

## UNIT 5 OBJECT-ORIENTED PROGRAMMING (OOP)

① What is object oriented programming? Write any Five ~~Characteristics~~ of oop. AND Five Features of oop.

⇒ Object oriented programming is programming methodology that ties data more closely to the functions that operate on it, and protects it from accidental modification from outside function.

Following are the Five ~~Features~~ <sup>Characteristics</sup> of oop.

- Emphasis is on data rather procedures.
- Programs are divided into objects
- Data structures are designed such that they characterize the objects.
- Data is hidden and can't be accessed by external functions
- New data and Function can be easily added whenever necessary.

Following are the Five features.

- Objects
- Class
- Encapsulation
- Data abstraction
- Inheritance
- polymorphism

@Object: object is the basic run time entities in oop which consists of data and functions. It may represent a person, place, bank account, table of data etc.

⑥ Encapsulation: The wrapping of related data and function into a single unit is known as encapsulation. It is a data hiding or process of binding data member into a single unit class.



① Data Abstraction: Data abstraction refers to the act of representing essential features to outside world, without including the background details or explanation.

② Inheritance: Inheritance is a mechanism to share code and behavior. It allows a programmer to reuse the behavior of a class in the definition of new classes.

③ Polymorphism: Polymorphism is an important concept of object-oriented programming. It means more than one form. That is, the same entity (function or operator) behaves differently in different scenarios.

④ Differentiate between pop and oop.

Procedural programming	Object oriented programming
<ul style="list-style-type: none"><li>• It deals with programs and function</li><li>• pop uses the top-down approach.</li><li>• No access modifiers are supported</li><li>• There is no data-hiding mechanism in pop</li><li>• object function are linked message passing.</li></ul>	<ul style="list-style-type: none"><li>• It deals with object and their properties</li><li>• oop uses bottom up approach.</li><li>• oop is supported by the means of access modifiers.</li><li>• Data can be hidden using encapsulation.</li><li>• parameter passing is involved in message passing.</li></ul>



③ What is structured programming? How it driven from exam driven program (oop).

=> A programming approach in which the program is made as a single structure. and improved version of un-structured programming is known as structured programming.

Structured programming is task centric while object oriented programming is data centric. Structured programming is based around data structure and subroutines. on the other hand, OOP shifts your primary attention to the data itself.

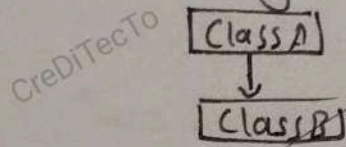
④ Distinguish between a class and an object.

Class	Object.
<ul style="list-style-type: none"><li>• A class is a blueprint for declaring and creating objects.</li><li>• Memory is allocated to classes.</li><li>• Class can be declared only one time</li><li>• Class is a logical entity</li><li>• we cannot manipulate class as it is not available in memory</li></ul>	<ul style="list-style-type: none"><li>• An object is a class instance that allows programmers to use variable and methods from inside the class.</li><li>• memory is allocated to an objects in the heap memory.</li><li>• A class can be used to create many objects.</li><li>• An object is a physical entity</li><li>• object can be manipulate.</li></ul>

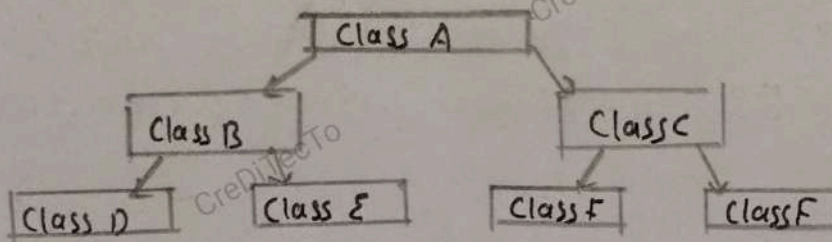


⑤ Explain different types of inheritance.

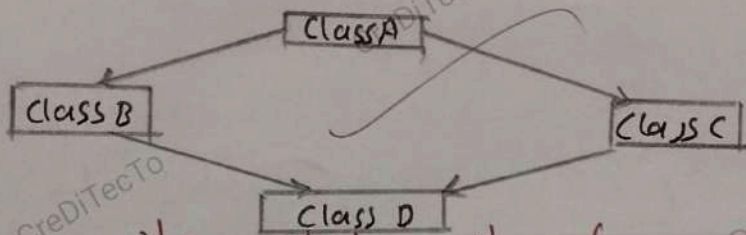
① Single Inheritance: A Single inheritance is a class derives from one base class only. This means that there is only one subclass.



② Hierarchical Inheritance: More than one class inherits from a single base class is known as Hierarchical Inheritance.



③ Hybrid: Hybrid Inheritance is usually a combination of more than one type of inheritance (Single, multilevel).



⑥ Write some merits and demerits of oop?

⇒ Merits

- ① Improved Software development productivity.
- ② Improved Software maintainability
- ③ Faster development
- ④ Lower cost of development
- ⑤ with the help of inheritance, we can eliminate redundant code and existing classes.

De-merits

- oop typically involve more lines of code than procedural program.
- oops are typically slower than procedural programming.
- oop is not suitable for all types of problems.
- Programmer need to have brilliant designing skill and programming skill along with proper planning because using oop is little tricky.
- oop can be too Scalable.



## ⑦ Application of oops.

- @ Realtime: Real time system inherits complexities and makes it difficult to build them. oop techniques make it easier to handle those complexities.
- @ Hypertext and hypermedia: Hypertext is similar to regular text as it can be stored, searched and edited easily. oop also helps in laying the framework.
- @ Office automation system: These include formal as well as informal electronic system that primarily concerned with information sharing and communication to and from people inside and outside the organization.
- @ Neural Networking and parallel programming: oop is used in neural networking chip which helps to movement of disabled persons.

## • @ Object-oriented database:

- The database try to maintain a direct correspondence between the real world and database object in order to let the object

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