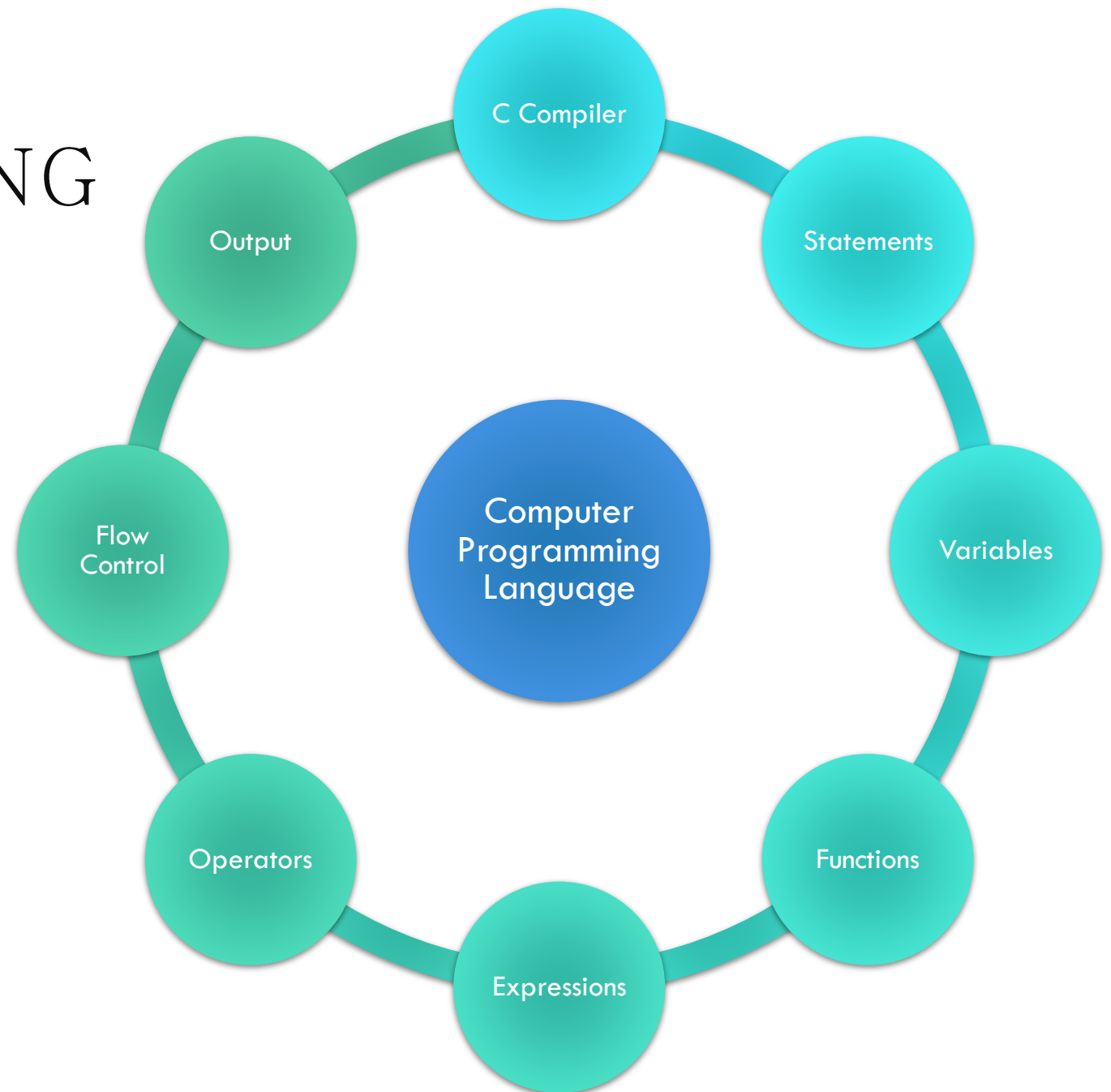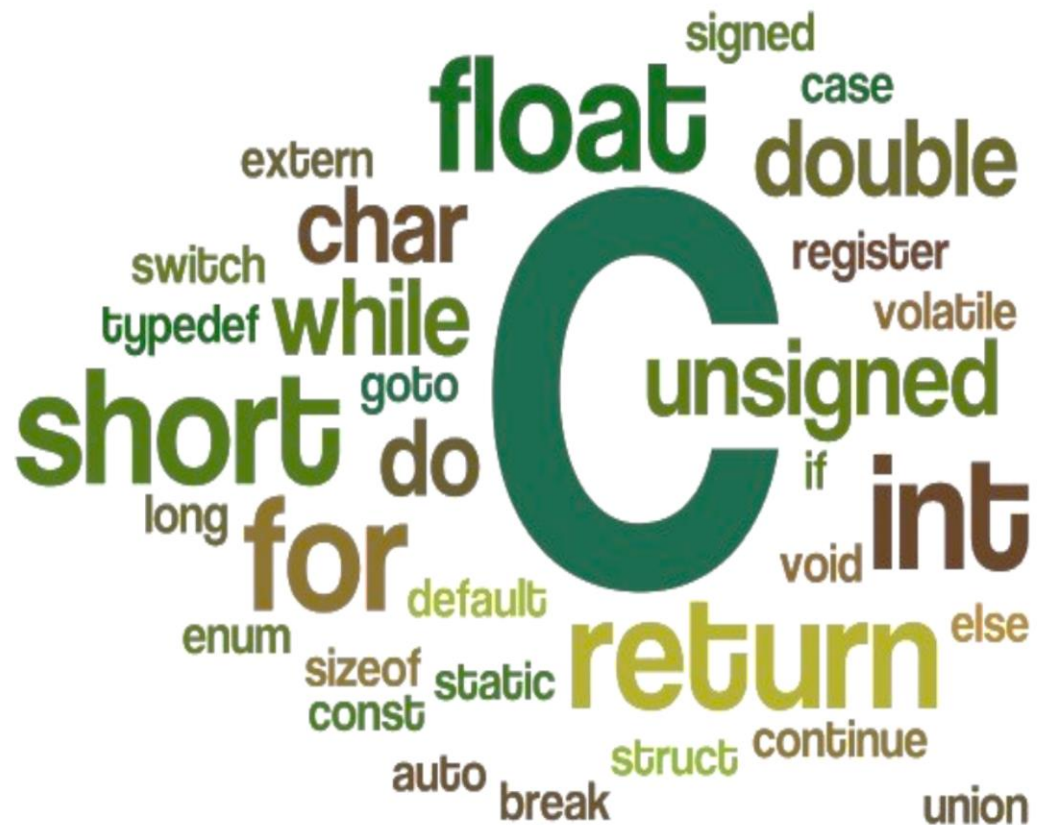# C−PROGRAMMING

