The background of the slide is a spiral-bound notebook with a light beige, textured cover. The spiral binding is visible on the left side. The text is centered on the page.

# Introduction To Computer Science

Bina Ramamurthy

# Objectives

---

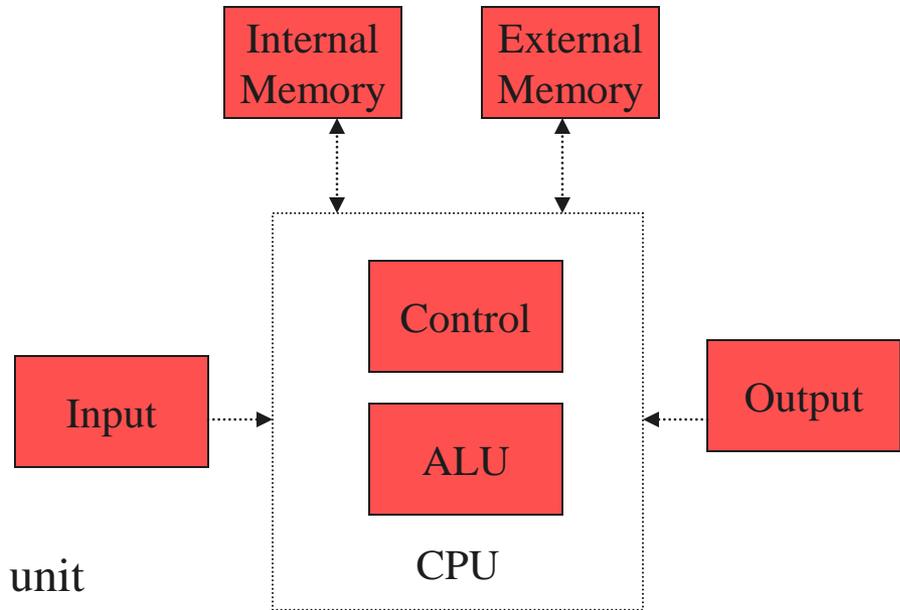
- 📄 Understanding of basic terminology for computers.
- 📄 Understanding problem-solving methodology using a computer

# Computing Systems: Hardware and Software

---

- ❏ A **computer** is a machine designed to perform operations specified with a set of instructions called a **program**.
- ❏ **Hardware** refers to the computer equipment.
  - keyboard, mouse, terminal, hard disk, printer
- ❏ **Software** refers to the programs that describe the steps we want the computer to perform.

# Computer Hardware



- 📄 CPU - Central processing unit
- 📄 ALU - Arithmetic and logic unit
- 📄 ROM - Read only memory
- 📄 RAM - Random access memory

# Terminology

---

- 📄 **Program** : a set of instructions given to a computer to accomplish a certain task.
  - Ex: automated payroll computation
- 📄 **Hardware** : physical (tangible) components that make up a computer system.
  - Ex: keyboard, disk drive, x-box
- 📄 **Software** : programs that run the computer and those that are run by the computer.
  - Ex: operating system (Unix, Windows), wordprocessor, Halo
- 📄 **Computer system** : Hardware and software taken together is referred to as a Computer System.

# Steps in Software Development

---

- ☞ Clear understanding of the **problem** : Problem Specification.
- ☞ Careful **solution** design paying attention all the constraints : Robust Algorithm Design.
- ☞ Transform algorithm into a **program** : Abstraction and coding.
- ☞ Complete **debugging** : Error removal.
- ☞ Thorough **testing** : Make sure it works for all cases
- ☞ **Maintenance** dictated by the environmental changes and time.

# The Programming Language

---

“Whenever you are developing something new, you have tasks. You have to create a new subject matter. You have to create a language which is appropriate to discuss the subject matter. Many people are insufficiently aware of the second obligation.”

