

# Advanced Management Information System

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# سیستم عامل چیست

• نرم افزاری است که واسط بین کاربران با سیستم کامپیوتری است.

• دستورات را از کاربران دریافت و با پردازش آنها و ترجمه به زبان قابل درک کامپیوتر آنها را اجرا می کند.

• سیستم عامل عملیات زیر را انجام می دهد:

۱- راه اندازی کامپیوتر

۲- گرفتن دستورات از User

۳- تجزیه و تحلیل دستورات

۴- اجرای دستورات

۵- مدیریت حافظه اصلی (Ram)

۶- مدیریت حافظه های جانبی

# اهداف و وظایف اصلی سیستم عامل

## اهداف اصلی سیستم عامل

- الف- ایجاد یک سطح ارتباطی بهتر بین کاربران و سیستم
- ب- بهترین و اقتصادی ترین نحوه استفاده از سخت افزار

## وظایف کلی سیستم عامل

- ۱- مدیریت و تقسیم وقت ریزپردازنده و تخصیص فضای حافظه به برنامه‌ها و کاربران مختلف
- ۲- مدیریت و کنترل تجهیزات ورودی/خروجی
- ۳- مدیریت و کنترل اطلاعات و فایلها

# انواع سیستم عامل

## اصطلاحات

کاربر: افرادی که از سیستم کامپیوتری به منظور خاصی استفاده می کنند  
وظیفه: کاری که سیستم کامپیوتری انجام می دهد

## انواع سیستم عامل

چند کاربره  
چند وظیفه ای  
چند کاربره/چند وظیفه ای

# نرم افزارهای کاربردی

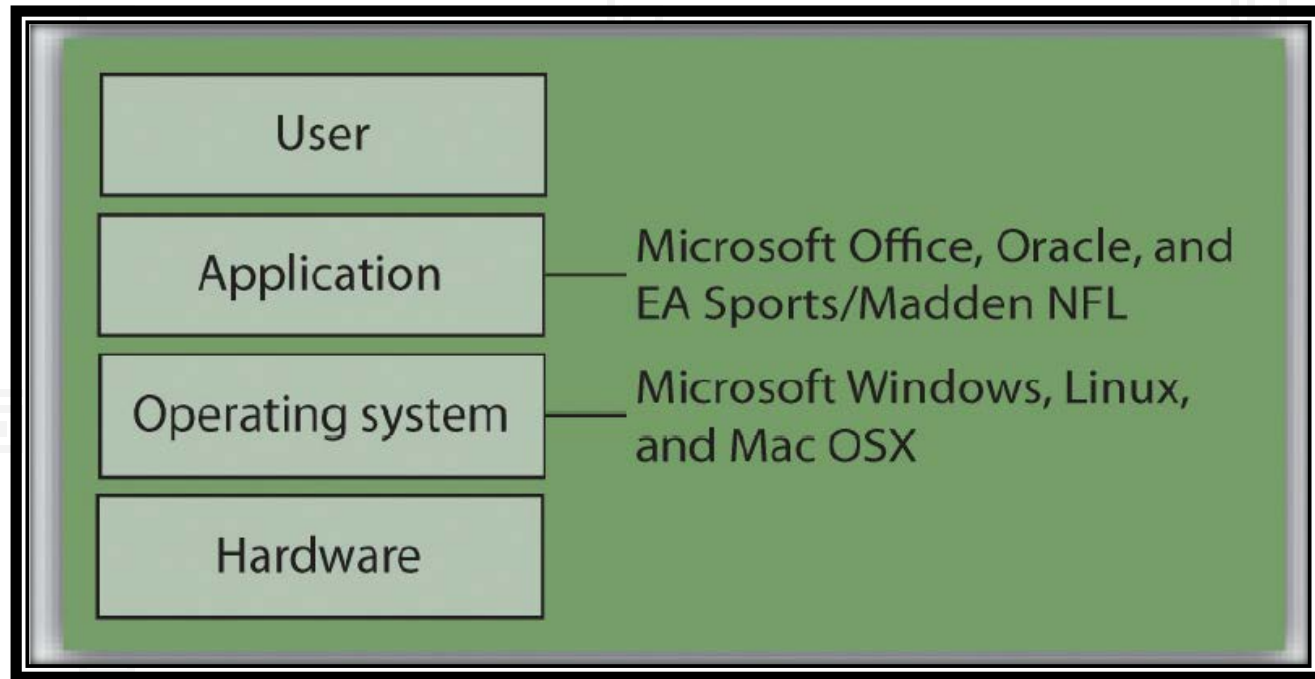
با توجه به گسترش سیستم های محاسباتی و شبکه های پیچیده، با تولید انبوهی از نرم افزارهای کاربردی مواجه هستیم.