Er. Shiva K. Shrestha

Head, Computer Department

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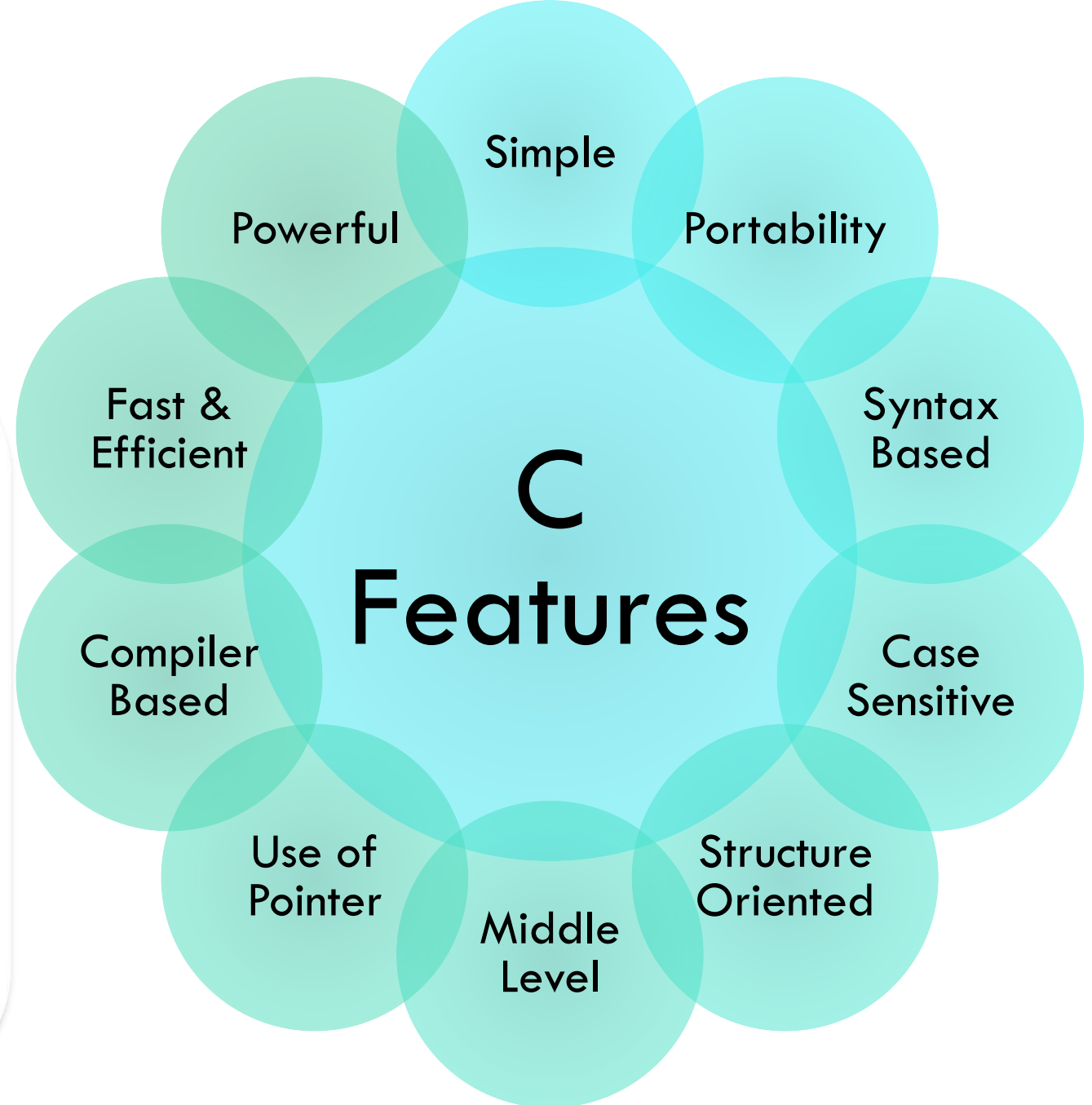
C – PROGRAMMING LANGUAGE

