software



Proprietary Software

- ❑ **Proprietary software** is one-of-a-kind software designed for a specific application and owned by the company, organization, or person that uses it.
- ❑ Proprietary software can give a company a competitive advantage by providing services or solving problems in a unique manner— better than methods used by a competitor.



Off-the-shelf Software

- ❑ **Off-the-shelf software** is produced by software vendors to address needs that are common across businesses, organizations, or individuals.
- ❑ For example, Amazon.com uses the same off-the-shelf payroll software as many businesses, but on its Web site, the company uses custom-designed proprietary software, which allows visitors to more easily find items to purchase.

TABLE 4.7 Comparison of proprietary and off-the-shelf software

Proprietary Software		Off-the-Shelf Software	
Advantages	Disadvantages	Advantages	Disadvantages
You can get exactly what you need in terms of features, reports, and so on.	It can take a long time and a significant amount of resources to develop required features.	The initial cost is lower because the software firm can spread the development costs across many customers.	An organization might have to pay for features that it does not require and never uses.
Being involved in the development offers more control over the results.	In-house system development staff may be hard-pressed to provide the required level of ongoing support and maintenance because of pressure to move on to other new projects.	The software is likely to meet the basic business needs. Users have the opportunity to more fully analyze existing features and the performance of the package before purchasing.	The software might lack important features, thus requiring future modification or customization, which can be very expensive, and because users will eventually be required to adopt future releases of the software, the customization work might need to be repeated.
You can more easily modify the software and add features that you might need to counteract an initiative by competitors or to meet new supplier or customer demands.	The features and performance of the delivered software may fail to meet evolving business and end user needs.	The software is likely to be of high quality because many customer firms have tested the software and helped identify its bugs.	The software might not match current work processes and data standards.



Off-the-shelf Software

- ❑ Many companies use off-the-shelf software to support business processes.
- ❑ Key questions for selecting off-the-shelf software include the following:
 - ❑ Will the software run on the OS and hardware you have selected?
 - ❑ Does the software meet the essential business requirements?
 - ❑ Is the software manufacturer financially solvent and reliable?
 - ❑ Does the total cost of purchasing, installing, and maintaining the software compare favorably to the expected business benefits?



Cloud Computing

- ❑ Cloud computing: Use of computing resources on the Internet (the cloud) rather than on local computers.





Software as a Service (SaaS)

- ❑ Software-as-a-Service, or SaaS for short, is a cloud-based method of providing software to users.
- ❑ Users can log into and use a SaaS application from any compatible device over the Internet.
- ❑ The actual application runs in cloud servers that may be far from a user's location.



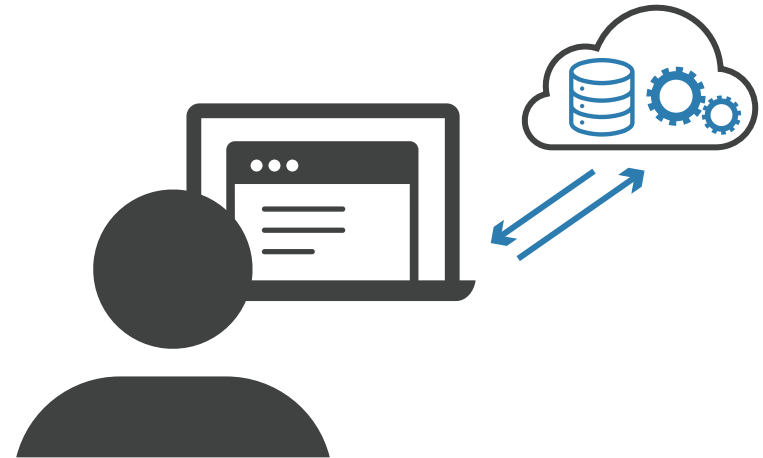
Software as a Service (SaaS)

Non-SaaS Application



Application logic runs
on user's computer

SaaS Application



Application logic runs
in the cloud



Software as a Service (SaaS)

- ❑ A SaaS application may be accessed through a browser or through an app.
- ❑ Online email applications that users access through a browser, such as Gmail, Office 365, Dropbox, are common examples of SaaS applications.



