Al-Mustaqal University
Collage of Pharmacy

Computer - S1

Lecture 4

Computer Software Part 2

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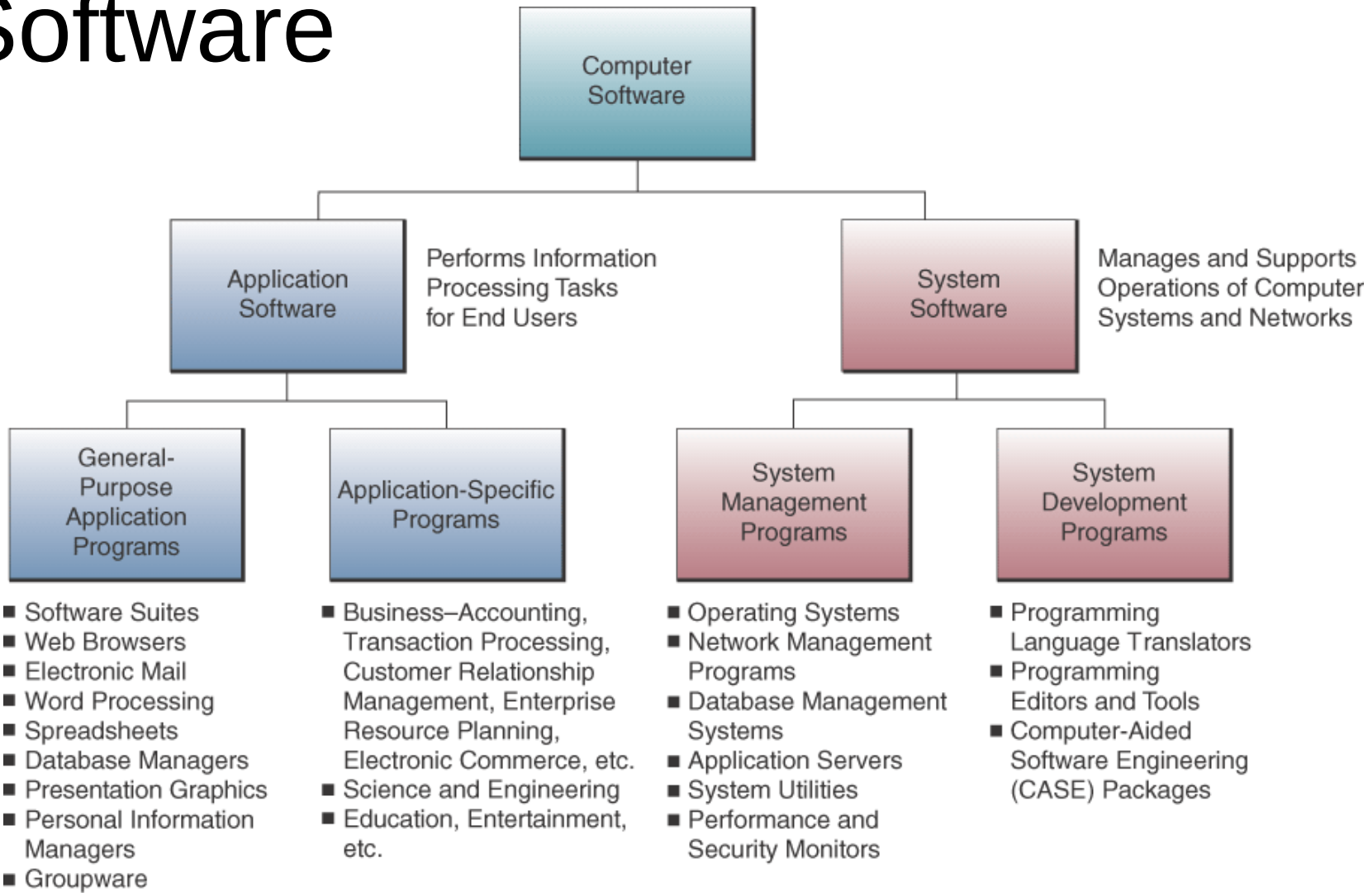
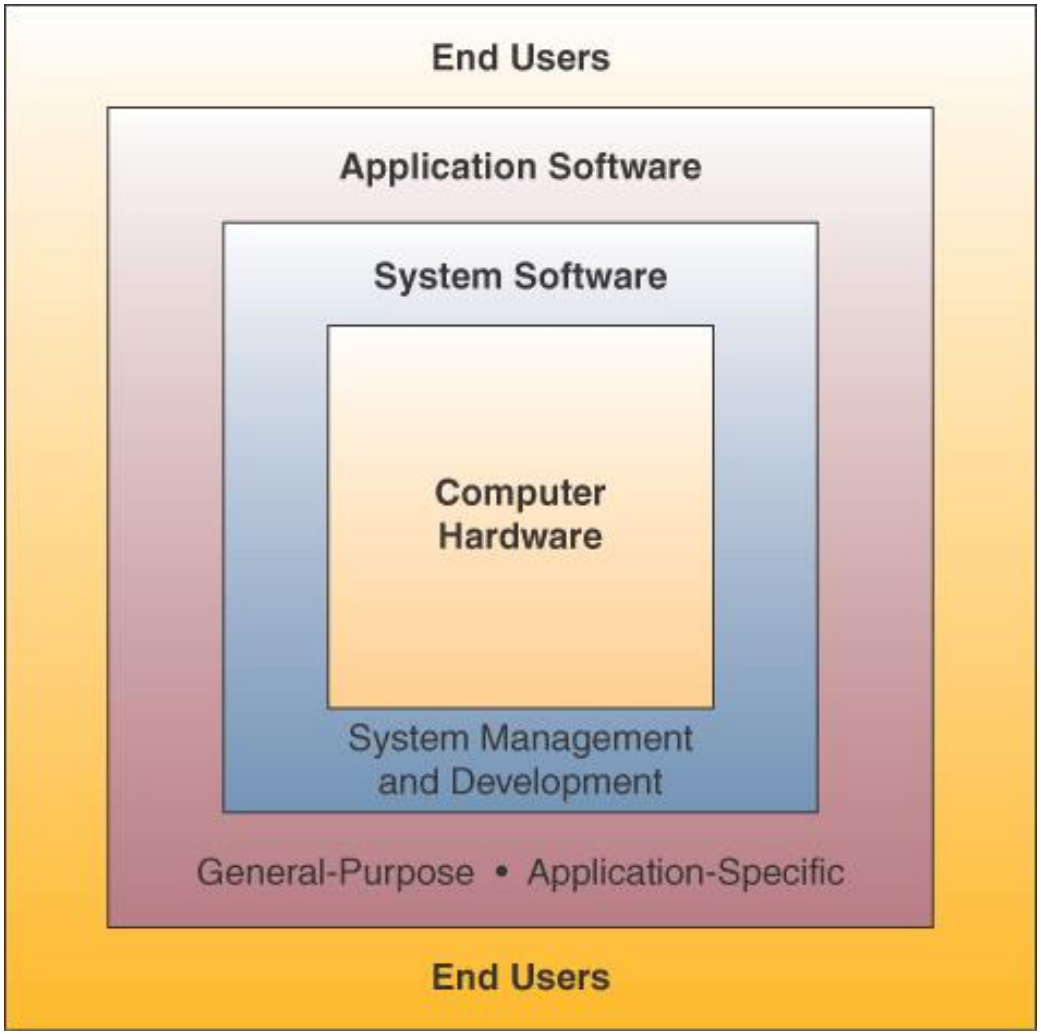
Types of Application & System Software