- General-purpose Programming Language

- In 1972 Dennis Ritchie writes C at Bell Labs

- "ANSI C", was completed late 1988

- Middle-level Language

FEATURES

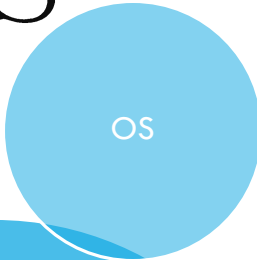
C Features:
- Simple
- Portability
- Syntax Based
- Case Sensitive
- Structure Oriented
- Middle Level
- Use of Pointer
- Compiler Based
- Fast & Efficient
- Powerful

USES

- OS
- Compilers
- Embedded System
- C
- Device Drivers
- Interpreters
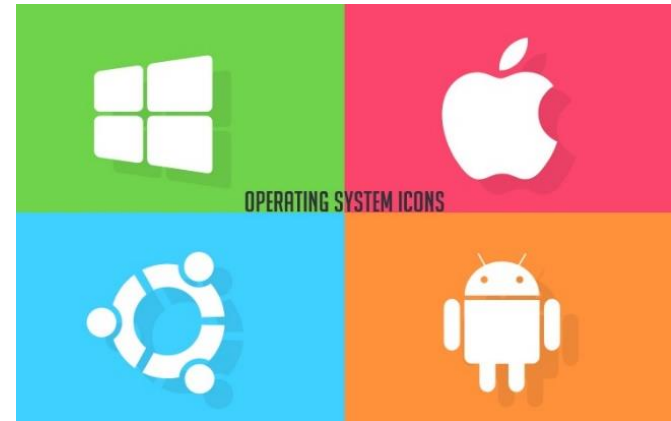
EVALUATION

Evaluation Criteria	Details

Internal Evaluation	✓ Theory (20)
	✓ Practical (50)
	   ✓ Lab Performance (30)
	   ✓ Mini-Project (20)

Final Evaluation	✓ Final Exam (80)

C Evaluation

- Internal Evaluation
  - Theory (20 Marks)
    - Attendance
    - Class Test
    - Assignment
    - First Assessment
    - Final Assessment
  - Practical (50 Marks)
    - Lab Attendance
    - Lab Report
    - Lab Test
    - Viva
    - Mini-Project
      - Proposal
      - Proposal Defense
      - Final Report
        - Report
        - Presentation
        - Team Work
        - Viva
      - Final Defense
        - Report
        - Presentation
        - Team Work
        - Viva
- External Evaluation
  - Final Exam (80 Marks)

COLLABORATION & CHEATING POLICY

➢ You are welcome to discuss assignments & laboratory projects with other students, provided that all work turned in must be your own.

➢ If you do discuss your work with other students on assignments, please list your collaborators at the top of your assignment, underneath your name.

➢ This does not excuse you from submitting your own work.

➢ Students caught engaging in an academically dishonest practice will receive an NQ for the course.

➢ Plagiarism detection tools may be used.