Software as a Service (SaaS)

- ❑ Software as a service (SaaS):
 - ❑ Allows businesses to subscribe to Web-delivered business application software by paying a monthly service charge or a per-use fee.
 - ❑ Can reduce expenses by sharing its running applications among many businesses.



Application Service Provider

- Application service provider (ASP):
 - Company that can provide software, support, and computer hardware on which to run the software from the user's facilities over a network.



Personal Application Software

- Hundreds of thousands personal software applications are available to meet the needs of individuals at school, home, and work—with new applications released on a daily basis.



Personal Application Software

- ❑ Thousands of personal computer applications perform specialized tasks that help users prepare their taxes, get in shape, lose weight, get medical advice, write wills and other legal documents, repair their computers, fix their cars, write music, and edit pictures and videos.
- ❑ This type of software, often called **user software** or **personal productivity software**, includes the general-purpose tools and programs that support individual needs.

TABLE 4.8 Examples of personal application software

Type of Software	Use	Example
Word processing	Create, edit, and print text documents	Apache OpenOffice Writer Apple Pages Corel Write Google Docs Microsoft Word WordPerfect
Spreadsheet	Perform statistical, financial, logical, database, graphics, and date and time calculations using a wide range of built-in functions	Apache OpenOffice Calc Apple Numbers Google Sheets IBM Lotus 1-2-3 Microsoft Excel
Database	Store, manipulate, and retrieve data	Apache OpenOffice Base Microsoft Access IBM Lotus Approach
Graphics	Develop graphs, illustrations, drawings, and presentations	Adobe FreeHand Adobe Illustrator Apache OpenOffice Impress Microsoft PowerPoint
Personal information management	Helps people, groups, and organizations store useful information, such as a list of tasks to complete or a set of names and addresses	Google Calendar Microsoft Calendar Microsoft Outlook

TABLE 4.10 Categories of mobile applications

Category	Description
Books and reference	Access e-books, subscribe to journals, or look up information on the Merriam-Webster or Wikipedia Web sites
Business and finance	Track expenses, trade stocks, and access corporate information systems
Entertainment	Access all forms of entertainment, including movies, television programs, music videos, and information about local night life
Games	Play a variety of games, from 2D games such as Pacman and Tetris to 3D games such as Need for Speed, Call of Duty, and Minecraft
Health and fitness	Track workout and fitness progress, calculate calories, and even monitor your speed and progress from your wirelessly connected Nike shoes
Lifestyle	Find good restaurants, make a dinner reservation, select wine for a meal, and more
Music	Find, listen to, and create music
News and weather	Access major news and weather providers, including Reuters, AP, the <i>New York Times</i> , and the Weather Channel
Photography	Organize, edit, view, and share photos taken on your phone's camera
Productivity and utilities	Create grocery lists, practice PowerPoint presentations, work on spreadsheets, synchronize with PC files, and more
Social networking	Connect with others via major social networks, including Facebook, Twitter, and Instagram
Sports	Keep up with your favorite team or track your own golf scores
Travel and navigation	Use the GPS in your smartphone to get turn-by-turn directions, find interesting places to visit, access travel itineraries, and more



Workgroup Application Software

- Workgroup Application Software is designed to support teamwork, whether people are in the same location or dispersed around the world.
- This support can be accomplished with software known as **Groupware** or **workgroup software** or called **collaborative software** which is a kind of software that helps groups of people work together more effectively.



Workgroup Application Software

- Examples of workgroup software include group-scheduling software, electronic mail, and other software that enables people to share ideas.



Workgroup Application Software

- Web-based software is ideal for group use. Because documents are stored on an Internet server, anyone with an Internet connection can access them easily.
- Example: Google provides workgroup options in its online applications, which allow users to share documents, spreadsheets, presentations, forms, calendars, etc.



“Three Cs” Rules for Groupware

Quality	Description
Convenient	If it's too hard to use, it's not used; it should be as easy to use as the telephone.
Content	It must provide a constant stream of rich, relevant, and personalized content.
Coverage	If it isn't conveniently accessible, it might never be used.



