



<Codemithra />TM

Explore | Expand | Enrich

<Codemithra />TM



Explore | Expand | Enrich

Object-Oriented Programming

WHAT YOU'LL LEARN

- OOPs Concepts in Java
- Object-Oriented Programming Paradigm (Model/Design)
- Features of OOPs in Java
- Basic OOPs Concepts in Java
- Advantage of OOPs Concepts
- Application of OOPs concepts

OOPs CONCEPT IN JAVA

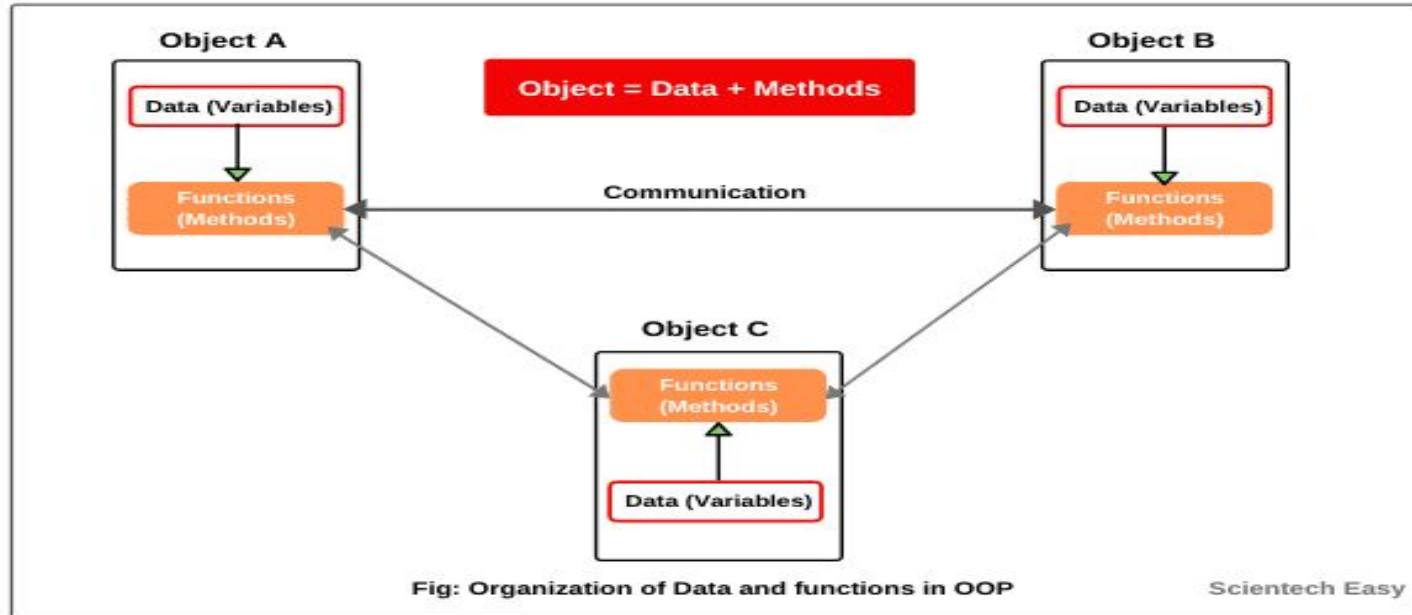
- Object-oriented programming (OOP) in Java is a programming methodology or paradigm (model) to design a computer program using classes and objects.
- It is the most popular programming paradigm and widely used in the software industry today. It is an extension of procedural programming.
- Procedural programming means writing code without objects.
- Whereas, object-oriented programming means writing code with objects. It contains data in the form of fields or variables and functionality code in the form of methods.

OOPs CONCEPT IN JAVA

- Java OOP concept uses variables and methods as procedural programs do, but it focuses on the objects that contain variables and methods.
- That's why this new approach is called object-oriented approach in which we write programs using classes and objects.