COURSE CONTENT

1. Overview of Computer Software & Programming Languages

2. Problem Solving Using Computer

3. Introduction to 'C' programming

4. Input and Output

5. Control Statements

6. User-Defined Functions

7. Arrays and Strings

8. Structures

9. Pointers

10. Data Files

11. Programming Language: FORTRAN

OVERVIEW OF COMPUTER SOFTWARE & PROGRAMMING LANGUAGES (3H)

1.1. System Software

1.2. Application Software

1.3. General Software Features and Recent Trends

1.4. Generation of Programming Languages

1.5. Categorization of High Level Languages

Python   Web

Android   Java

C#   Windows

Linux   PHP
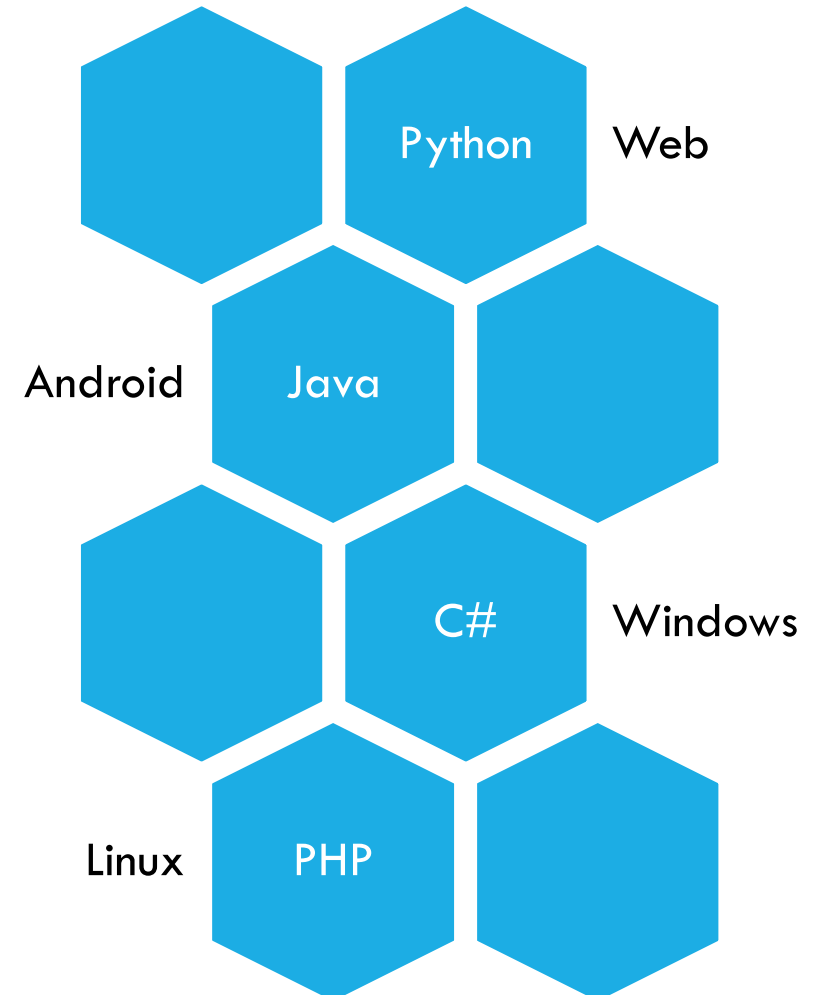
PROBLEM SOLVING USING COMPUTER (3H)