Enterprise Application Software

- ❑ Software that benefits an entire organization.
- ❑ There are many categories of enterprise software:

Accounts payable
Accounts receivable
Airline industry operations
Automatic teller systems
Cash-flow analysis
Check processing
Credit and charge card administration
Distribution control
Fixed asset accounting
General ledger
Human resource management
Inventory control

Invoicing
Manufacturing control
Order entry
Payroll
Receiving
Restaurant management
Retail operations
Sales ordering
Savings and time deposits
Shipping
Stock and bond management
Tax planning and preparation



Enterprise Application Software

- Enterprise resource planning (ERP) software refers to a type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, etc.



Enterprise Application Software





Enterprise Application Software

- The ability to extend enterprise applications so that they can run on smartphones and other mobile devices is increasingly becoming a priority for many organizations.



Enterprise Application Software

- Worldwide spending on enterprise software was estimated to be about \$310 billion in 2015. Most software spending goes to application software.

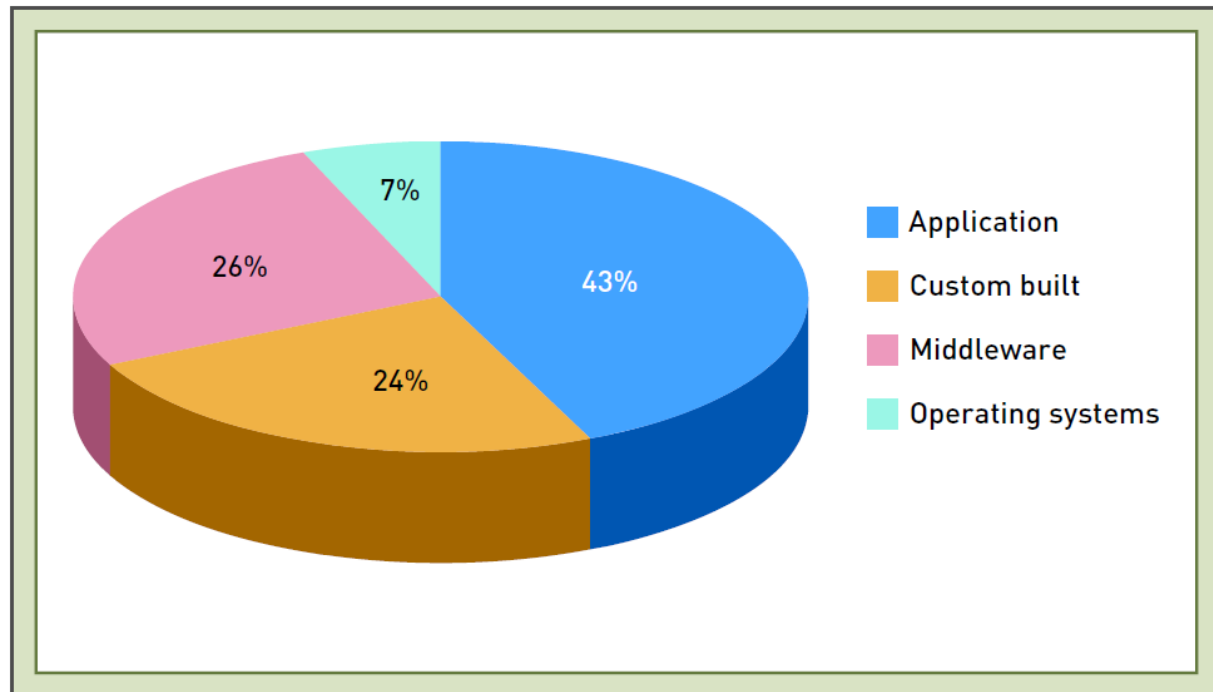


FIGURE 4.21

Spending by type of software

Of all software types, businesses spend the most on application software.



Specialized Application Software

- ❑ Specialized application software for learning enhancement and management, business analytics, information, decision support, and competitive advantage is available in every industry.



Specialized Application Software

- For example,
 - Many schools and colleges use learning management software to organize class materials and grades.
 - Genetic researchers use software to visualize and analyze the human genome.
 - Music executives use business analytics software to help them pick the next hit song.
- All these systems are developed through the use of **programming languages**.



