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ASSIGNMENT-1

Ques 1: What is an object ? Explain using suitable example.

Ans 1: ★ In the Object - Oriented design method, the system is viewed as a collection of objects (i.e. entities).

★ The state is distributed among the objects and each object handles its state data.

★ An object is a software "bundle", consists of a set of variables which defines the states. The object can exist in and a set of functions that define behaviour of that object.

★ Objects are often used to model the real world objects that you find in everyday life.

★ All entities involved in the solution design are known as objects.

★ For example, person, banks, company and users are considered as objects.

★ Every entity has some attributes associated with it and has some methods to perform on attributes.

★ Eg: In a library automation software, each library representative may be a separate object with its data and functions

to operate on there data.
* Objects have their internal data which represent their state. Similar objects create a class.
* Each object is a member of some class. Classes may inherit features from superclass.

Ques 2: Explain the various characteristics on properties of the objects.

Ans 2: There are following characteristics of objects:

1. State:
An object stores its state in fields, i.e. member variables in classes.

2. Defined behaviors:
An object expresses its behavior through methods. Methods operate on an object's internal state and serve as primary mechanism for object-to-object communication. Hiding the internal state and requiring all interaction to be performed through an objects methods known as data encapsulation which is a fundamental principle of object-oriented programming.

3. Defined ways of modifying the state:
Only an object's method should be able to modify it's state i.e. none of the fields should be directly modifiable

by other object's code.

Some features of object-oriented language are:

1. Encapsulation:
* It means that data are encapsulated inside an inviolable shell along the methods require to use it.

2. Polymorphism:
* It is the ability of a message to be displayed in more than one form.

3. Inheritance:
* It is the ability to create classes that share the attributes and methods of existing class but with more specific features.

Ques 3: Explain the concept of object oriented model.

Ans 3: * Object-Oriented Model is the construction of objects using a collection of objects that contains stored values of the instance variables found within an object.
* It is an approach to modeling an application that is used at the beginning of the software life cycle when using an object-oriented approach to software development. Steps involved in object-oriented modeling

1. System Analysis:
   ☆ In this stage a statement of the problem is formulated and a model is build.
   ★ This phase show the important properties associated with the situation.

2. System design:
   ★ At this stage, the complete system architecture is designed.
   ★ In this stage, whole system is divided into subsystems.

3. Object design:
   ☆ At this stage, a design model is developed based on the analysis model.

4. Final implementation:
   ☆ At this stage, final implementation of classes and relationships developed during object design takes place.

Ques 4: What is UML? Explain UML architecture in detail along with its advantages.

Ans 4: ★ UML stands for Unified Modeling Lang.
   ★ UML is a pictorial language used to make software blueprints.

★ UML can be described as a general purpose visual modeling language to visualize, specify, construct and document software system.
★ It is also used to model non-software systems as well.

Architecture of UML:
★ The UML is defined in a circular manner in which a subset of the language notation and semantics is used to specify the language itself.
☆ The UML is defined within a conceptual framework for modeling that consists of four distinct layers or levels of abstraction.
☆ The framework is defined based on the most fundamental UML notation that concepts are depicted as symbols and relationships among concepts are depicted as paths connecting symbols. Both of these types of elements may be named.
★ The concepts introduced by the UML are organized around architectural view to define the various diagrams.
★ The UML diagrams are used to understand conceptualize a problem, solve the problem, and implement or realize the solution.

Advantages:

* It has wide industry acceptance in comparison to previous modeling lang.
* It supports OOAD methodology.
* It bridges the communication gap between different entities of system development.
* It is a unified and standardize modeling language.