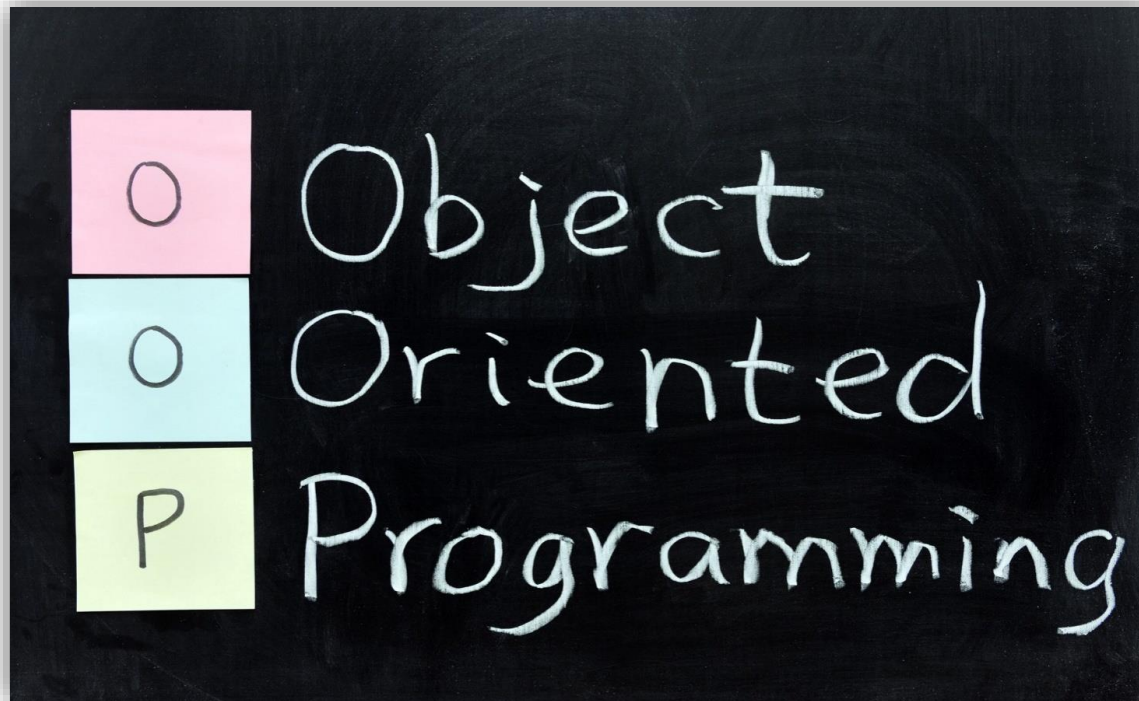




CS1143 - OBJECT ORIENTED PROGRAMMING



LECTURE#01 - COURSE INTRODUCTION

MUHAMMAD ZEESHAN SABIR

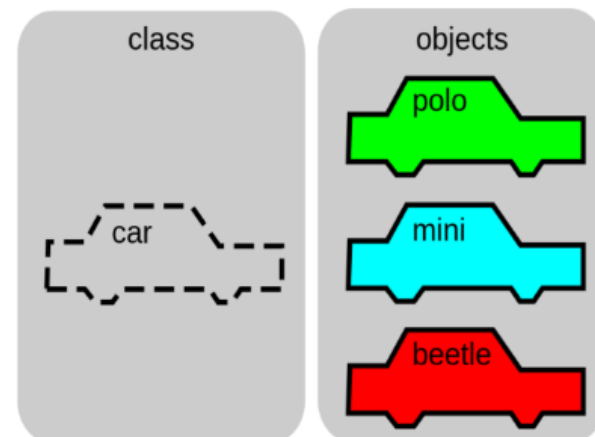
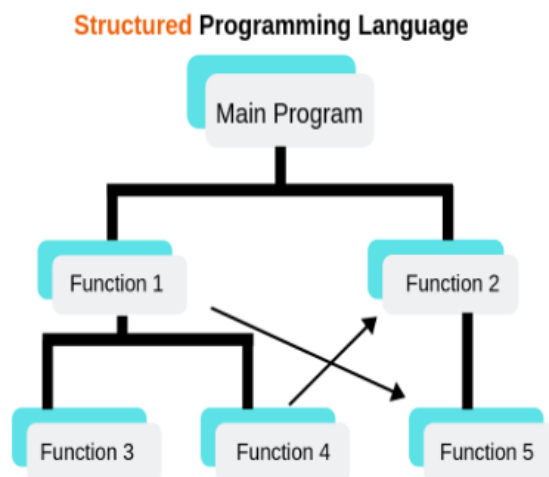
CAPITAL UNIVERSITY OF SCIENCE AND TECHNOLOGY

Object-Oriented Programming

- In Object-Oriented Programming (OOP), the first step in the problem-solving process is to identify the components called objects, which form the basis of the solution, and to determine how these objects/classes interact with one another
- Help in developing much larger and complex problem than structural programming.
- Some classes in a University Management System
 - Students
 - Faculty
 - Staff
 - Course
 -

Structured vs Object Oriented Programming

- Structured programming allows developing a program using a set of modules or functions
- Object oriented programming allows constructing a program using a set of objects which has certain behaviors and properties and their interactions.