Programming Languages

- ❑ **Programming Languages** are sets of keywords, commands, symbols, and rules for constructing statements by which humans can communicate instructions to a computer.
- ❑ The primary function of a programming language is to provide instructions to the computer system so that it can perform a processing activity.
- ❑ Information systems professionals work with different programming languages.



Programming Languages

- Programming involves translating what a user wants to accomplish into a code that the computer can understand and execute.
- **Program code** is the set of instructions that signal the CPU to perform circuit-switching operations.



Programming Languages

- Like writing a report or a paper in English, writing a computer program in a programming language requires the programmer to follow a set of rules.
- Each programming language has its own set of rules, called the **syntax**.
- The syntax dictates how the symbols, keywords, and commands should be combined into statements capable of conveying meaningful instructions to the CPU.

Top Programming Languages (Aug 2021)

1	Python	29.93 %
2	Java	17.78 %
3	JavaScript	8.79 %
4	C#	6.73 %
5	C/C++	6.45 %
6	PHP	5.76 %
7	R	3.92 %
8	Objective-C	2.26 %
9	TypeScript	2.11 %
10	Swift	1.96 %
11	Kotlin	1.81 %
12	Matlab	1.48 %



The Evolution of Programming Languages

Generation	Language	Approximate Development Year
First	Machine language	1940s
Second	Assembly language	1950s
Third	High-level language	1960s
Forth	Query and Database language	1970s
Fifth	Natural and Intelligent language	1980s



