**Java OOPs Concepts**

**Simula** is considered as the first object-oriented programming language.

**Smalltalk** is considered as the first truly object-oriented programming language.

**OOPs (Object Oriented Programming System)**

**Object** means a real word entity such as pen, chair, table etc.

1. Inheritance
2. Polymorphism
3. Abstraction
4. Encapsulation

**1) Inheritance**

**Passing the properties**

**When one object acquires all the properties and behaviors of parent object** i.e. known as inheritance.

It provides code reusability. It is used to achieve runtime polymorphism.

**2) Polymorphism**

**Poly means many and morphs means form.**

**Polymorphism means existing in many form**

When **one task is performed by different ways** i.e. known as polymorphism. For example: to convense the customer differently, to draw something e.g. shape or rectangle etc.

**In java, we use method overloading and method overriding to achieve polymorphism.**

Another example can be to speak something e.g. cat speaks meaw, dog barks woof etc.

**3) Abstraction**

**Hiding internal details and showing functionality** is known as abstraction. For example: phone call, we don't know the internal processing.

In java, we use abstract class and interface to achieve abstraction.

**4) Encapsulation**

**Binding (or wrapping) code and data together into a single unit is known as encapsulation**. For example: capsule, it is wrapped with different medicines.

A java class is the example of encapsulation. Java bean is the fully encapsulated class because all the data members are private here.

**Advantage of OOPs over Procedure-oriented programming language**

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| 1)OOPs makes development and maintenance easier where as in Procedure-oriented programming language it is not easy to manage if code grows as project size grows. |
| 2)OOPs provides data hiding whereas in Procedure-oriented prgramming language a global data can be accessed from anywhere. |
| 3)OOPs provides ability to simulate real-world event much more effectively. We can provide the solution of real word problem if we are using the Object-Oriented Programming language. |

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