

# COMPLETE ADVANCED THEORETICAL FRAMEWORK

- For example, if you had a class called Expensive Cars it could have objects like Mercedes, BMW, Toyota, etc. For example - chair, bike, marker, pen, table, car, etc. What are Classes and Objects. Classes and objects are the two main aspects of object - oriented programming.
- For example, in English, the verb run has a different meaning if you use it with a laptop, a foot race, and business. For example, while driving a car, you do not have to be concerned with its internal working. For example - in school, a student cannot exist without a class. For example, many students can associate with one teacher while one student can also associate with multiple teachers.
- In procedural programming, over loading is not possible Examples: C, FORTRAN, Pascal, Basic etc. Examples: C++, Java, Python, C# etc.
- Object - oriented programming aims to implement real - world entities like inheritance, hiding, polymorphism etc in programming. Object - Oriented Programming is a methodology or paradigm to design a program using classes and objects. It is only a logical component and not the physical entity. Its properties (data) can be price or speed of these cars.
- While the methods may be performed with these cars are driving, reverse, braking etc. 2) Object An object can be defined as an instance of a class, and there can be multiple instances of a class in a program. An Object contains both the data and the function, which operates on the data. An object consists of: 1.
- It also reflects the properties of an object. BCA - JAVA PROGRAMMING YUVAKSHETRA INSTITUTE OF MANAGEMENT STUDIES BCA 2017 ONWARS BATCH Page 2 2. Behavior : It is represented by methods of an object. It also reflects the response of an object with other objects.
- Identity : It gives a unique name to an object and enables one object to interact with other objects. Its creating a parent - child relationship between two classes. 4) Polymorphism Polymorphism refers to the ability of a variable, object or function to take on multiple forms. Here, we understand the meaning of run based on the other words used along with it.
- The same also applied to Polymorphism. 5) Abstraction An abstraction is an act of representing essential features without including background details. It is a technique of creating a new data type that is suited for a specific application. Here you just need to concern about parts like steering wheel, Gears, accelerator, etc.
- In this OOPS concept, the variables of a class are always hidden from other classes. It can only be accessed using the methods of their current class. 7) Association Association is a relationship between two objects. It defines the diversity between objects.
- In this OOP concept, all object have their separate lifecycle, and there is no owner. 8 ) Message Passing : Objects communicate with one another by sending and receiving information to each other. Message passing involves specifying the name of the object, the name of the function and the information to be sent. Objects created for Object - Oriented Programs can be reused in other programs.
- Large programs are difficult to write, but if the development and designing team follow OOPS concept then they can better design with minimum flaws. It also enhances program modularity because every object exists independently. In object oriented programming, program is divided into small parts called objects. Procedural programming follows top down approach.
- Object oriented programming follows bottom up approach. There is no access specifier in procedural programming. Object oriented programming have access specifiers like private, public, protected etc. Adding

new data and function is not easy.

- Adding new data and function is easy. Overloading is possible in object oriented programming.  
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- BCA - JAVA PRORAMMING YUVAKSHETRA INSTITUT E OF MANAGEMENT STUD IES BCA 2017 ONWARS BATCH Page 1 UNIT I OBJECT - ORIENTED PROGRAMMING Object - Oriented Programming or OOPs refers to languages that uses objects in programming. Th e main aim of OOP is to bind together the data and the functions that operate on them so that no other part of the code can access this data except that function. It simplifies software development and maintenance by providing some concepts: Object Class Inheritance Polymorphism Abstraction Encapsulation Object Oriented Programming popularly known as OOP, is used in a modern programming language like Java CORE OOPS CONCEPTS ( PRINCIPLES OF OBJECT ORIENTATION - CLASS) 1) Class The class is a group of similar entities. State : It is represented by attributes of an object.
- Look at the following illustration to see the difference between class and objects: CLASS Fruit OBJECTS Apple Banana Mango 3) Inheritance Inheritance is an OOPS concept in which one object acquires the properties and behaviors of the parent object. It offers robust and natural mechanism for organizing and structure of any software. BCA - JAVA PRORAMMING YUVAKSHETRA INSTITUT E OF MANAGEMENT STUD IES BCA 2017 ONWARS BATCH Page 3 6) Encapsulation Encapsulation is an OOP technique of wrapping the data and code. A message for an object is a request for execution of a procedure and therefore will invoke a function in the receiving object that generates the desired results.
- Advantages of OOPS: OOP offers easy to understand and a cle ar modular structure for programs. Thus it saves significant development cost. BCA - JAVA PRORAMMING YUVAKSHETRA INSTITUT E OF MANAGEMENT STUD IES BCA 2017 ONWARS BATCH Page 4 DIFFERENCE BETWEEN PROCEDURAL PROGRAMMING AND OBJECT ORIENTED PROGRAMMING: PROCEDURAL ORIENTED PROGRAMMING OBJECT ORIENTED PROGRAMMING In procedural programming, program is divided into small parts called functions.