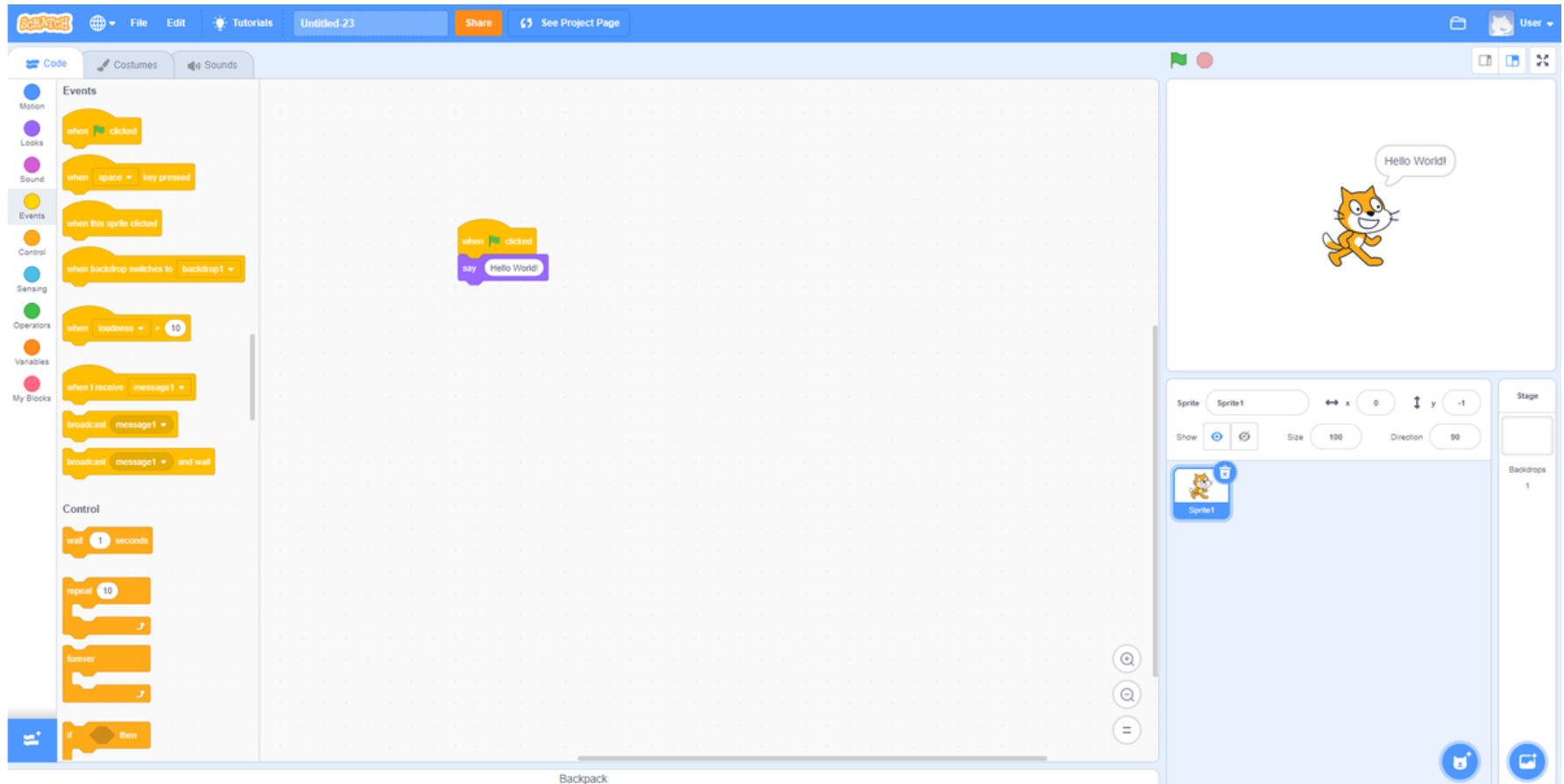
Visual Languages

- Visual programming:
 - Uses a graphical or “visual” interface combined with text-based commands.
 - Lets users create programs by manipulating program elements graphically rather than only by specifying them textually.



Visual Languages

Example: Scratch





Object-Oriented Languages

- ❑ Object-oriented programming languages are Programming languages that are based on objects.
- ❑ Example: Java, Python, C++, C#, R, PHP, JavaScript, etc.



Artificial Intelligence Languages

- Fifth-generation languages (5GLs):
 - Used to create Artificial Intelligence or Expert Systems Applications.
 - Example; Prolog, OPS5, and Mercury.

- Some 3GL are also widely used for Artificial Intelligence such as Python, R, C++, MATLAB, etc.



Compilers

- With higher-level programming languages, each statement in the language translates into several instructions in machine language.
- A special software program called a **compiler** translates the programmer's source code into the machine-language instructions, which consist of binary digits.

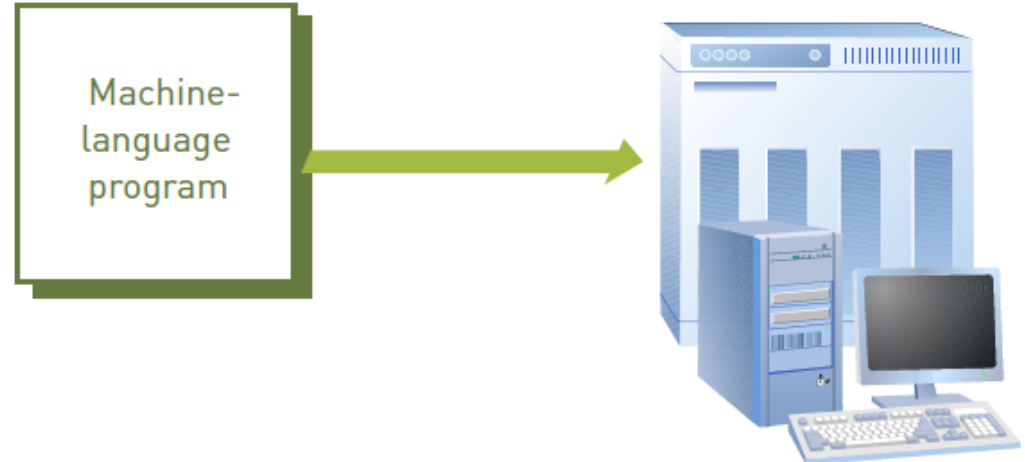
Stage 1:

Convert program



Stage 2:

Execute program



Program execution

FIGURE 4.22

How a compiler works

A compiler translates a complete program into a complete set of binary instructions (Stage 1). After this is done, the CPU can execute the converted program in its entirety (Stage 2).



Software Issues and Trends

- Because software is such an important part of today's computer systems, issues such as software bugs, copyrights and licensing, freeware and open-source software, upgrades, and global software support are receiving increased attention.