2.1.   Problem Analysis

2.2.   Algorithm Development and Flowchart

2.3.   Compilation and Execution

2.4.   Debugging and Testing

2.5.   Programming Documentation
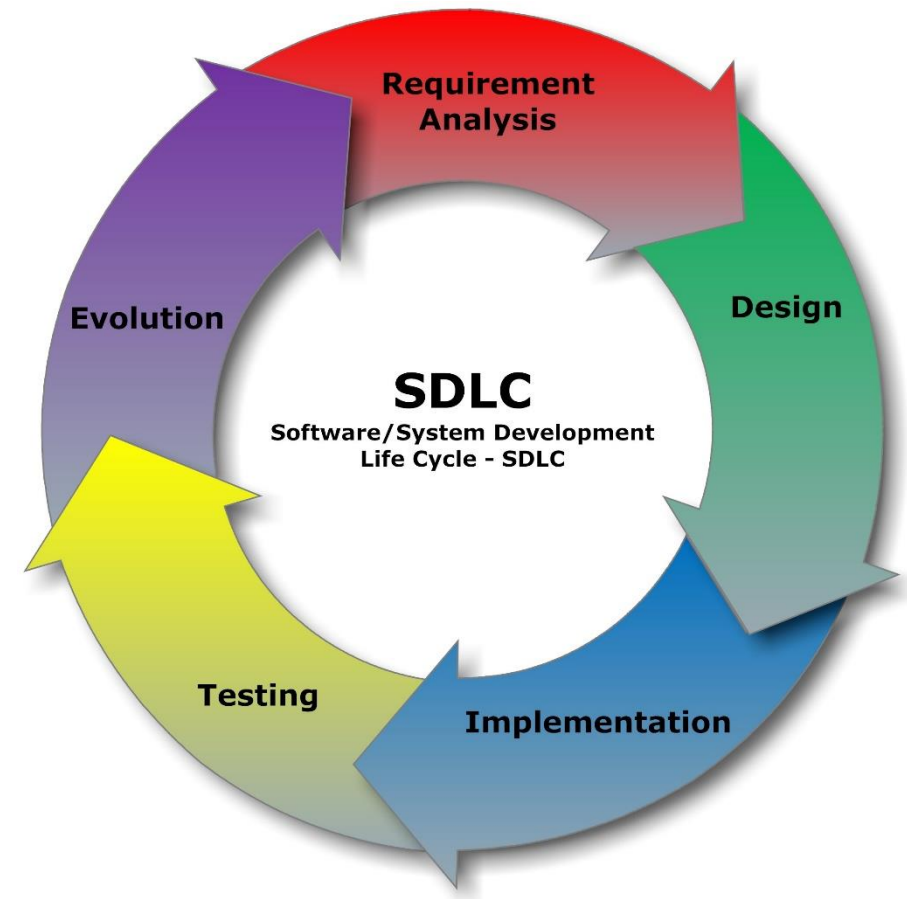
INTRODUCTION TO 'C' PROGRAMMING (4H)

3.1.   Character Set, Keywords, & Data Types

3.2.   Preprocessor Directives

3.3.   Constants and Variables

3.4.   Operators and Statements

INPUT AND OUTPUT (3H)