نرم افزارهای کاربردی، برنامه هایی هستند که برای کاربرد خاص مورد استفاده گروهی از کاربران قرار می گیرد.

## • انواع نرم افزار کاربردی

- نرم افزارهای تجاری
- نرم افزارهای محاسباتی
- نرم افزارهای اداری
- نرم افزارهای شبکه
- و....

# The Hardware/Software Layer



# Hardware Components

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- Central processing unit (CPU)
- Arithmetic/logic unit (ALU)
- Control unit
  - Input devices
  - Output devices

# Hardware Components (continued)

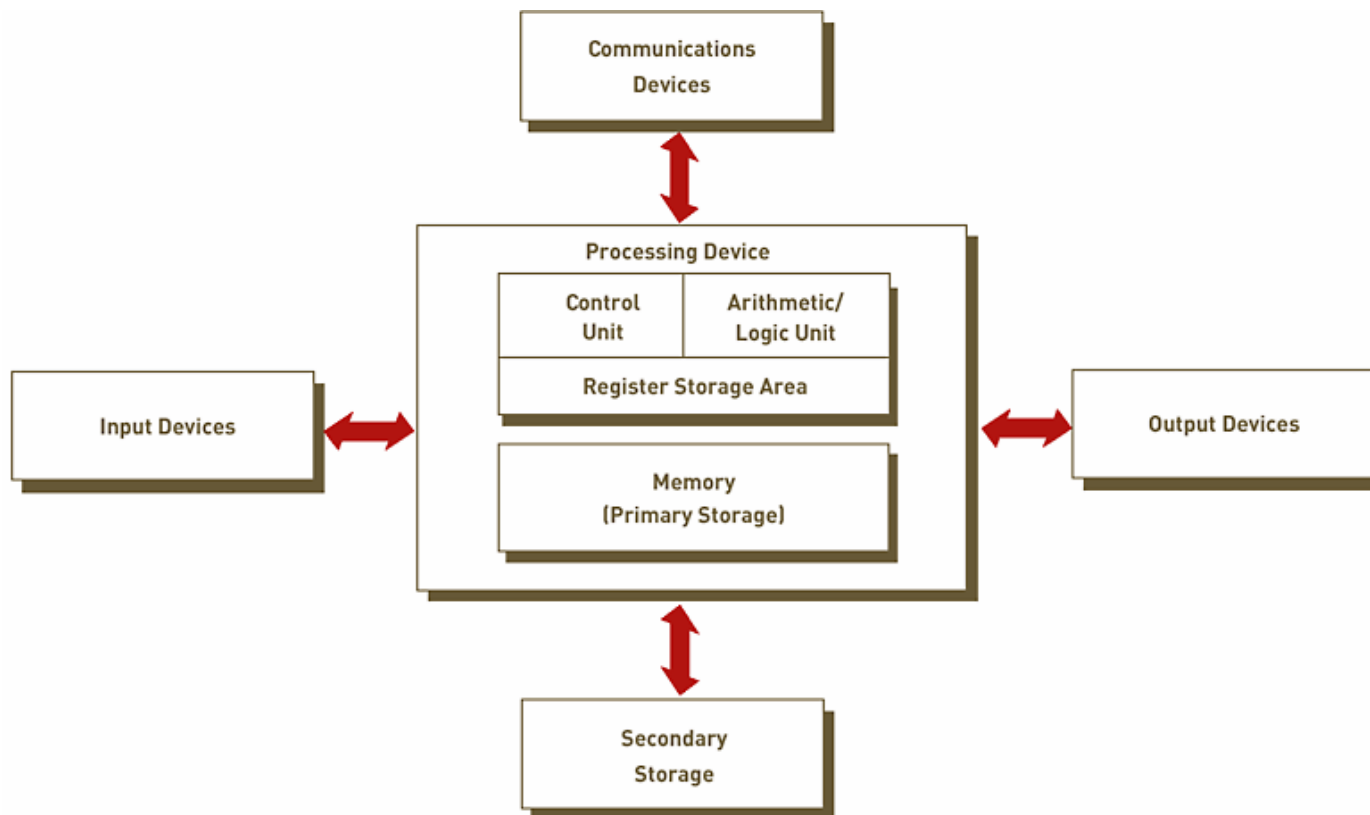
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- Communications devices
  - Primary storage devices
  - Secondary storage devices