Software Bug

- ❑ Software bug:
 - ❑ Defect in a program that keeps it from performing as it should.
- ❑ Most computer and software vendors say that as long as people design and program hardware and software, bugs are inevitable.



Software Bug

The following list summarizes tips for reducing the impact of software bugs:

- ❑ Register all software so that you receive bug alerts, fixes, and patches.
- ❑ Check the manual or read-me files for solutions to known problems.
- ❑ Access the support area of the manufacturer's Web site for patches.
- ❑ Install the latest software updates.



Copyrights and Licenses

- Most software products are protected by law using copyright or licensing provisions:
 - In some cases, you are given unlimited use of software on one or two computers.
 - In other cases, you pay for your usage; if you use the software more, you pay more.
- Some software now requires that you *register* or *activate* it before it can be fully used.



Copyrights and Licenses

License	Description
Single-user license	Permits you to install the software on one computer, or sometimes two computers, used by one person.
Multiuser license	Specifies the number of users allowed to use the software, and the number that can be installed on each user's computer. For example, a 20-user license can be installed on 20 computers for 20 users.
Concurrent-user license	Designed for network-distributed software, this license allows any number of users to use the software, but only a specific number of users to use it at the same time.
Site license	Permits the software to be used anywhere on a particular site, such as a college campus, by everyone on the site.

Table 4.11



Freeware and Open-Source Software

- ❑ Freeware:
 - ❑ Software that is made available to the public for free.
- ❑ Open-source software:
 - ❑ Distributed, typically for free, with the source code.

TABLE 4.13 Examples of freeware

Software	Description
Adobe Reader	Software for viewing Adobe PDF documents
AVG Anti-Virus	Antivirus security software
IrfanView	Photo-editing software
Pidgin	Instant messaging software
Thunderbird	Email, news, and chat software
WinPatrol	Anti-malware software

TABLE 4.14 Examples of open-source software

Software	Category
Drupal	Web publishing
Gimp	Photo editing
Grisbi	Personal accounting
Linux	Operating system
Mozilla Firefox	Internet browser
MySQL	Database software
Apache OpenOffice	Application software
ProjectLibre Open Project	Project management



Open-Source Software

- ❑ Open-source software is not completely devoid of restrictions. Much of the popular free software in use today is protected by the GNU General Public License (GPL).
- ❑ GPL grants you the right to:
 - ❑ Run the program for any purpose.
 - ❑ Study how the program works and adapt it to your needs.
 - ❑ Redistribute copies so you can help others.
 - ❑ Improve the program and release improvements to the public.



Open-Source Software

- ❑ Why would an organization run its business using software that's free?
- ❑ The answer is surprising—many believe that open-source software is often more reliable and secure than commercial software. How can this be?
 - ❑ First, because a program's source code is readily available, users can fix any problems they discover. A fix is often available within hours of a problem's discovery.
 - ❑ Second, because the source code for a program is accessible to thousands of people, the chances of a bug being discovered and fixed before it does any damage are much greater.



Open-Source Software

- ❑ However, using open-source software does have some disadvantages.
 - ❑ Licensed software comes with guarantees and support services, whereas open-source software does not.



Software Upgrades

- ❑ Software companies revise their programs periodically. Software upgrades, which are an important source of increased revenue for software manufacturers, vary widely in the benefits that they provide, and what some people call a benefit, others might call a drawback.



Software Upgrades

- ❑ Deciding whether to upgrade to a new version of software can be a challenge for corporations and people with a large investment in software.
- ❑ Some users choose not to immediately download the most current software version or upgrade unless it includes significant improvements or capabilities.



Global Software Support

- ❑ Can those same vendors provide adequate support for their software customers in all locations?
- ❑ Supporting local operations is one of the biggest challenges IS teams face when putting together standardized, company-wide systems.
- ❑ Trend:
 - ❑ Outsourcing global support to one or more third-party distributors who act as a middleman between the software vendor and user, often providing distribution, support, and invoicing.



References

- ▣ **Reynolds, George Walter, Stair, Ralph M.**
“Principles of information systems”, 13e – 2017