4.1.   Formatted Input/Output

4.2.   Character Input/Output

4.3.   Programs using Input/Output Statements
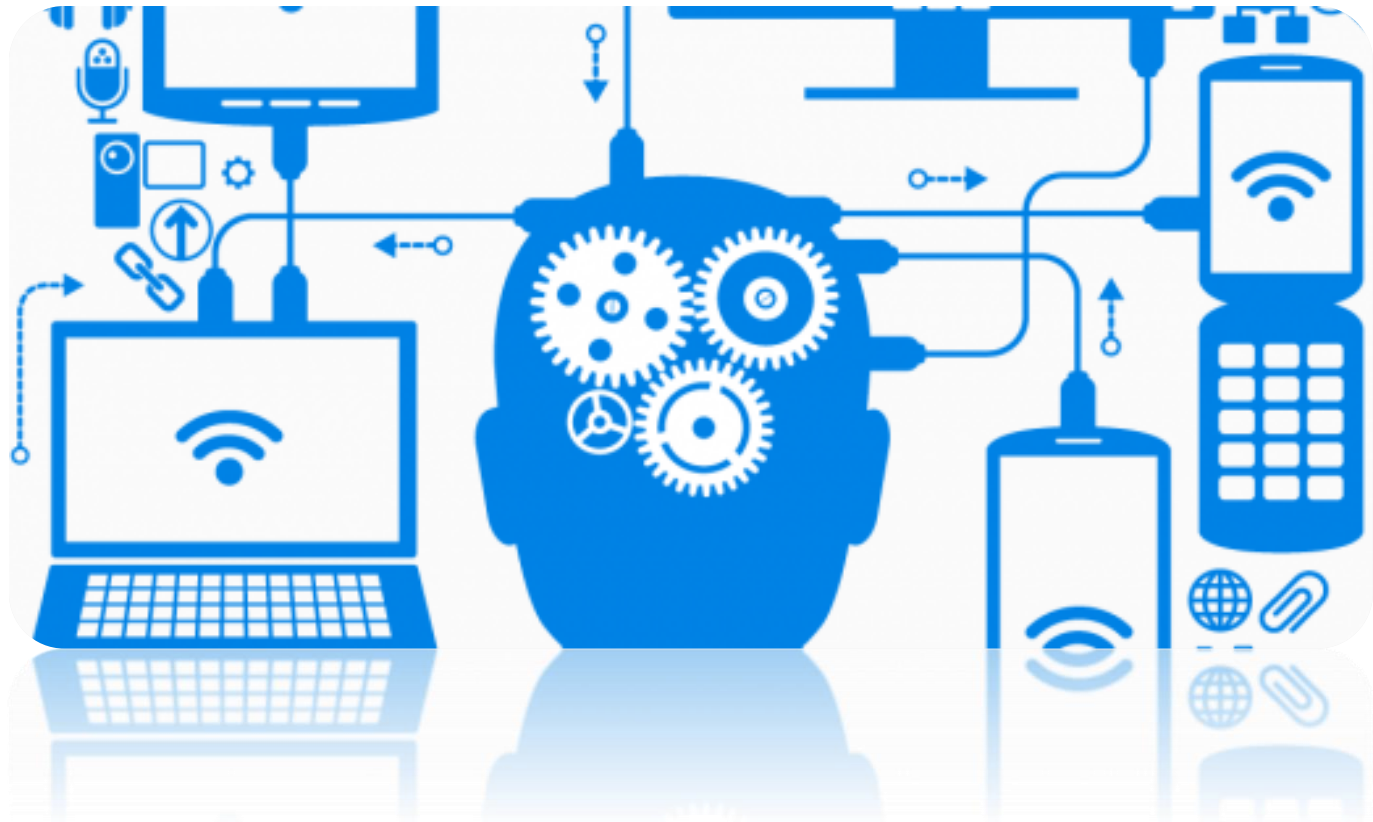
CONTROL STATEMENTS (6H)

5.1.   Introduction

5.2.   The goto, if, if…
…else, switch Statements

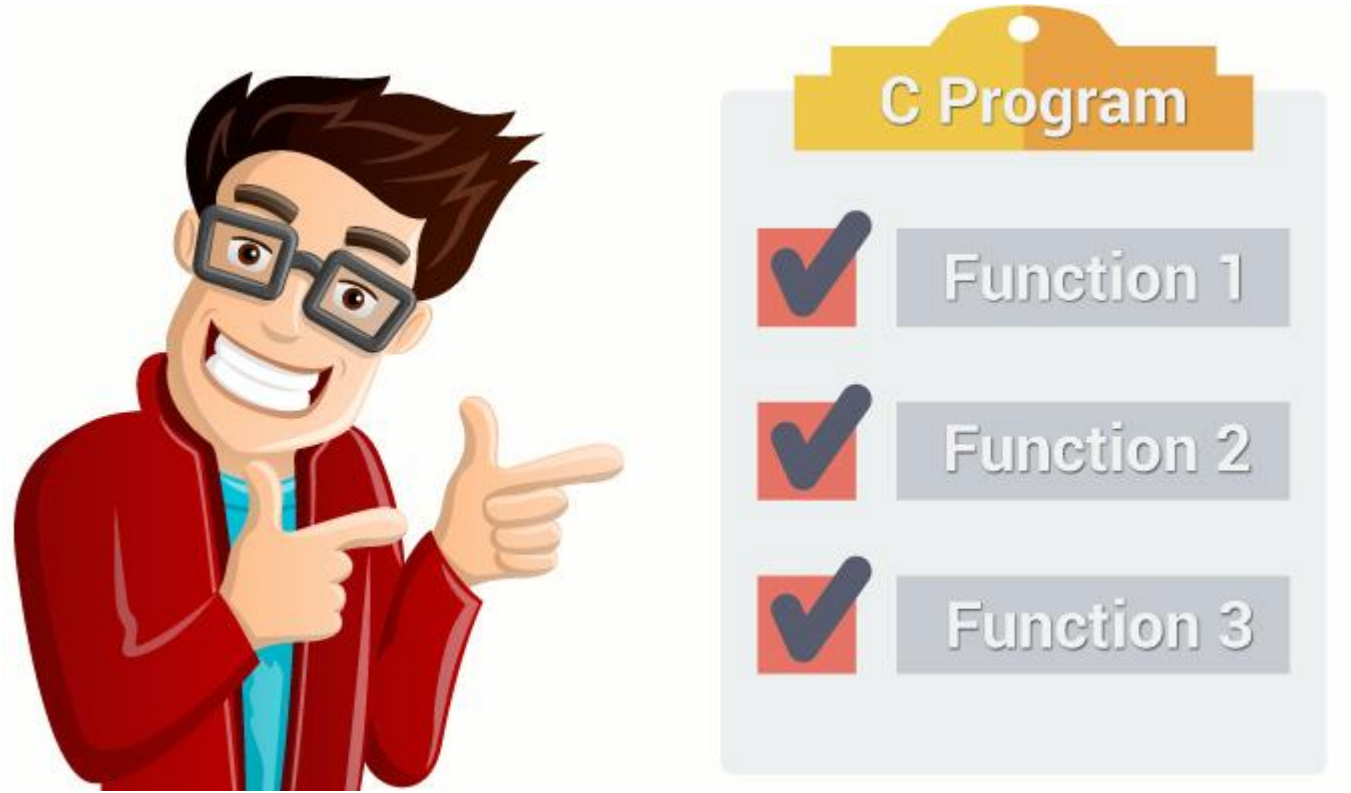5.3.   The while,
do…while, for
Statements

USER−DEFINED FUNCTIONS (4H)

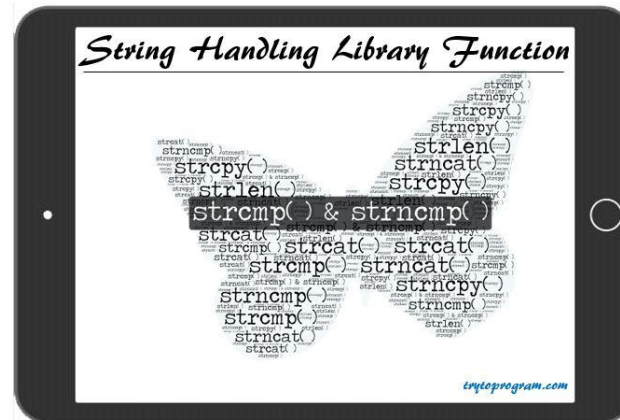6.1. Introduction

6.2. Function Definition & Return Statement

6.3. Function Prototypes

6.4. Function Invocation, Call By Value and Call By Reference, Recursive Functions

ARRAYS AND STRINGS (5H)

