IS1201: Programming & Problem Solving

1. Introduction

Viraj Welgama

About…

- Code: IS1101
- Name: Programming & Problem Solving
- Requirement: Core
- No of Credits: 3 (2L 1P)
- Rubric: 70% 30%
- Delivered by:
  - 8/15: Viraj Welgama (wvw@ucsc.cmb.ac.lk)
  - 7/15: Upul Rathnayake (uar@ucsc.cmb.ac.lk)

Practical

- Wednesday 1-3pm
- May be considered as one of the assignment

- Instructors:
  - Ms. P.M.U.Sandamini (UPE)
  - Ms. R.K.N.D. Jayawardhane (NDJ)
    Ms. H. P. N. M. Jayathilake (HPM)
    Ms. K.D.C.I. Thathsarani (CIT)

Course Objectives

- LO1: Understand the overview and history of programming languages and different programme design and development approaches.
- LO2: Understand and apply techniques for modeling programme structures, algorithms, flow charts and pseudo codes.
- LO3: Understand how to use constants, variables, literals, primitive data types, and expressions.
- LO4: Learn how to use operators and operations, decision logic selection, simple selection and multiple selection.

Course Objectives

- LO5: Learn how to use functions, parameters and passing parameters.
- LO6: Learn how to write codes when solving simple problems.
- LO7: Understand and apply control structures and recursion
- LO8: Understand and apply simple data structures and file handling.
- LO9: Implement and debug applications to solve simple real life problems.

Topics

1. Overview and history of programming languages
2. Programming Fundamentals (Data types, Operators)
3. Control structures (Conditions and Loops)
4. Functions
5. Arrays and Strings
6. Pointers
7. Constructed Data Types
8. File Handling

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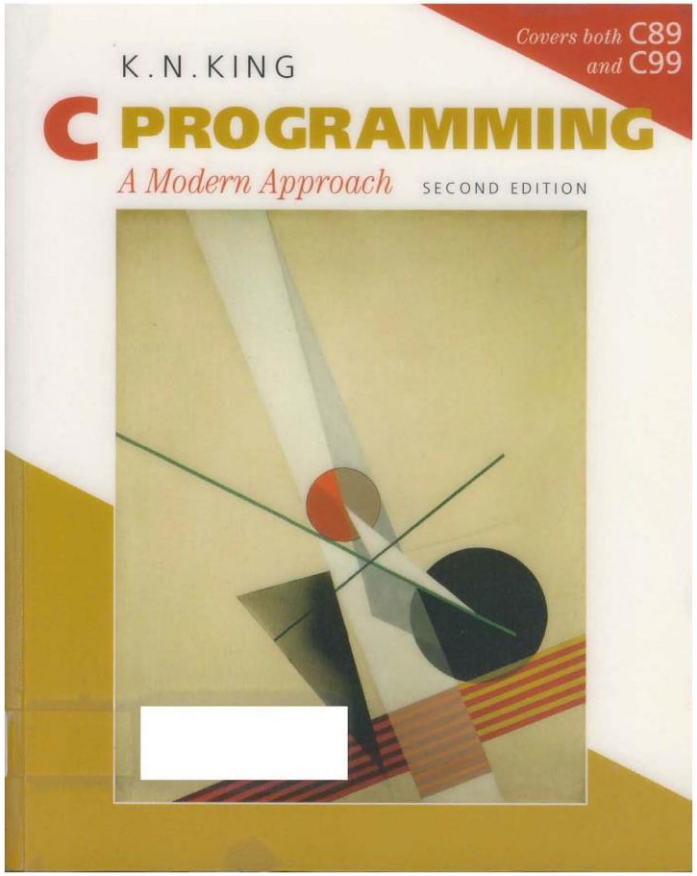
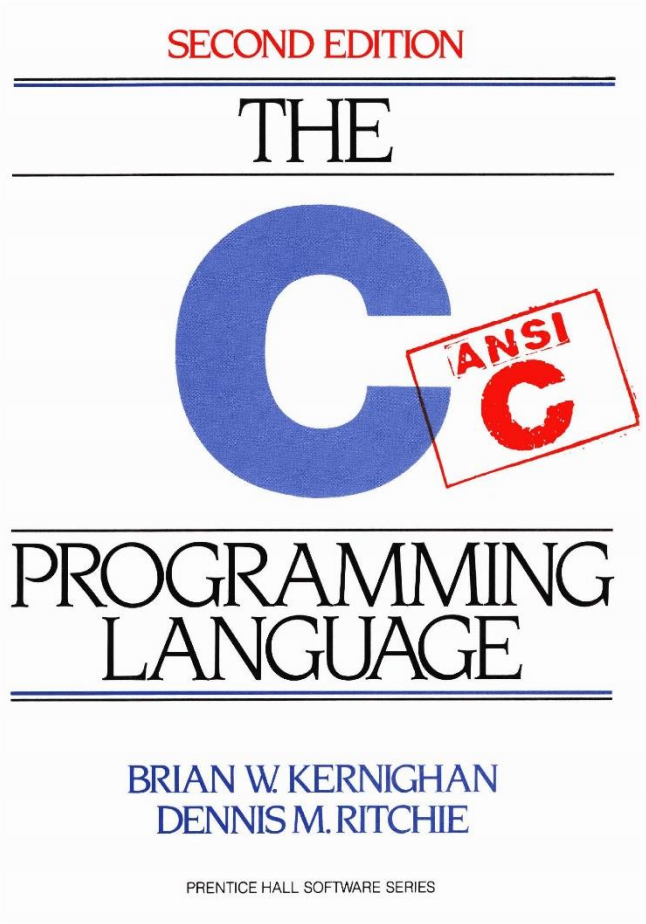
Upul Sir

