

CHAPTER 1 COMPUTER CONCEPTS

What is a computer?

A device capable of performing computations and making logical decisions faster than human beings.

Components of Computer

- ✦ Types of computers: (Four)
 - micro
 - mini
 - mainframe
 - super computer
- ✦ Computer functions: (Four)
 - input data
 - process data
 - output data, or store data

Components of Computer

- ✦ Computer Programs:
 - sets of instructions that guide computer through execution of a series of tasks
- ✦ Hardware- keyboard, mouse, monitor, hard drive, printer, diskette, tape drive, cpu
- ✦ Software- computer programs

Computer Organization

- ✦ Input unit- receives data to be processed
 - keyboard and mouse most common used
- ✦ Output unit- ships processed data to output devices
 - monitor and printer most common used
- ✦ Memory unit- storage area of computer for data waiting to be processed or already processed
 - primary memory or RAM which is temporary

Computer Organization

- ✦ Arithmetic and Logic Unit (ALU)- perform all calculations ($+, -, *, /$) and decision operations ($=, \neq, <, >$)
- ✦ Central Processing Unit (CPU)- controls all aspects of computer's operation (administration)
- ✦ Secondary Storage Unit- long term storage
 - diskettes, hard drive, tape, cartridge, CD-ROMs, Optical disks (DVD)

Evolution of Operating Systems

- ✦ 1st computers executed one job or task at a time
 - single user batch processing
- ✦ Operating Systems- manage transition between jobs and other tasks
- ✦ Multiprogramming- simultaneous operation of many jobs
 - time sharing
 - share resources

Personal, Distributed, and Client/Server Computing

- ✦ 1977- Apple established first commercial personal computer
- ✦ 1981- IBM PC introduced
- ✦ 1984- Macintosh introduced with GUI
- ✦ Distributed Computing- spreading organizations' computing over networks to sites at which real work is performed
 - Local Area Networks (LANs)

Personal, Distributed, and Client/Server Computing

- ✦ Workstations- powerful desktop machines provide enormous power to users
- ✦ servers- computer (often mini-computers) offer common storage of programs and data used by client computers(client/server computers)
- ✦ C and C++- have become programming languages of choice for operating systems (UNIX), networking, client/server applications

Machine, Assembly, and High-Level Languages

- ✦ Machine Language- natural language of any given computer
 - vary depending on type of computer (binary system)
- ✦ Assembly Language- translates English instructions into machine language
- ✦ High-Level Language: allow easier programming since one command executes several operations
- ✦ Compiler- translates high-level language into machine language

History of Visual Basic

- ✦ Interpreter programs allow direct execution of high-level programs without compiling
- ✦ Note: Will run slower than compiled programs
- ✦ BASIC- Beginner's All-purpose Symbolic Instruction Code
 - developed in 1960's to help teach programming
 - used an interpreter
- ✦ GUI- Graphical User Interface was developed by Apple and Microsoft in the 1980's

History of Visual Basic

- ✦ Visual Basic- was the enhancement of Basic allowing the creation of programs in GUI environment
 - created by Microsoft in 1991
 - purpose was to develop Microsoft Windows-based applications

Other High-level Languages

- ✦ FORTRAN (Formula TRANslator)- used for scientific and engineering applications
- ✦ COBOL(Common Business-Oriented Language)
 - used for businesses to manipulate large data bases
 - fore runner of database management languages
- ✦ C- developed to run on UNIX operating systems
- ✦ Pascal- created for teaching programming skills
- ✦ C++- enhancement of C : Object-oriented programming (software development)

Other High-level Languages

- ✦ Text-based languages do not allow users to work directly with graphics.
 - Requires programmer to add graphical elements via special software
- ✦ Note: Visual Basic is graphical-based language
- ✦ Graphical-based languages: Java, Visual J++, PowerBuilder, C++, Ada, Delphi, and C.

Other High-level Languages

- ✦ Structured Programming: disciplined approach to writing programs that are clearer, easier to test and debug, and easier to modify
- ✦ Pascal was designed to teach structured programming
- ✦ Ada allows to undertake multitasking operations
 - parallel
- ✦ Multitasking in Visual Basic can be undertaken via Win32 Application Programming Interface (API) function

What is Visual Basic?

- ✦ Programs are run via Integrated Development Environment (IDE)
- ✦ IDE allows programmer to create, run, and debug VB programs
- ✦ Rapid Application Development (RAD) is rapid creation ability employed by VB
- ✦ Power of VB: GUI development, event handling, access to Win32 API, object-oriented, and structured
- ✦ Versions: Learning, Professional, Enterprise editions