OOPS-Features-

Object Oriented Programming

* The programming paradigm where everything is represented as an object, is known as truly object-oriented programming language.
* Simula is considered as the first object-oriented programming language.
* Smalltalk is considered as the first truly object-oriented programming language.
* In simple words it can be said as real world enntity.
* It provide many concepts:

a)Object
b)Class
c)Inheritance
d)Polymorphism
e)Abstraction
f)Encapsulation

Object:- The actual meaning of a object is,it is an instance of a class
In simple terminology object is the one which has a state and behaviour.

Class:- A class can be defined as a blueprint that describes the behaviour (or) state that the object of its type support.

A class in Java can contain:

* fields
* methods
* constructors
* blocks
* nested class and interface

Inheritance:- Classes can share, obtain or inherit properties and methods that belong to existing classes and the advantage of this is we can reuse existing code and reduces the time you spend coding.

* A class that inherits from another is called a derived class or a child class.
* A class that shares its properties and methods is called a base class or parent class.
* A base class can have additional properties and methods not present in the parent class that distinguishes it and provides additional functionality.

Polymorphism:- Polymorphism refers to the ability of a method to be used in different ways, that

is, it can take different forms at different times .

There are two types of polymorphism: compile time polymorphism(Static) and run time polymorphism(Dynamic).

* Compile time (static) polymorphism occurs when a method is overloaded; that is, when the argument used with the method is changed.

* Run time (dynamic) polymorphism occurs when the methods itself are changed.

Abstraction:- Data abstraction refers to the process of only displaying relevant properties and methods to handle an object, while hiding the rest.

Data abstraction lets you reduce the complexity (apparently) of a program and is a large advantage offered by classes in OOP languages.

ex:-You can operate your phone as long as you have a keypad and a screen. You dont to know about its circuit,software or other technology to operate it. Its complexity is hidden.

* We can declare a class as abstract in Java to use the data abstraction functionality.

* We can create an abstract class using the abstract keyword. An abstract class may or may or may not contain abstract methods. A class containing abstract methods must be declared abstract a normal class cannot contain abstract methods.

Encapsulation:- It refers to keeping objects with their methods in one place.

* It also protects the integrity of the data prevents it from being needlessly altered by restricting access to the data, preferably by hiding it from outside elements.

* Encapsulation is often confused with data abstraction, but they are different concepts entirely.

* Data hiding, or data abstraction, has more to do with access specifiers.

* A programmer must first encapsulate the data and then he can take steps to hide it.