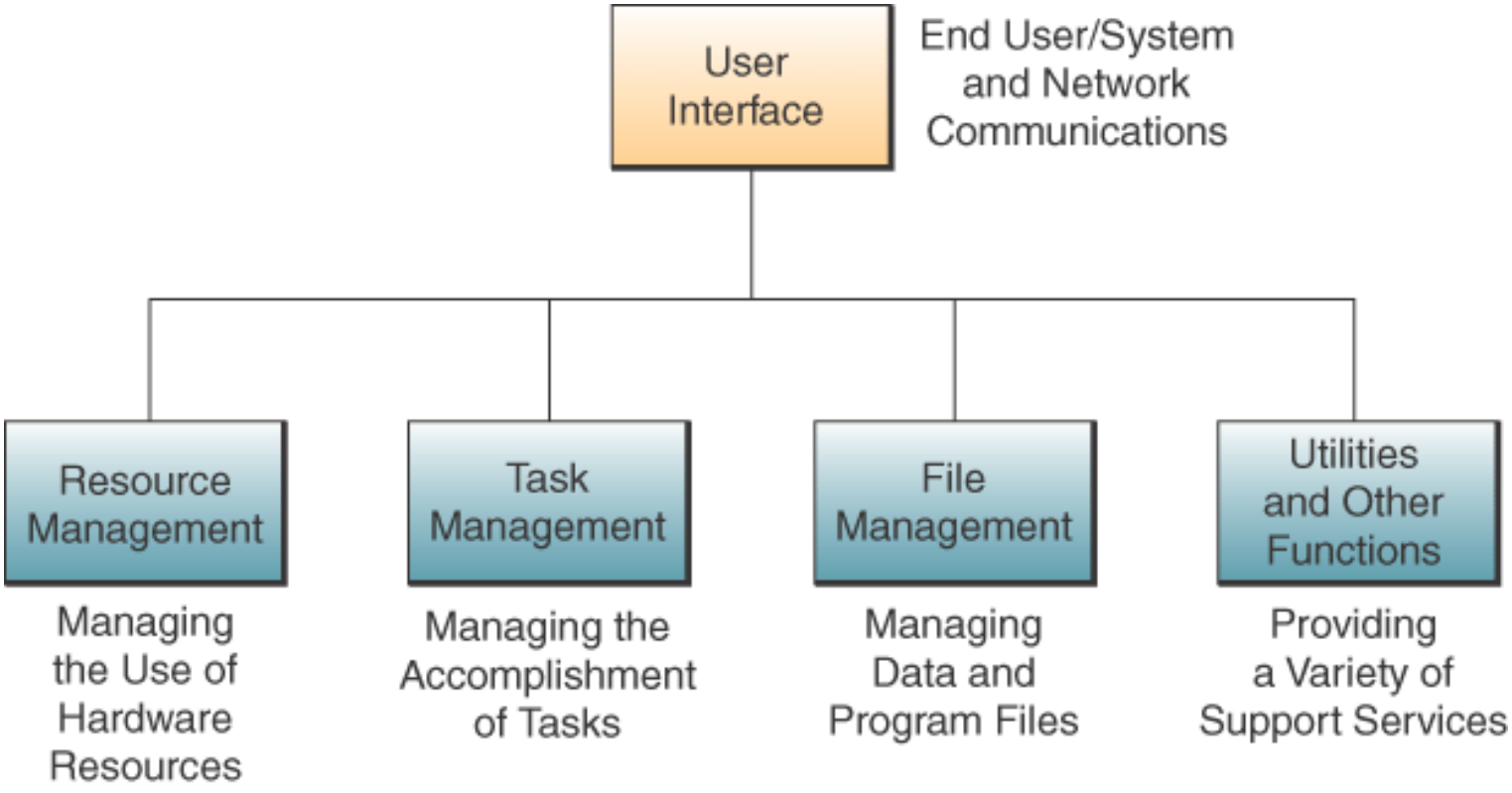
Interface Between End Users and Computer