7.1.   Defining an Array

7.2.   One-dimensional Arrays

7.3.   Multi-dimensional Arrays

7.4.   Strings & String Manipulation

7.5.   Passing Array

& String to Function

STRUCTURES (4H)

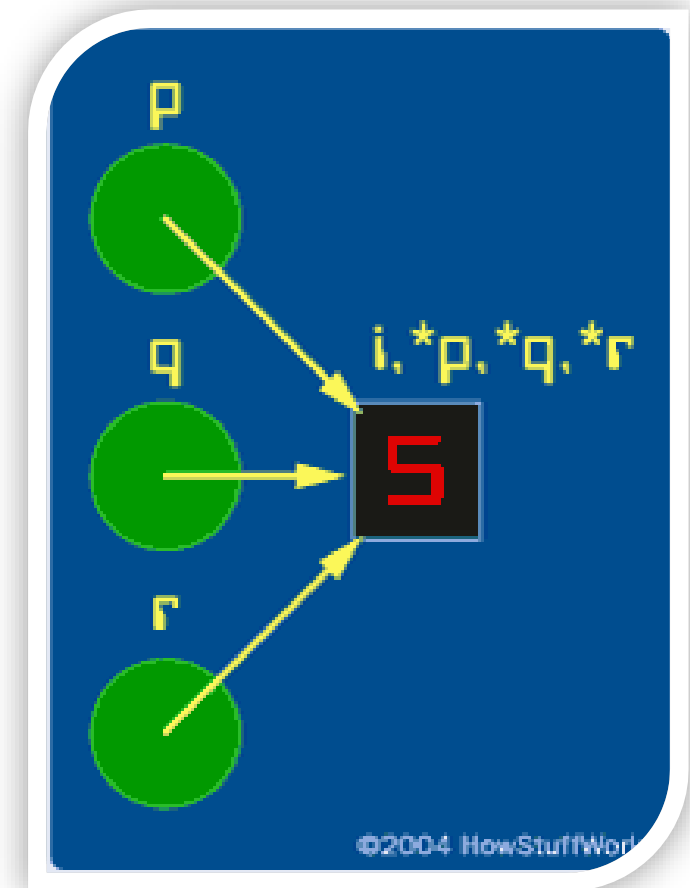# POINTERS (4H)

