Procedure Oriented Programming

Examples of POP are COBOL, FORTRAN, C, etc.

Features of POP

* It gives emphasis on algorithm rather than data.
* Large problems are divided into smaller programs known as functions.
* Most of the functions share global data.
* data move openly around the systems i.e. one function to another function.
* it is top down approach in program design.

Main Program

Function 1 Function 2 Function 3

Function 4 Function 5

Function 6 Function 7 Function 8

GLOBAL DATA

FUNTION 1 LOCAL DATA

FUNTION 3 LOCAL DATA

FUNTION 2 LOCAL DATA

GLOBAL DATA

Object Oriented Programming

e.g. C++, Java, Smalltalk etc.

Main features of OOP are

* It treats data as critical elements.
* It doesn't allow the data to move freely around the system.
* It ties data more closely to the function and protects from accidental modification from outside function
* It allows decomposition of programs into a number of entities called objects.
* Objects may communicate with each other through function/methods.
* New data and functions can be easily added when necessary.
* It follows Bottom-Up approach.

Object 1 Object 2

Function Data

Function Data

Object 3

Function Data

Major tools of OOP are

* Object
* Class
* Data Abstraction
* Inheritance
* Encapsulation
* Polymorphism
* Dynamic Binding
* Message Passing

Object

Object is an instance of class and there can be multiple instance of a class in a program. Objects are the basic runtime entities in Object Oriented System, they may represent a person, a place, a bank account , a table of data or any item that the program has to handle.

Class

Object contains data and code to manipulate the data, the entire set of data and code of a object can be mode as a user defined data type in a entity called class. Thus, a class is a group of similar entities e.g. fruit, furniture etc.

Data Abstraction

It hides necessary details from unauthorized access.

Data Abstraction is an act of representing essential features without including background details explanation.

e.g. while driving a car we don't have to be concerned with its internal working we just need to be concerned about parts like steering wheel, gears, accelerator etc.

Inheritance

It is the process by which object of one class acquires the property of another class. In OOP, inheritance provide the concept of reusability.

Base Class

Derived Class

It creates parent-child relationship b/w two classes.

Encapsulation

The wrapping/binding of data and function into a single unit is known as encapsulation.

Polymorphism

One name, many forms

Area

Circle Triangle

It refers to the ability of a variable , object or function to take multiple forms.

e.g. a draw( ) function can be used to draw a circle, draw a box or a triangle.

Message Passing

Communication b/w objects by sending and receiving information to functions is known as message passing.

Data Binding

Binding refers to the linking a procedure call to the code to be executed in respect to the call

Static or compile time binding.

Type

Dynamic or runtime binding.

Advantage of OOP

* It deals with real world problems.
* It makes the program to understand, manage and maintain.
* It provides reusability features.
* It is more secure in compare to POP languages.