Computers and History

Outline

- Computer and information
- History of computer technology

What is a computer*?*

A *computer* is an information-processing machine that performs simple tasks according to specific instructions. This means it can store, retrieve, output and process *data*.

Data is a collection of unorganized facts or information, which includes words, numbers, images, and sound.

Computer system

- Hardware -- physical components of computer that you see or touch
- Software -- computer programs that instruct hardware to perform specific tasks
- A *computer program* is a set of instructions written in a *programming language*.

Basic Computer Components

- Central Processing Unit
- Storage -- memory
- Input devices
- Output devices

Categories of Computers

- Personal computer (PC)
- Minicomputers
- Mainframe computers
- Supercomputers

Personal Computers

- Desktop computers
- Network of computers and Web appliances -- WebTV
- Laptop or notebook computers
- Handheld computers -- small personal computers

Minicomputers

A *minicomputer* is designed for a small group of organizations with a more powerful computing capabilities. The computing process of a minicomputer can be accessed by several users via terminal that connected to it.

Mainframe Computers

A *mainframe computer* is a large, expensive, and powerful computing process that allows hundred and thousand users access its computing capabilities.

Supercomputers

A *supercomputer* is the fastest, most powerful, and most expensive. It is designed specifically for applications requiring complex, sophisticated mathematical calculations -- weather forecasting, medical image processing, petroleum exploration,...

Software

- System software
  - Operating system
  - System utilities
- Application software

Operating System

An *operating system* is a primarily resource manager that manages computer hardware in the form of processor, storage, I/O devices, communication devices, and data.

History of Computer Technology

- The first computer
- The first generation (1950s)
- The second generation (1960s)
- The third generation (1965 to 1975)
- The fourth generation (1975 to 1991)
- The fifth generation (1991)

The First Computer

The first machine ABC (Atanasoff Berry Computer) to employ electronics (vacuum tubes) was developed in 1939 by a physicist John V. Atanasoff and Clifford Berry at Iowa State University. This was used to solve simultaneous linear equations.

ENIAC

In 1946, J. Presper Eckert and John Mauchly at Moore School of Engineering, University of Pennsylvania developed the first large–scale computer called ENIAC (Electronic Numerical Integrator and Computer). It used 17,480 vacuum tubes. This Machine uses the program to control calculations.

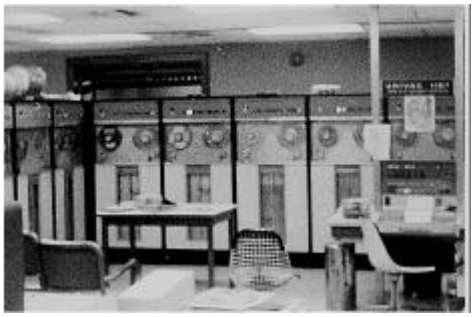
Stored-Program Computer

In 1946, John Von Neumann proposed the concept of stored program computer.

- encode both program and data as binary number,
- store the program along with the data electronically in a set of switches (computer memory),
- provide a central processing unit that not only perform calculations but also fetch, decode and execute the instructions contained in the program.

The First Generation

In 1951, J. Presper Eckert and John Mauchly built the first general-purpose commercial computer, the UNIVAC. This is the first generation of commercial computers. The instructions were written machine language. UNIVAC used less number of vacuum tubes then ENIAC.



The Second Generation

- Vacuum tubes were replace by transistors.
- Computers are faster and smaller.
- It has punched cards for input, tape storage, and disk storage.
- Development of high-level programming languages: COBOL (Common Business-Oriented Language) and FORTRAN (Formula Translator).

The Second Generation

- ASCII (American Standard Code for Information Interchange) was developed in 1963.
- In 1964 IBM announced a new line of computers called System/360.

The Third Generation

- Timsharing
- Batch processing
- Development of integrated circuits (ICs)
- Small-scale integration and medium-scale integration
- Wide area networks
- Internet

The Fourth Generation

- Very-large-scale integration
- Microprocessor
- MS-DOS
- Command line interface
- Graphical interface

The Fifth Generation

- Artificial intelligence (AI)
- World Wide Web
- Local area networks
- Wireless technology
- E-commerce
- http://www.scsite.com/dc2001/