



OBJECT ORIENTED PROGRAMMING

Object Oriented Approach

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Introduction

- The programming languages which support following characteristics are considered as object oriented languages:
 - Class and Object
 - Data encapsulation
 - Data hiding
 - Inheritance
 - Polymorphism
 - Reusability
 - Abstraction
 - Open recursion
- Advantages
 - Scalable
 - Reusable
 - Flexible
 - Maintainable
 - Real-World Modeling



Object Oriented Approach

- Class and Object
 - Class is description that consists members as a single unit
 - Members of class can be:
 - Data members (attributes), which carry data specified with-in class
 - Member functions (methods), which operate data members of same class as described
 - Class itself is just description and doesn't exist physically (i.e. doesn't allocate memory)
 - Variable or instance of class is called an object
 - Object is physical existence of a class and allocate memory.
 - Many objects of same class can be created according to requirements
 - Relationship b/w class and its object is similar to structure and its variable.
- Data encapsulation
 - Enforces modularity
 - Combining functions along with the data on which those operate in a single unit
 - Data encapsulation provides facility towards programmers to implement real-life problems



Object Oriented Approach

- Data hiding
 - Allows to hide data from accidental use
 - Also provides different methods to define access type of the member(s)
- Inheritance
 - Provides a facility to create new class from existing class
 - New (child) class will have all the members of existing (base) class
 - While the child class can have its own members too
 - Ease in program development
- Polymorphism
 - Allows to define single entity many times
 - Entity types:
 - Functions
 - Operators
 - Types:
 - Overloading: Compile-time polymorphism
 - Overriding: Run-time polymorphism
 - Results easiness in using an object/class or to implement operations for new data types



Object Oriented Approach

- Reusability
 - Reuse the existing code in other programs and/or to create new one
 - e.g. Pre-defined class, APIs, Libraries etc.
 - Inheritance also provide an aid in reusability
- Abstraction
 - Hiding detailed information form the programmer(s) using the existing code/class/object
 - Abstraction is possible due to data encapsulation
- Open Recursion
 - Allows a method to call another method of the same object
 - Invokes and/or shares data with other methods of same object
 - Also referred as message-passing in Object Oriented Approach



Questions

