

OPP’S

Assignment

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# Object Oriented Programming:

Programming languages have been designed based on two fundamental concepts, data and ways of manipulate data.

OOP was introduced, which focused on data rather than the ways to manipulate data. The object-oriented approach defines objects as entities having a defined set of values and a defined set of operations that can be performed on these values.

# Classes And Objects:

The program also include code to instantiate (support) the classes as objects. When the program runs, objects are created for the classes and they may interact with each other to provide the functionalities of the program.

## Objects:

The Concept of objects in the real world can also be extended to the programming world.

An object in a programming language has a unique identity, state, and behavior.

In simple terms, an object has various features that can describe it. These features could be the company name, model, price, mileage and so on.

An object stores its identity and state in fields (also called variables) and exposes its behavior through methods.

## Classes:

Categorization of real-life objects according to its attributes and behavior.

The concept of classes in the real world can be extended to the programming world, similar to the concept of objects. In object-oriented programming languages, A class is template or blueprint which defines the state and behavior of all objects belonging to that class.

A class comprises (compresses) fields, properties, methods, and so on, collectively called data members of the class.

# Inheritance:

A programmer does not always need to create a class in PHP form scratch. At times, the programmer can create a new class by extending the features of an existing class. The process of creating a new class by extending some features of an existing class is known as inheritance.

The class from which the new class is created is known as the Parent (Base) class and the created class is known as the Child (Derived) class.

# Single Level Inheritance:

In single level inheritance, we inherit one class into another class. In this process, One is parent class and other is child class. This type of inheritance also known as simple inheritance.

CLASS A

## Parent Class

CLASS **B**

## Child Class

# Multi Level Inheritance:

In this type of inheritance, there will be more than 2 classes involved. In Multilevel inheritance Parent class will be inherited by a child and then further child class will be inherited by another child class.

# Parent Class

CLASS **A**

CLASS **B**

# Child Class

# But Parent

# Of C Class

# Child Class

CLASS **C**

# Hierarchical Inheritance:

When more than one class inherit to a single class. This type of inheritance known as Hierarchical Inheritance.

# Parent Class

CLASS **A**

# Child Child

CLASS **B**

CLASS **C**

# Class Class

# Polymorphism:

Polymorphism is derived from two Greek words, namely Poly and Morphos. Poly means many and Morphos Means forms. Polymorphism means Existing in multiple forms.

Polymorphism is the ability to behave differently in different situations. It is basically seen in programs where you have methods declared with the same name but with different parameters and different behavior.

# For Example

Area (float radius)

Area (float base, float height)

The two methods calculate the area of the circle and triangle taking different parameters and using different formulae. This is an example of polymorphism.

Polymorphism allows methods to function differently based on the parameters and their data types.

# Abstraction:

Abstraction is the feature of extracting only required information from objects.

# Encapsulation:

Details of what a class contains need not to be visible to other classes and objects that use it. Instead, only specific information can be made visible and the others can be hidden. This is achieved through encapsulation, also called data hiding. Both abstraction and encapsulation are complementary to each other.