

Introduction to OOP



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Agenda

- **Introduction to POP**
- **Introduction to OOP**
- **Key Principles of OOP**

Procedure oriented Programming

- ये **procedure** बताती हैं किसी भी काम को करने का
- **Any software project can be seen as a list of tasks**
- **Some procedure (sequence of instructions) is required to accomplish a given task**

Introduction to OOP

- **Object Oriented Programming** is a popular programming paradigm based on the concept of **Objects**.
- **Object** is something which can contain **data** and **code**.
- **Data** in the form of fields (or attributes, or properties)
- **Code** in the form of procedures (or methods)
- Real world entities are called object.
- Class is a description of an object.
- Class is a group of variables and functions.
- Object is an instance of a class

History of OOP

- The term object oriented programming made its first appearance at **MIT** in the late 1950s and early 1960s.
- **LISP** is the second oldest high level programming language (after **FORTRAN**) which uses term **object** with **properties**.
- **Simula** introduced important concepts that are today an essential part of object oriented programming, such as **class** and **object**, **inheritance**, and **dynamic binding**

- **Alan Kay** who also developed **Smalltalk** implemented **Object Oriented** features has received the major credit on development of **OOP**.
- **"OOP to me means only messaging, local retention and protection and hiding of state - process, and extreme data binding at all things"**

- Alan Kay

- **In Simple words, essential ingredients of OOP are**
 - **Message Passing**
 - **Encapsulation**
 - **Dynamic Binding**

What is programming paradigm

- **Paradigm = model**
- **Programming Paradigms are specific code organization with particular techniques to implement programming solutions**
- **Different programming paradigms are guidance on approach to solve a programming problems**

Different programming paradigms

- **Procedural Programming**
- **Object Oriented Programming**
- **Imperative Programming**
- **Declarative Programming**
- **Parallel Processing Approach**
- **many more . . .**

❖ Which of the following is the first object oriented Programming language ?

- a) Java
- b) C++
- c) Simula
- d) Smalltalk

❖ Which of the following is the first purely object oriented programming language ?

- a) Java
- b) C++
- c) Simula
- d) Smalltalk

Key principles of OOP

1. Encapsulation

2. Data Hiding

3. Abstraction

4. Inheritance

5. Polymorphism