# Hardware Components (continued)

- Computer System Components



# Processing Characteristics and Functions

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- **Machine cycle time:** time to execute the instruction phase and the execution phase
  - **Clock speed:** electronic pulses produced at a predetermined rate
  - **Wordlength:** number of bits that can be processed at one time

# Data Management: The Hierarchy of Data

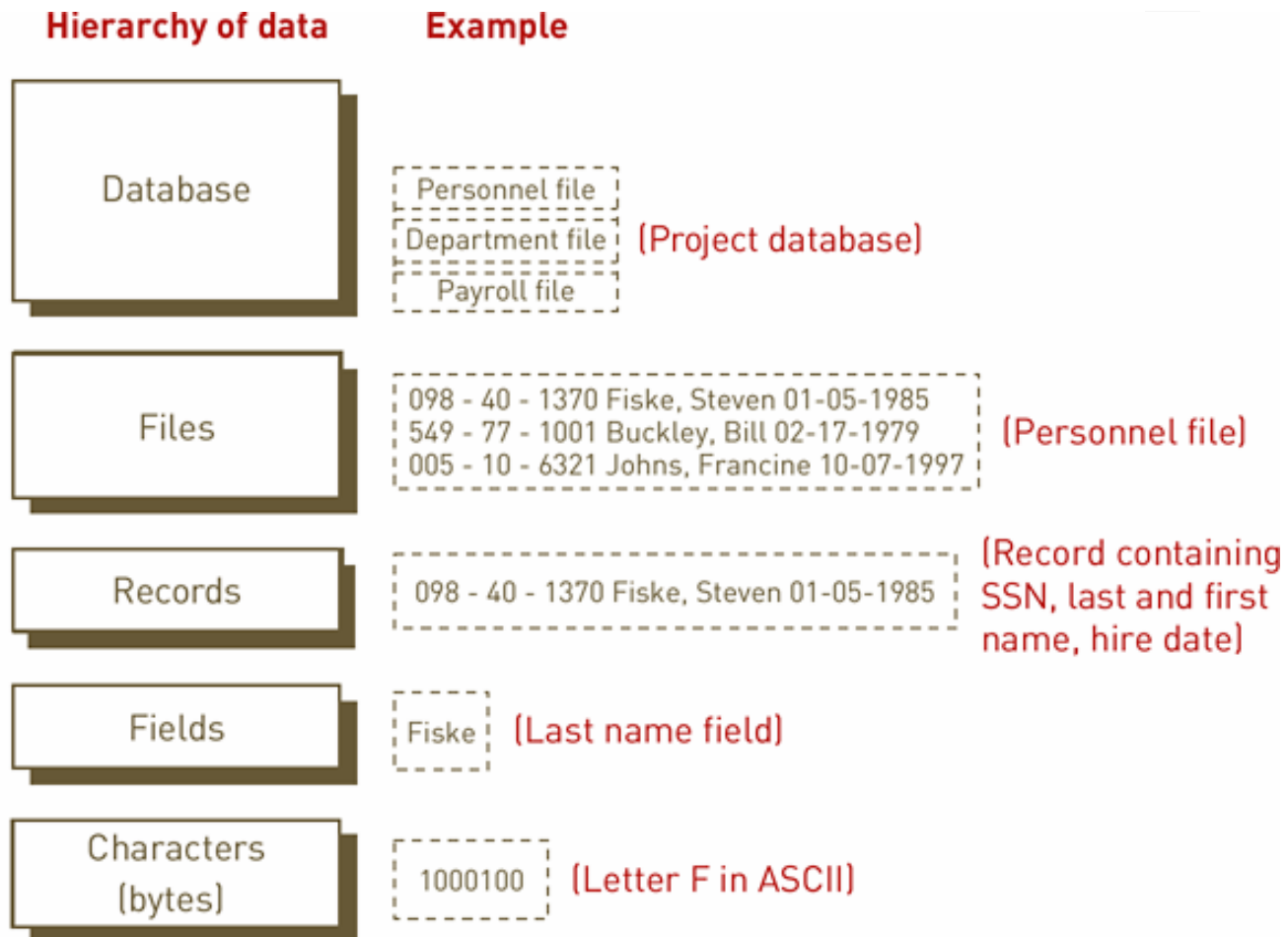
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- **Bit(a binary digit):** a circuit that is either on or off
- **Byte:** 8 bits
- **Character:** each byte represents a character; the basic building block of information
- **Field:** name, number, or characters that describe an aspect of a business object or activity