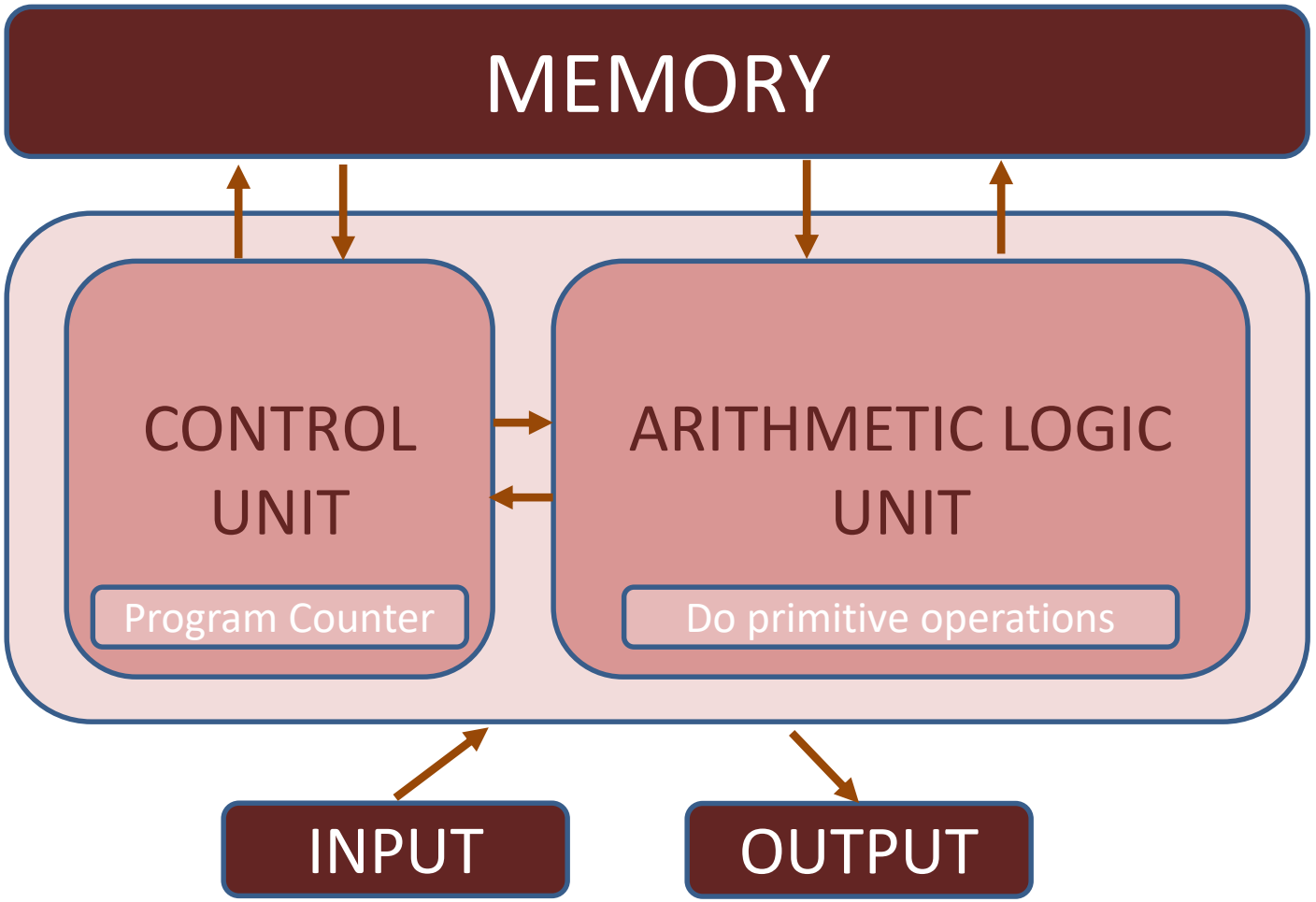
Reference Books



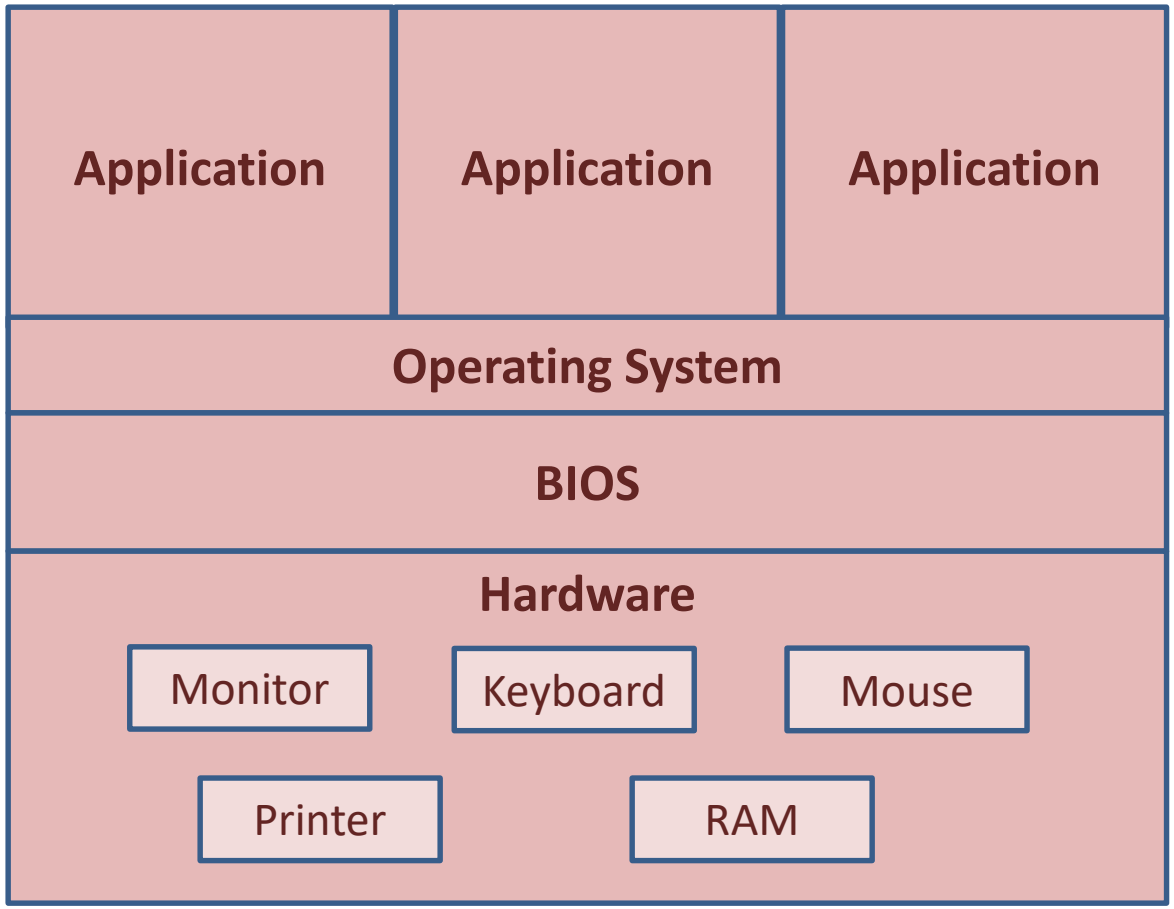


COMPUTERS & FLOW CHARTS

Computer is a Machine



Basic View of the Layered Architecture



Computers are Machines

- Sequence of instructions stored inside computer, built from predefined set of primitive instructions.
  1. Arithmetic & Logic
  2. Simple Tests
  3. Moving Data

- Special program executes each instruction in order.
- Use tests to change flow of control through sequence and stop when done.

What does a Computer do?

- Fundamentally:
  - Performs calculations
    - A billion of calculations per second!
- Remembers results
  - Thousands of gigabytes of storage!

- What kinds of calculations?
  - Built-in to the language
  - Ones that you define as the programmer.

Computers only know what you tell them

Computer Science?

- Computer science is no more about **computers** than astronomy is about telescopes.
- Instead, Computer Sconce is about **Algorithms**.
- An algorithm is a **formal specification** for stating a method to **solve a problem**.