OOPs CONCEPT IN JAVA

Object-Oriented Programming Paradigm



OOPs CONCEPT IN JAVA

Object-Oriented Programming Paradigm

- Object oriented programming is a new approach to overcome the drawbacks of a procedural oriented approach. It divides programs into the number of entities called objects that contain data (variables) and functions/tasks (known as methods in java).
- The data of an object is tied more closely with a function that operates on it. In the OOPs concept, data cannot move freely around the system.



OOPs CONCEPT IN JAVA

Features of OOPs in Java

- Higher priority is focused on Data rather than functions.
- Programs are divided into the number of entities known as objects.
- Objects communicate with each other through functions (methods).
- Methods that operate on Data of an object are closely bound together in the data structure.
- An object is a group of data and methods.

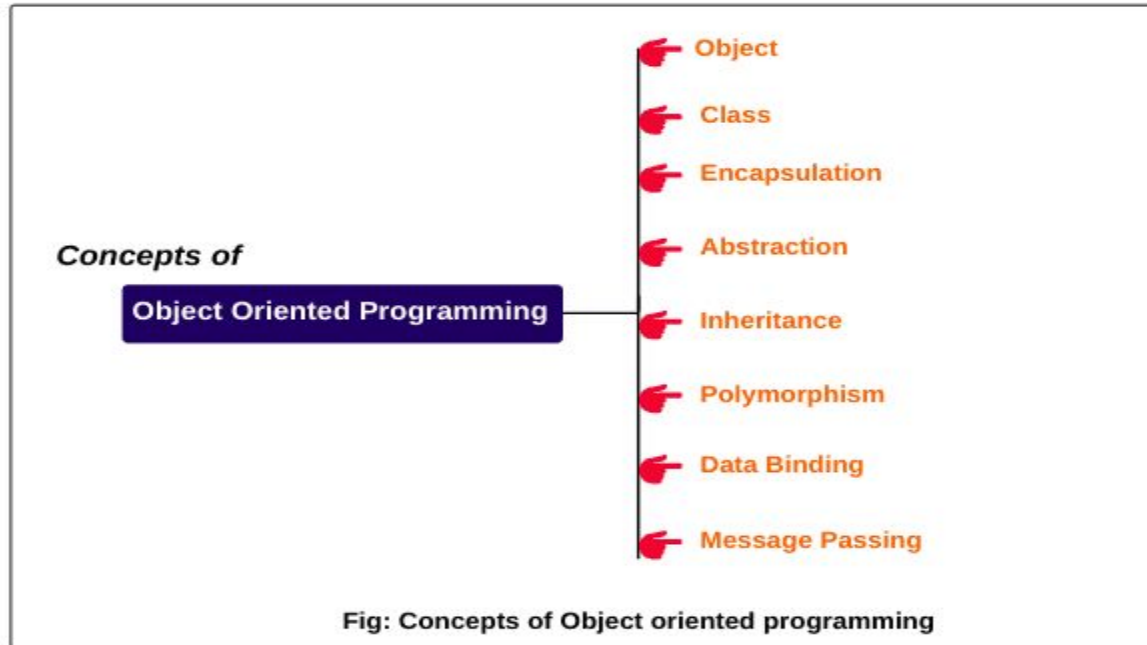
OOPs CONCEPT IN JAVA

Features of OOPs in Java

- Data is hidden in the OOP and cannot be accessed by external methods. Hence, it is safe from accidental modification.
- Data cannot move freely out of the object.
- New data and methods can be easily added whenever needs.
- A bottom-up approach is adopted in programming design.

OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java



OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java

Object:

A real-world entity that has state and behavior is called object in java. Here, state represents properties and behavior represents actions and functionality. For example, a person, chair, pen, table, keyboard, bike, etc.

Class:

A class is basically user-defined data types that act as a template for creating objects of the identical type. It represents the common properties and actions (functions) of an object.

OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java

Encapsulation:

The process of binding data (variables) and corresponding functions (methods) together into a single unit (called class) is called encapsulation in Java. It is one of the striking features to achieve data security in an object-oriented program.