Operating Systems

- Integrated system of programs that…
  - Manages the operations of the CPU
  - Controls the input/output, storage resources, and activities of the computer system
  - Provides support services as the computer executes application programs
- The operating system must be loaded and activated before other tasks can be accomplished

Operating System Basic Functions



User Interface

- The part of the operating system that allows you to communicate with it
- Three main types…
  - Command-driven
  - Menu-driven
  - Graphical user interfaces (GUI)

Resource Management

- Part of the operating system that manages the hardware and networking resources of a computer system
  - Includes CPU, memory, secondary storage devices, telecommunications, and input/output peripherals
- Common functions
  - Keeping track of where data and programs are stored
  - Subdividing memory; providing virtual memory capability

File Management

- Part of the operating system that controls the creation, deletion, and access of files and programs
  - Keeps track of physical location on storage devices
  - Maintains directories of information about the location and characteristics of stored files

Task Management

- Part of the operating system that manages the accomplishment of end user computing tasks
  - Controls which task gets access to the CPU, and for how long
  - Can interrupt the CPU at any time to substitute a higher priority task
  - Supports preemptive and cooperative multi-tasking and multi-processing

Popular Operating Systems

- Windows
  - GUI, multitasking, networking, multimedia
  - Microsoft's operating system
  - NT, XP, 2003
  - Different versions manage servers
- Unix
  - Multitasking, multi-user, network-managing
  - Portable - can run on mainframes, midrange, and PCs
- Linux
  - Low-cost, powerful reliable Unix-like operating system
  - Open-source
- MAC OS X
  - Apple operating system for the iMac
  - GUI
  - Multitasking
  - Multimedia

Open-Source Licensing Characteristics

- The Program
  - Must include source code and allow distribution in source code as well as compiled form
- The License
  - Shall not restrict any party from selling or giving away the software as a component of an aggregate software distribution containing programs from several sources
  - Must allow modifications and derived works, and must allow them to be distributed under the same terms as the license of the original software

Open-Source Licensing Characteristics

- The License (cont'd)
  - Must allow modifications and derived works and allow them to be distributed under the same terms as the license of the original software
  - May restrict source code from being distributed in modified form only if the license allows the distribution of patch files with the source code for the purpose of modifying the program at build time
  - Must not discriminate against any person or any group of persons

Other System Management Programs

Software Category	What It Does	IBM Product	Customers	Main Competitor	Customers
Network management	Monitors networks to keep them up and running.	**Tivoli**	T. Rowe Price uses it to safeguard customer records.	**HP OpenView**	Amazon.com uses it to monitor its servers.
Application server	Shuttles data between business apps and the Web.	**WebSphere**	REI uses it to serve up its website and distribute data.	**BEA WebLogic**	Washingtonpost.com builds news pages with it.
Database manager	Provides digital storehouses for business data.	**DB2**	Mikasa uses it to help customers find its products online.	**Oracle 9i**	It runs Southwest Airlines' frequent-flyer program.
Collaboration tools	Powers everything from e-mail to electronic calendars.	**Lotus**	Retailer Sephora uses it to coordinate store maintenance.	**Microsoft Exchange**	Time Inc. uses it to provide e-mail to its employees.
Development tools	Allows programmers to craft software code quickly.	**Rational**	Merrill Lynch used it to build code for online trading.	**Microsoft Visual Studio .NET**	Used to develop Allstate's policy management system.

Source: Adapted from Susan Orenstein, Erik Schonfeld, and Scott Herhold, "The Toughest Guy in Software," *Business 2.0*, April 2003, p. 82.

Application Servers

- Provide an interface between an operating system and the application programs of users
- Middleware
  - Software that helps diverse software applications exchange data and work together more efficiently

Programming Languages

- Examples of programming in each language

Four Levels of Programming Languages	
• **Machine Languages:** Use binary coded instructions 1010 11001 1011 11010 1100 11011	• **High-Level Languages:** Use brief statements or arithmetic notations BASIC: X = Y + Z COBOL: COMPUTE X = Y + Z
• **Assembler Languages:** Use symbolic coded instructions LOD Y ADD Z STR X	• **Fourth-Generation Languages:** Use natural and nonprocedural statements SUM THE FOLLOWING NUMBERS

Web Languages

- HTML
  - A page description language that creates hypertext documents for the Web
- XML
  - Describes Web page content by applying identifying tags or contextual labels to the data
- Java
  - Object-oriented programming language that is simple, secure, and platform independent
  - Java applets can be executed on any computer

Web Services

- Web services are software components that are
  - Based on framework of Web and object-oriented standards and technology
  - Used to link the applications of different users and computing platforms via the Web


Thank you