9.1. Introduction

9.2. Pointer Declaration

9.3. Pointer Arithmetic

9.4. Pointer and Array

9.5. Passing Pointers to a Function
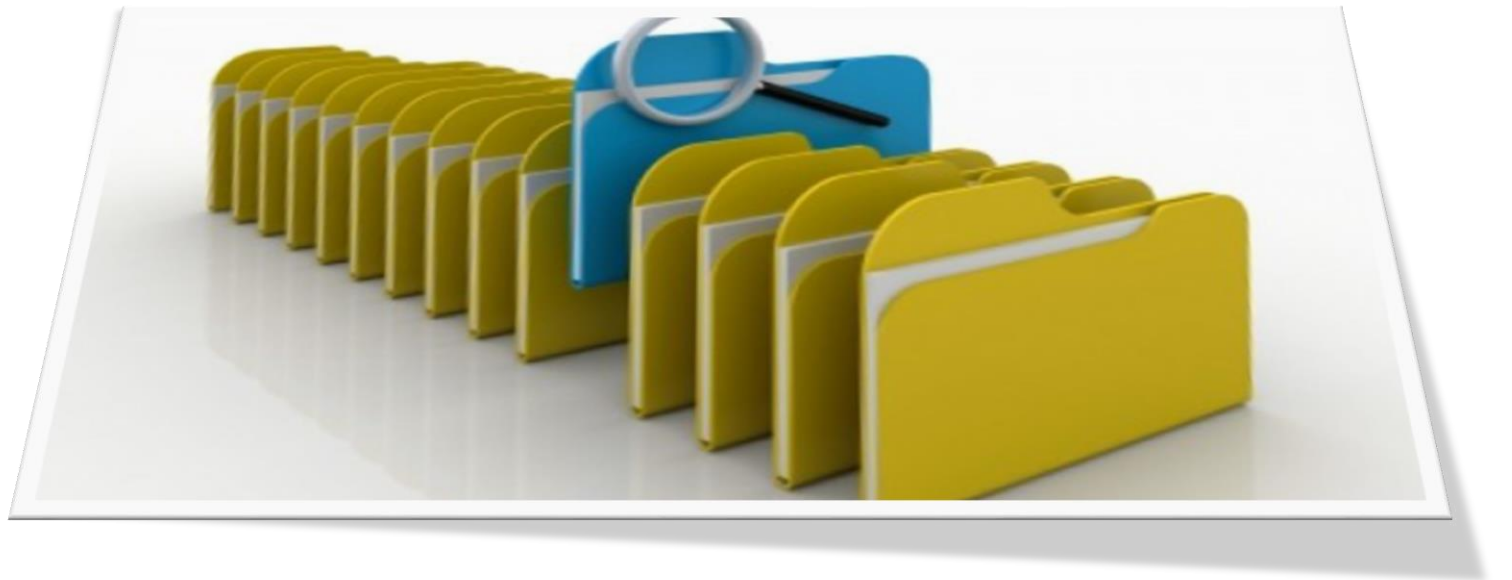
9.6. Pointers and Structures

DATA FILES (5H)

10.1. Defining Opening and Closing a File

10.2. Input/Output Operations on Files

10.3. Error Handling During Input/Output Operations

PROGRAMMING LANGUAGE: FORTRAN (4H)

11.1. Character Set

11.2. Data Types, Constants and Variables

11.3. Arithmetic Operations, Library Functions

11.4. Structure of a FORTRAN Program

11.5. Formatted and Unformatted Input/Output Statements

11.6. Control Structures: Goto, Logical IF, Arithmetic IF, Do Loops

11.7. Arrays: One Dimensional and Two Dimensional
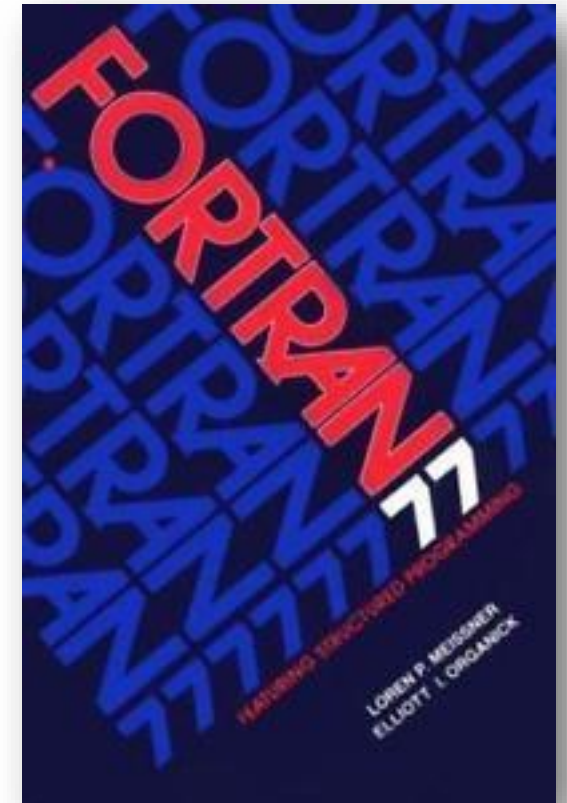
PRACTICAL

❖ Minimum 6 Sets of Computer Programs in C (From Chapter 4 to Chapter 10) and 2 Sets in FORTRAN (From Chapter 11) should be done individually. (30 Marks out of 50 Marks)

❖ Student (Maximum 4 Persons in a Group) should submit mini project at the end of course. (20 Marks out of 50 Marks)

REFERENCES

1. Kelly & Pohl, "**A Book on C**", Benjamin/Cumming

2. Brian W. Keringhan & Dennis M. Ritchie, "**The 'C' Programming Language**", PHI

3. Daya Sagar Baral, Diwakar Baral and Sharad Kumar Ghimire "**The Secrets of C Programming Language**", Bhundipuran Publication

4. Bryons S. Gotterfried, "**Programming with C**", TMH

5. Yashavant Kanetkar, "**Let Us C**", BPB

6. Ram Datta Bhatta, Babu Ram Dawadi, "**A Textbook of C Programming**", Vidyarthi Pustak Bhandar

7. Krishna Kandel, "**Learning C By Examples**", Shree Chandeshwori Publication

8. Alexis Leon, Mathews Leon, "**Fundamentals of Information Technology**", Leon Press and Vikas Publishing House

9. C. Xavier, "**FORTAN 77 and Numerical Methods**", New Age International (P) Limited

10. D. M. Etter, "**Structured Fortran & for Engineers and Scientist**", The Benjamin/Cummings Publishing Company, Inc.

11. Rama N. Reddy and Carol A. Ziegler, "**FORTRAN 77 with Applications for Scientists and Engineers**", Jaico Publishing House

DATA EXCHANGE

Introducing Third Variable

a = 5

b = 7

// Use Third Variable c

c = a

a = b

b = c

Without Introducing Third Variable

a = 5

b = 7

// No Use Third Variable

a = a + b

b = a − b

a = a - b

Q/A?

Thank You!

Er. Shiva K. Shrestha

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