

DON BOSCO SCHOOL, RANCHI

COMPUTER APPLICATIONS

CLASS – 10

CLASS AND OBJECTS

What is an Object?

An Object is a real world entity which having a specific identity, specific characteristics and behaviours.

Example: A chair.



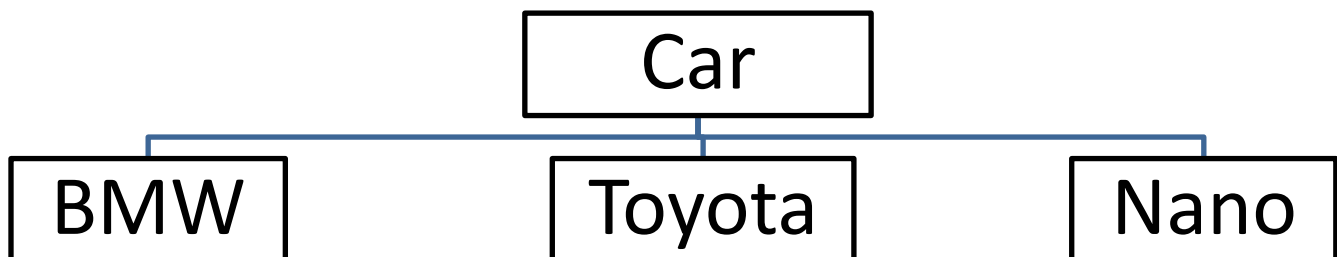
Object : A Chair

1. Characteristics – four legs, a back, arms etc.
2. Behaviour – it lets you sit on it.

What is an Class?

A Class is a blueprint of a set of objects that have a common structure and common behavior. A class is a blueprint and an object is its instance.

Example: Car represents a class which is not exist and shows common properties of all different cars but BMW, Toyota and Nano is a real world entity which having their own characteristics/properties and behaviours.



How to define a Class and Objects in Java Program:

All objects having the two things: characteristics and behaviours. During Class programming all characteristics is represented using variables and behaviours represented by the functions definition. So inside a Java Program class we define all the variables and related functions.

e.g.,

```
class ClassName
{
    //list of variables
    //list of function definition
}
```

Simple Example Questions:

1. Write a Java Program to define a class Rectangle which has following descriptions:

Data Members/Instance Variables: length, breadth

Member Functions/Methods:

(i) input() – function to accept the values from user.

(ii) display() – function to display the values of length and breadth.

(iii) area() – function to calculate the area of rectangle.

Write a main() method where user will create an object of the class and call all the member functions.

Ans :

```
import java.io.*;
import java.util.*;

class Rectangle
{
    int length;
    int breadth;
    void input( )
    {
        Scanner sc = new Scanner(System.in) ;
        System.out.println("Enter length = ");
        length = sc.nextInt( );
        System.out.println("Enter breadth = ");
        breadth = sc.nextInt( );
    }
    void display( )
    {
        System.out.println("Length =" + length);
        System.out.println("Breadth =" + breadth);
    }
    void area( )
    {
        int Ar = length * breadth ;
        System.out.println("Area of Rectangle = " + Ar);
    }
    public static void main (String arg [ ])
    {
        Rectangle ob = new Rectangle( );
        ob.input( );
        ob.display( );
        ob.area( );
    }
}
```

Questions based on Class and Objects:

1. Define a class called **Cuboid** with the following description:

Instance variables/Data members: length, breadth, height

Member methods:

- (i) input() - to input the data members values
- (ii) display() - to display the values of data members
- (iii) volume() - to calculate the volume of Cuboid

Write a **main()** method where user will create an object of the class and call all the member functions.

Ans : Please refer the link: <https://bit.ly/36kktkZQ>

2. Define a class called **Library** with the following description:

Instance variables/Data members:

- int acc_num - stores the accession number of the book.
- String title - stores the the title of the book.
- String author - stores the name of the author.

Member methods:

- (i) void input() - to input and store the accession number, title and author.
- (ii) void compute() - to accept the number of days late, calculate and display the fine charged at the rate of Rs. 2 per day..
- (iii) void display() - to display the details in following format:
Accession Number Title Author

Write a **main()** method where user will create an object of the class and call all the member functions.

Ans : Please refer the link: <https://bit.ly/2AP9XMN>

3. Define a class called **Mobike** with the following description:

Instance variables/Data members:

- int bno - to stores the bike's number.
- int phno - to stores the phone number of the customer
- String name - to stores the name of the customer
- int days - to stores the number of days the bike is taken on rent
- int charge - to calculate and store the rental charge

Member methods:

- (i) void input() - to input and store the detail of the customer.
- (ii) void compute() - to compute the rental charge

The rent for a mobike is charged on the following basis.

- First five days Rs. 500 per day.
- Next five days Rs. 400 per day.
- Rest of the days Rs. 200 per day.

- (iii) void display() - to display the details in the following format:
Bike No. Phone No. No. of days Charge

Write a **main()** method where user will create an object of the class and call all the member functions.

Ans : Please refer the link: <https://bit.ly/2TqUol6>

4. Define a class called **Triangle** with the following description:

Instance variables/Data members: three side of triangle (a, b, c)

Member methods:

- (iv) input() - to input the data members values
- (v) display() - to display the values of data members
- (vi) area() - to calculate the area of Triangle

Write a **main()** method where user will create an object of the class and call all the member functions.

Ans : Please refer the link: <https://bit.ly/2TpU06c>