Domain of a processor

Processor rules its domain

- **Main memory:**
  - **addressing scheme (perhaps 16 or 32 bits)**

Ports (addressable) for

- **Graphics for display**
- **Keyboard**
- **Network interface**
- **Secondary storage**

Multi-core?

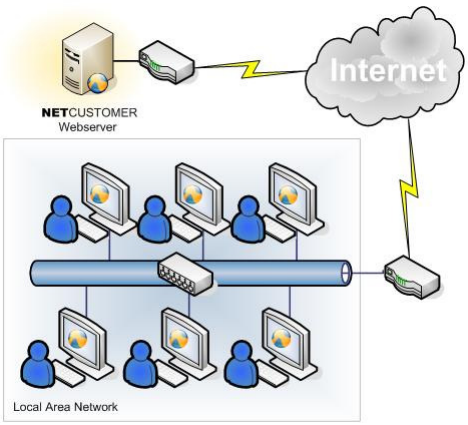
Northbridge

Southbridge

Show diagram

Other domains

- **Local network**
  - **Addressing/access mechanism in the network**
- **Internet – Global network**
  - **Addressing/access mechanism in the network**



What a computer does

- Stores information
  - Storage technology
  - Access & addressing method, Access delay
  - Amount of storage, cost
- Moves information
  - Controlling transfers
  - bits transferred at a time
  - Serial/parallel/block
- Manipulates information
  - Arithmatic/logic operations
  - Searching & reorganization

Chronology of Computing Ideas

BC:

- Roman number system (XII, IV) etc: ?
- Abacus tablets with calculi pebbles: 500 BCE
- Mail: 550 BCE: Cyrus the great
  "Neither rain nor snow … shall keep the postman from his appointed rounds"
- Algorithm: Euclid 300 BCE greatest common divisor algorithm
- Binary system: I-Ching 3rd BCE
- Antikythera mechanism: analog computation device: 150 BCE

5-9th CE:

- Positional Decimal system with 0: fifth century
- Al-Khwarezmi 825: Algorithms using decimal numbers

Since 10th CE:

- Floating point decimal numbers: 14th century

Chronology of Computing Ideas

Early
1642 Pascal: automated carry in machines
1833: Babbage conditional control
1890: Hollerith: data recorded on punched cards

1940s:
1941: Zusa: binary system machine, floating point numbers (0 and infinity)
1943: Aiken: subroutines
1945: Von Neumann: unified memory holds both data and instructions
1946: ENIAC: Mauchly Eckert: programming by re-wiring
1948: Wheeler: assembly language

1950s:
1951: Wilkes: Microprogramming
1952: Grace Hopper: first compiler
1953: Backus: FORTRAN one of the first high level languages
1955: Bauer: computer stack
1958: Kilby: multiple switches on a chip: IC

1960s
1962: Steve Russell: Spacewar game
1964: Kemeny & Kurtz: BASIC: interpretation
1964: Engelbart: mouse and windows
1964: Kleinrock: packet switching
1969: 4-machine arpanet: internet

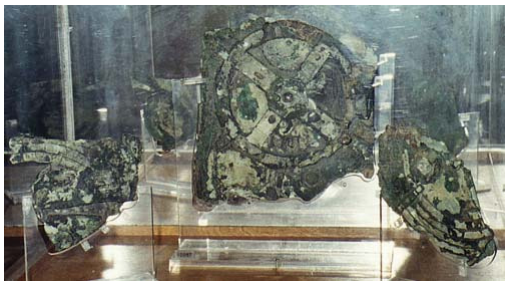
1970s:
1971: 4004: processor on a chip
1970s: Kay: Xerox PARC small talk: object oriented programming
1971: Shugart: floppy
1971: email
1975: Altair: switch programmable
1978: SPAM is born

Recent:
1980s: Cocke: RISC architecture
1990: Lee: browser
1994: Gosling: Java virtual machine

Euclid

Postman

Antikythera Mechanism

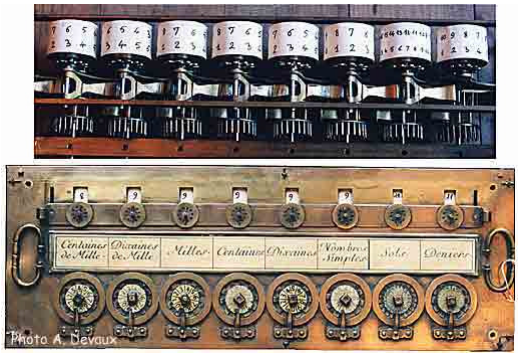


I Ching

Roman Numerals

Counting board and Decimal numbers

Pascal



Chronology of Computing Ideas

- 1972: C Dennis Ritchie
- 1979: C++ Bjarne Stroustrup
- 1994: Java
  - 1996: JDK 1.0 with AWT (Abstract Window Toolkit)
  - 1998: J2SE 1.2 with swing
  - 2004: J2SE 5.0 (Java 2 Platform, St. Ed.) "1.5"
  - 2006: Java SE 6
  - Latest 1.6.0_16 (a.k.a Version 6 Update 16)

Java using Command Prompt

- Compile using javac HelloWorld.java
  - Check version: javac -version
- Run using java HelloWorld
- Running Applets: appletviewer HelloWorld.html

  ..<applet code="HelloWorld.class" width=500 height=400></applet>..