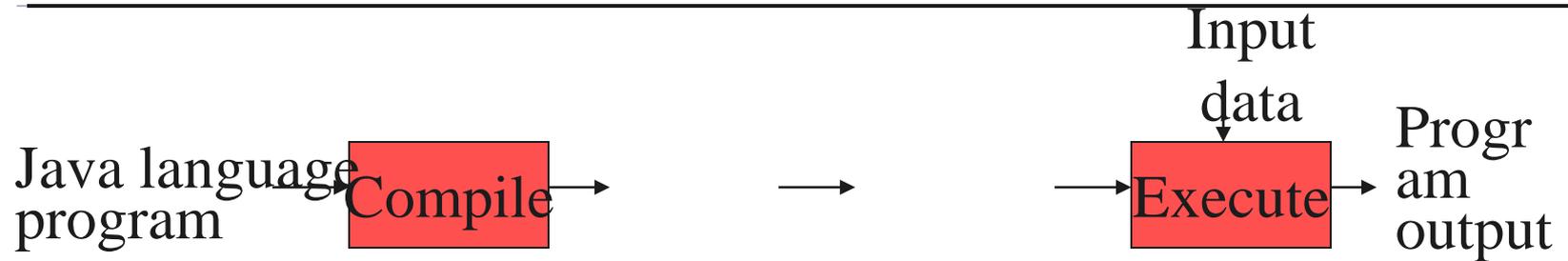
---Famous Computer Scientist Dijkstra

This supports our move from

Pascal → Modula-2 → C++ → Java → Python

# Executing a Computer Program

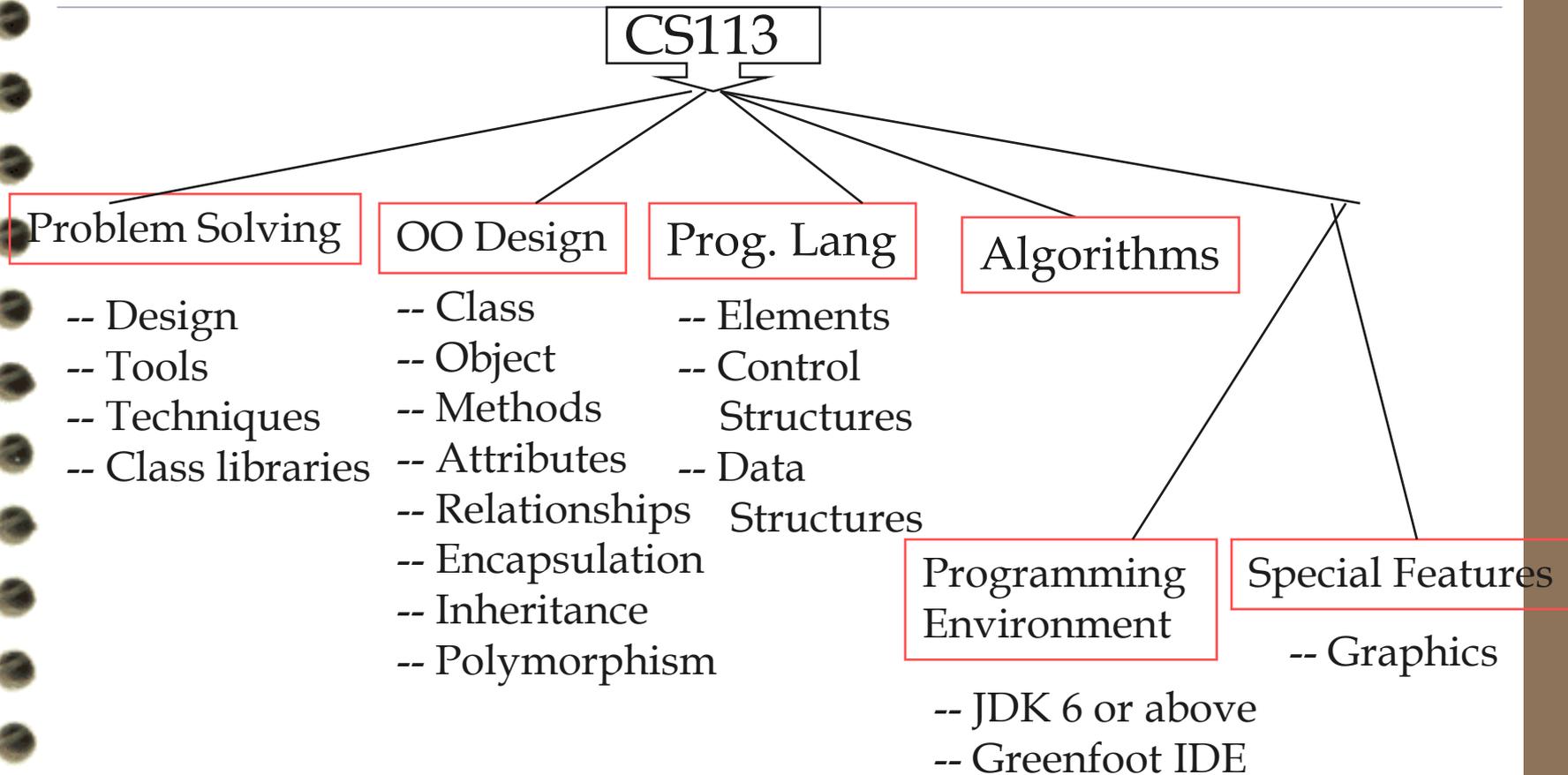
---



## Compiler

- Converts **source** program into form that hardware can understand and execute

# What has CS113 to offer?



# 10 keywords for today

---

1. Computer system
2. Hardware
3. Software
4. Problem solving
5. Design
6. Programming language
7. ALU (Arithmetic Logic Unit)
8. CPU (Central Processing Unit)
9. Block diagram of a computer
10. Compile (a program)

# Your responsibilities

---

- 📄 Plan your time.
- 📄 Attend all the lectures and the recitations.
- 📄 Read the text before every lecture.
- 📄 Work individually on the projects : no group work is allowed.
- 📄 Note that as the semester progresses, the complexity of the problems you will be required to solve will increase.

# Before next week..

---

-  Read Ch. 1 of the book.
-  CSE113 A : 9.00-9.50 AM
-  CSE113B : 2.00 – 2.50 AM

 We will help you with Greenfoot installation during next week's lab/recitation