# Memory Characteristics and Functions: Storage Capacity

Name	Abbreviation	Exact Number of Bytes	Approximate Number of Bytes
Byte	B	1	1
Kilobyte	KB	1,024 Bytes	1 thousand
Megabyte	MB	1,024 Kilobytes	1 million
Gigabyte	GB	1,024 Megabytes	1 billion
Terabyte	TB	1,024 Gigabytes	1 trillion
Petabyte	PB	1,024 Terabytes	1 quadrillion

# The Hierarchy of Data (continued)



# Types of Memory

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- **Random access memory (RAM)**
  - Temporary
  - Volatile
- **ROM (read-only memory)**
  - Usually nonvolatile

# Multiprocessing

- **Multiprocessing:** simultaneous execution of two or more instructions
  - **Parallel processing:** linking hundreds or thousands of processors operating in parallel
  - **Grid computing:** collection of computers working to solve a common problem

# Secondary Storage and Input and Output Devices

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- **Secondary storage**
  - Also called permanent storage
  - Nonvolatile
  - Greater capacity and greater economy than memory



# Secondary Storage Access Methods

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- **Sequential access:** records must be retrieved in order
  - Sequential access storage devices (SASD)
- **Direct access:** records can be retrieved in any order
  - Direct access storage devices (DASDs)

# Secondary Storage Devices

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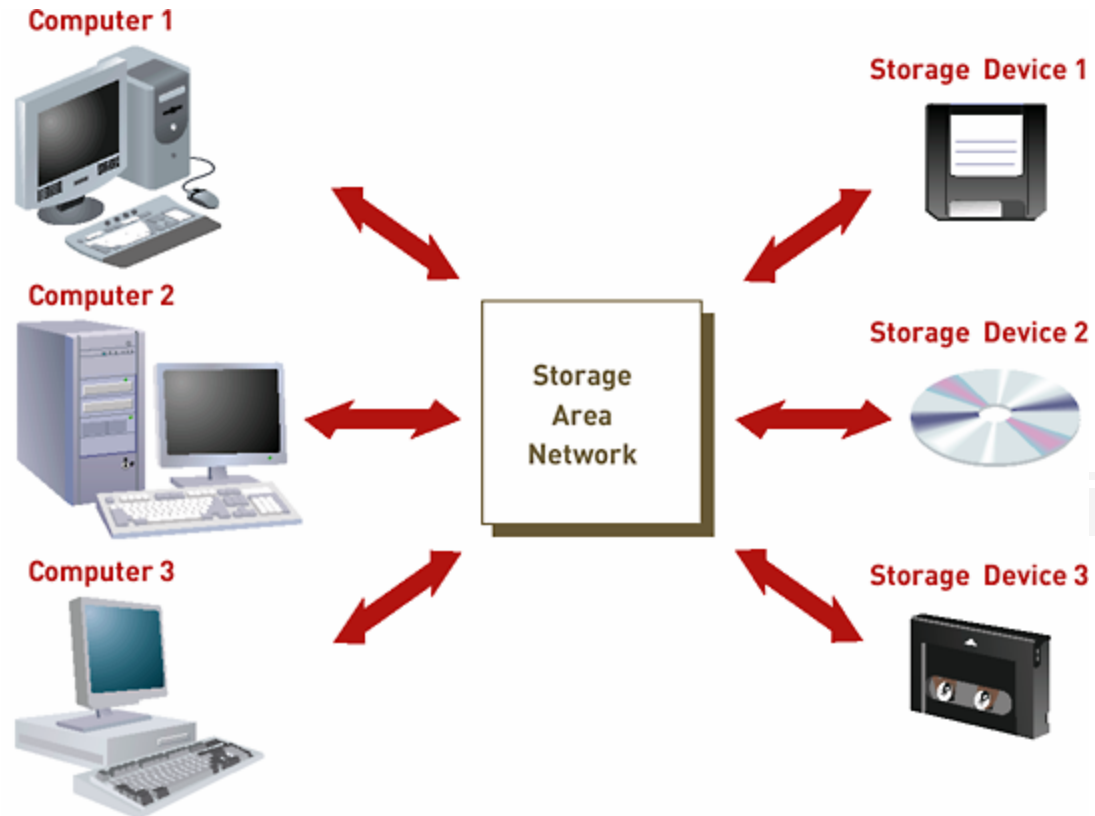
- **Magnetic tapes**
  - Magnetic disks
  - Redundant array of independent/inexpensive disks (RAID)
  - Compact disc read-only memory (CD-ROM)

