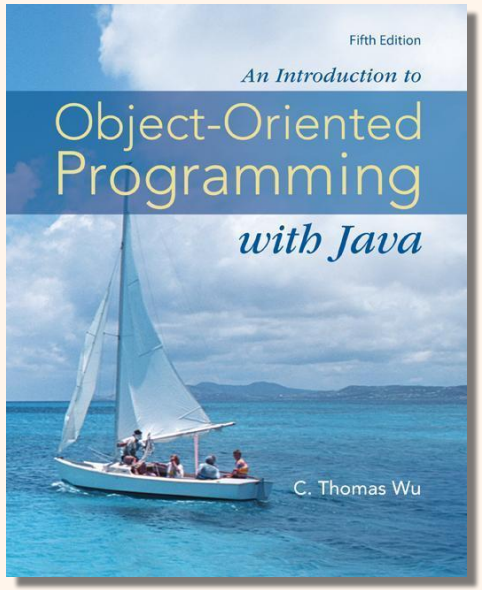


Chapter 0

Programação II

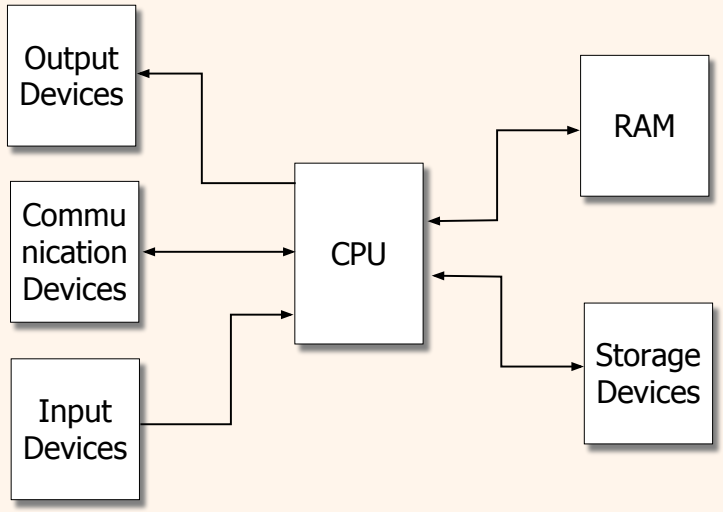
Chapter 0 Objectives

- After you have read and studied this chapter, you should be able to
  - State briefly a history of computers.
  - Name and describe five major components of the computer.
  - Convert binary numbers to decimal numbers and vice versa.
  - State the difference between the low-level and high-level programming languages.

A History of Computers

- Charles Babbage is credited as the father of computer. Although never actually built, he proposed the computing machines called Difference Engine and Analytical Engine that possessed the core characteristics of today's computers.
- Ada Lovelace, who wrote demonstration programs for Analytical Engine, is credited as the first programmer.
- The first modern computer was built by Atanasoff of Iowa State University in the late 1930s.
- An electromechanical computer MARK I was built by Howard Aiken of Harvard.
- The first completely electronic computer ENIAC I was built by Mauchly and Eckert of the University of Pennsylvania.

Computer Architecture



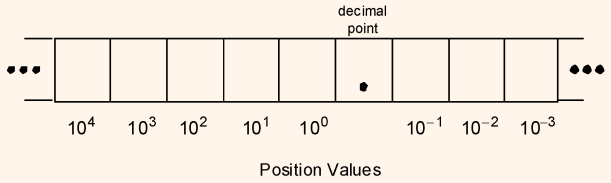
Progress of CPU Speed

	CPU	Date Introduced	Clock Speed (MHz)
1970s	4004	11/15/71	0.108
	8008	4/1/72	0.200
	8080	4/1/74	2
	8088	6/1/79	8
1980s	80286	2/1/82	12
	80386SX	6/16/88	16
	80486DX	4/10/89	25
1990s	Pentium	3/22/93	66
	Pentium Pro	11/1/95	200
	Pentium II	5/7/97	300
	Pentium II Xeon	6/29/98	400
	Pentium III	10/25/99	733
2000s	Xeon	9/25/01	2000
	Pentium 4	4/27/01	2000
	Itanium 2	7/8/02	1000
	Pentium 4 Extreme Edition	2/2/04	3400
	Core 2 Extreme	7/27/06	3200

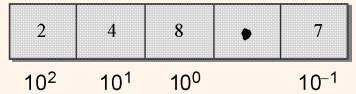
For more information on Intel CPUs, click Intel Museum

Decimal Number Representation

How the decimal number is represented.



Example:



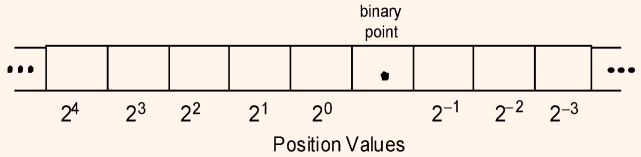
$= 2 \times 10^2 + 4 \times 10^1 + 8 \times 10^0 + 7 \times 10^{-1}$

$= 2 \times 100 + 4 \times 10 + 8 \times 1 + 7 \times 1/10$

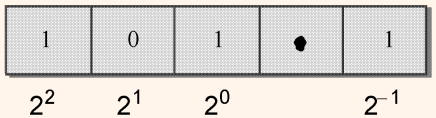
$= 200 + 40 + 8 + 7/10 = 248.7$

Binary Number Representation

How the binary number is represented.



Example:



$= 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0 + 1 \times 2^{-1}$

$= 1 \times 4 + 0 \times 2 + 1 \times 1 + 1 \times 1/2$

$= 4 + 0 + 1 + 1/2 = 5.5$

Programming Languages

- Three levels of programming languages:
  - Machine Languages
    - Machine language instructions are binary coded and very low level.
  - Assembly Languages
    - Assembly language allows symbolic programming. Requires an assembler to translate assembly programs into machine programs.
  - High-level Languages
    - High-level language provides a very high conceptual model of computing. Requires a compiler to translate high-level programs into assembly programs.

Java

- Java is a high-level object-oriented language developed by Sun Microsystems.
- Java's clean design and wide availability make it an ideal language for teaching the fundamentals of computer programming.