Course Objectives

- Study Object-Oriented Programming using C++.

Course Learning Outcomes

At the end of this course, the students should be able to

CLO1: Describe key concepts of object-oriented programming paradigm [C1 Remembering]

CLO2: Interpret real world problems in terms of objects rather than procedure [C2 Understanding]

CLO3: Apply object-oriented programming principles to implement small and medium scale C++ programs with simple graphical user interface [C3 Applying]

CLO-PLO Mapping

	CLO:1	CLO:2	CLO:3
PLO:2 (Knowledge for Solving Computing Problems)	√		
PLO:3 (Problem Analysis)		√	
PLO:4 (Design/ Development of Solutions)			√

Course Policies

- **Assessment Policy**

- No makeup for assignments, quizzes. **No Exception**
- Quizzes will be announced
- No best of Quizzes/Assignments.

- **Attendance Policy**

- Attendance will be marked at any time during the class.
- Check your attendance during the class.
- You are required to be present in at least 75% of the classes

Marks Distribution

Grading	Marks
Assignments	20%
Quizzes	20%
Mid Exam	20%
Final Exam	40%

- Viva maybe conducted for assignment
- Assignment 04 will be based on project

Instructor

- Muhammad Zeeshan Sabir
- Education
 - MS, Information Security, RISE, Islamabad
 - BS Software Engineering ,UET Taxila
- Email
 - muhammad.zeeshan@cust.edu.pk
- Office
 - Block C, 2nd Floor

Schedule

- Monday 08:00 - 08:50 (1 Lecture). M4.
- Thursday 09:00 - 10:50 (2 Lectures). M6.
- Office Hours
 - Monday 9:00 am to 3:00 pm
 - Thursday 11:00 AM to 3:00 PM

Text/Reference Books

- **Text Book**

- C++: How To Program (Fourth Edition), Deitel & Deitel, Prentice-Hall.

- **Reference Book(s)**

- Object-Oriented Programming in C++ Author: Robert Lafore, Fourth Edition
 - Object Oriented Programming with C++, Author: David Parsons, [2nd Revised], Published by: Thomson Learning
 - C++ Programming: An object Oriented Approach. Forouzan and Gilberg. 2020.
 - Introduction To C++ Programming, Comprehensive Version. Daniel Liang. 3rd Edition

- Lecture Slides will be detailed enough but reading books is always a good habit

Required Software/Resources

- Code::Blocks

<https://www.codeblocks.org/downloads/binaries/>

Resources:

- All resources slides, Books, Tasks, Assignments, will be uploaded on GitHub.
- Link: <https://github.com/mzsabir/OOP---FALL-2024>
- All the information and course material will be available there.

Some Basic Rules

- General Discipline
 - DONOT use **mobile phone** during the lecture
 - Be on time. **Attendance** will be taken at the beginning of the lecture
- Plagiarism in homework
 - Submit your own work
 - Zero tolerance policy for **plagiarism**.

Contents

- Introduction and Revision
 - Introduction of the course
 - Overview of Structured Programming using C++
 - Pointers Revision
- Introduction to classes and Object-Oriented Concepts
- Creating classes
 - Function Overloading, C++ Constructor & Destructor
 - Importance of Destructor, Calling sequence of Constructor & Destructor for multiple objects
 - Preventing changes in data members from a method: const method
 - Pointer to Object; Object as argument to function (call by value & call by reference);

Contents Cont..

- Friend classes and functions
 - Friend functions
 - Friend class
- Operator overloading
 - Operator Overloading
 - Binary Operator NOT receiving Instance of class as 1st operand
 - Overloading Binary Operators for I/O stream
 - Overloading Unary Operator: as member, as non-member
 - Unusual Operators: ++, --, [] (set & get, both versions), type-cast

Contents Cont..

- Inheritance in OOP
 - C++ Inheritance Concepts
 - Relationships in OOP
 - C++ Multiple Level Inheritance, Multiple Inheritance
- Virtual classes and Polymorphism
 - Virtual inheritance
 - Polymorphism in C++ and Java
 - Virtual Functions

Contents Cont..

- Streams
 - C++ Streams
- Template classes and functions
 - Function Template
 - Class Template

This is an advance course...!

It is expected to be **CHALLENGING**

I expected you to **WORK HARD**