# SAN

- **Storage Area Network**
  - Provides high-speed connections between data-storage devices and computers

# SAN (continued)

- Storage Area Network



# Secondary Storage Devices (continued)

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- CD-recordable (CD-R) discs
  - CD-rewritable (CD-RW) discs
- Digital versatile disc (DVD)
- Memory cards
- Expandable storage

# Input Devices

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- Personal computer input devices
  - Keyboard
  - Mouse
- Voice-recognition devices
- Terminals

# Input Devices (continued)

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- Touch-sensitive screens
- Bar-code scanners
- Optical data readers
- Point-of-sale (POS) devices
- Automatic teller machine (ATM) devices

# Output Devices

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- Display monitors
  - Liquid crystal displays (LCDs)
  - Organic light-emitting diodes (OLEDs)
- Printers and plotters



# انواع کامپیوتر



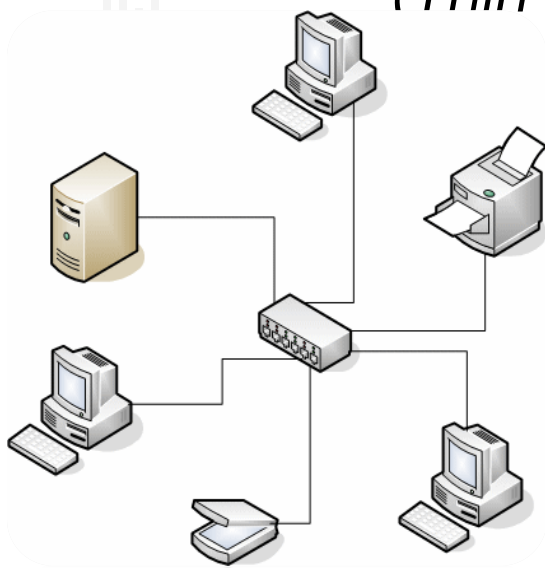
ابر کامپیوتر (Supercomputer)

کامپیوترهای بزرگ (Mainframe)

کامپیوترهای شخصی (Personal computer- PC)

کامپیوترهای قابل حمل (Lap top-Tablet-Pocket PC)

کامپیوترهای تحت شبکه (Thin Clients/Network computers)



# Operating Systems (OS)

تمامی دستگاههای محاسباتی، همانند دستگاههای زیر دارای سیستم عامل هستند:

- Desktops, laptops, enterprise-class server computers, mobile phone, iPods, video game consoles, and television set top boxes

برخی از شرکتها سیستم عامل را صرفا مخصوص دستگاه های خود یا سخت افزاری که تولید می نمایند تولید می نمایند:

برخی دیگر سیستم عامل خود بطور کلی برای انواع مدل سخت افزار عرضه می نمایند

# Operating Systems (continued)

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- **User interface**
  - Allows individuals to access and command the computer system
  - **Command-based user interface:** uses text commands
  - **Graphical user interface (GUI):** uses icons and menus to send commands to the computer system

# Operating Systems (continued)

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- **Hardware independence**
  - **Application program interface (API):** allows applications to make use of the operating system
- **Memory management**
  - Control how memory is accessed and maximize available memory and storage

# Operating Systems (continued)

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- **Processing tasks**
  - **Multitasking:** more than one program running at the same time
  - **Time-sharing:** more than one person using a computer system at the same time
  - **Scalability:** ability to handle an increasing number of concurrent users smoothly
- **Networking capability:** features that aid users in connecting to a computer network

# Operating Systems (continued)

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- **Access to system resources**
  - Protection against unauthorized access
  - Logons and passwords
- **File management**
  - Ensures that files in secondary storage are
- **Available when needed**
- **Protected from access by unauthorized users**