Abstraction:

Abstraction is a technique by which we can hide the unnecessary data that is not needed from a user and expose only that data is of interest to the user. It hides all unwanted data so that users can work only with the required data.

OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java

Inheritance:

Inheritance is one of the main pillars of the OOP concept. It provides a mechanism for the users to reuse the existing code within the new applications

Polymorphism:

Polymorphism is another salient feature of OOP concepts in which method can take more than one form based on the type of parameters, order of parameters, and number of parameters.



OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java

Dynamic Binding:

Dynamic binding (also known as late binding) is a way of connecting one program to another that is to be executed whenever it is called at runtime. It is associated with inheritance and polymorphism.

OOPs CONCEPT IN JAVA

Basic OOPs Concepts in Java

Message Passing:

In OOP, objects communicate with each other through member methods of the class. To establish communication between two objects, the following steps take place:

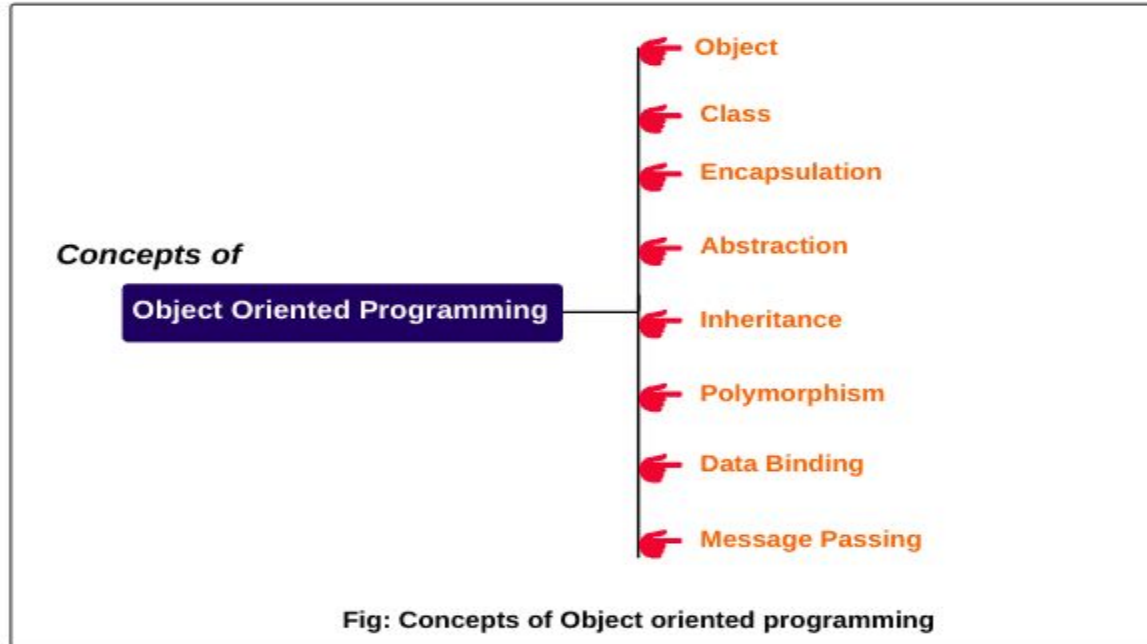
- Creating classes that declare variables and methods.

- Creating objects of classes that already declared.

- Calling methods through suitable data to establish communication between objects.

OOPs CONCEPT IN JAVA

Advantage of OOPs Concepts



OOPs CONCEPT IN JAVA

Application of OOPs concepts

- Real-time systems
- Object-oriented database
- Graphical user interface design in the Windows operating system.
- Artificial intelligence and expert systems
- Parallel programming
- CAD/CAM software and in many areas.



/ethnuscodemithra



Ethnus Codemithra



/ethnus



/code_mithra

<Codemithra />TM



<https://learn.codemithra.com>



Explore | Expand | Enrich



codemithra@ethnus.com



+91 7815 095 095



+91 9019 921 340