# Current Operating Systems

Personal	Workgroup	Enterprise
Windows XP, Windows Mobile, and Windows Embedded	Windows NT Server	Windows NT Server
Mac OS	Windows 2003 Server	Windows 2003 Server
Mac OS X	Mac OS Server	Windows Advanced Server, Limited Edition
UNIX	UNIX	UNIX
Solaris	Solaris	Solaris
Linux	Linux	Linux
RedHat Linux	RedHat Linux	RedHat Linux
Palm OS	Netware	
	IBM OS/390	IBM OS/390
	IBM z/OS	IBM z/OS
	HP MPE/iX	HP MPE/iX

# Workgroup Operating Systems

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- **Windows Server**
- **UNIX**
- **NetWare**
- **Red Hat Linux**
- **Mac OS X Server**



# Application Software

- Desktop software:

نرم افزارهای کاربردی که عموماً جهت کاربرهای سیستمهای سیستمهای شخصی تولید می شوند

- Enterprise software:

نرم افزارهای کاربردی تجاری که برای استفاده از مجموعه ای از کاربرها ساخته و عرضه می شوند

# Personal Application Software

Type of Software	Explanation	Example	Vendor
Word processing	Create, edit, and print text documents	Word WordPerfect	Microsoft Corel
Spreadsheet	Provide a wide range of built-in functions for statistical, financial, logical, database, graphics, and date and time calculations	Excel Lotus 1-2-3	Microsoft Lotus/IBM
Database	Store, manipulate, and retrieve data	Access Approach dBASE	Microsoft Lotus/IBM Borland
Online information services	Obtain a broad range of information from commercial services	America Online CompuServe MSN	America Online CompuServe Microsoft
Graphics	Develop graphs, illustrations, and drawings	Illustrator FreeHand	Adobe Macromedia
Project management	Plan, schedule, allocate, and control people and resources (money, time, and technology) needed to complete a project according to schedule	Project for Windows On Target Project Schedule Time Line	Microsoft Symantec Scitor Symantec

# Personal Application Software (continued)

Financial management	Provide income and expense tracking and reporting to monitor and plan budgets (some programs have investment portfolio management features)	Managing Your Money Quicken	Meca Software Intuit
Desktop publishing (DTP)	Work with personal computers and high-resolution printers to create high-quality printed output, including text and graphics; various styles of pages can be laid out; art and text files from other programs can also be integrated into "published" pages	QuarkXPress Publisher PageMaker Ventura Publisher	Quark Microsoft Adobe Corel
Creativity	Help generate innovative and creative ideas and problem solutions. The software does not propose solutions, but provides a framework conducive to creative thought. The software takes users through a routine, first naming a problem, then organizing ideas and "wishes," and offering new information to suggest different ideas or solutions	Organizer Notes	Macromedia Lotus

# Workgroup Application Software

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- **Workgroup application software:** supports teamwork, whether people are in the same location or dispersed around the world
- **Groupware:** software that helps groups of people work together more efficiently and effectively

# Enterprise Application Software

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- **Software that benefits an entire organization**
  - **Enterprise resource planning (ERP) software:** programs that manage a company's vital business operations for an entire multisite, global organization

# Programming Languages

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- Sets of keywords, symbols, and a system of rules for constructing statements
- Allow humans to communicate instructions to be executed by a computer
- **Syntax:** a set of rules associated with a programming language
- Different languages have characteristics that make them appropriate for particular types of applications

# Software Issues and Trends

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- Software bugs
  - Program defects that keep it from performing correctly
- Copyrights and licenses
- Global software support

# Summary

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- **Hardware:** central processing unit (CPU), input and output devices, communications devices, primary storage devices, and secondary storage devices
- **Random access memory (RAM):** temporary and volatile
- **ROM (read-only memory):** usually nonvolatile
- **Multiprocessing:** simultaneous execution of two or more instructions



# Summary (continued)

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- **Sequential access:** records retrieved in order
- **Direct access:** records retrieved in any order
- **Computer programs:** sequences of instructions
- **Systems software:** coordinates the activities of hardware and programs
- **Application software:** helps users solve problems

# Summary (continued)

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- **Operating system (OS):** programs that control the hardware and act as an interface with applications
- **Graphical user interface (GUI):** uses icons and menus to send commands to the computer system
- **Programming languages:** allow humans to communicate instructions to be executed by a computer

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موفق باشید