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Subject :- object oriented programming

①

Q1 What is class and role of object in a class, explain in detail with the help of a suitable program?

A):- class

A class is a user defined blueprint or prototype from which objects are created. It represents the set of properties or methods that are common to all objects of one type. ~~It~~ A class can be defined as a template/blueprint that describes the behavior and state that the object of its type support.

Objects

Let us now look deep into what are objects. If we consider the real-world we can find many objects around us, cars, dogs, humans, etc. all those objects have a state and a behavior. If we consider a dog then its state is name, breed, color, and the behavior is barking, wagging the tail, running. If you compare the software object with a real-world object, they very similar characteristics.

Software objects also have a state and a behavior. A software objects state is stored in fields and behavior is shown via methods.

Example program:-

(2)

```
// class Declaration
public class Dog {
// Instance Variable
String breed;
String size;
int age;
String color;
```

```
// method 1
public String getInfo() {
return ("Breed is: "+ breed + " size is: "
+ size + " Age is: " + age + "
color is: " + color);
}
```

```
public static void main(String[] args)
{
Dog husky = new Dog();
husky.breed = "husky";
husky.size = "small";
husky.age = 2;
husky.color = "white";
System.out.println(husky.getInfo());
}
```

```
} Output: Breed is: husky
Size is: small Age: 2
Color is: white
```


Q2 Write a program about table printing which takes input from the user on the basis oop and explain?

This is a java program to print multiplication table for any Number

Enter any integer number as input at which you want multiplication table. After that we use for loop from one to ten to generate multiplication at that number.

program coding:-

```

public class Multiplication_Table
{
    public static void main(String[] args)
    {
        Scanner s = new Scanner
            (System.in);
        System.out.print ("Enter number");
        int n = s.nextInt();
        for (int i = 1; i <= 10; i++)
        {
            System.out.println
                (n + "*" + i + " = " + n * i);
        }
    }
}

```


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Output

Enter number: 7

$$7 * 1 = 7$$

$$7 * 2 = 14$$

$$7 * 3 = 21$$

$$7 * 4 = 28$$

$$7 * 5 = 35$$

$$7 * 6 = 42$$

$$7 * 7 = 49$$

$$7 * 8 = 56$$

$$7 * 9 = 63$$

$$7 * 10 = 70$$

Q3

Write a program about any 2 cars which can calculate the performance at both of them?

Calculate speed, distance and time when object moves in a straight line at a steady speed, we can calculate its speed if we know how far it travels and how long it takes. This equation shows relationship between speed distance traveled and time taken:
Speed is distance divided by time taken
For example, a car travels 30 kilometers in 2 hours. Its speed is $30 \div 2 = 15 \text{ km/hr}$.

Formula used

$$\text{Distance} = \text{Speed} \times \text{Time}$$

$$\text{Time} = \text{Distance} / \text{Speed}$$

$$\text{Speed} = \text{Distance} / \text{Time}$$

~~Code~~

programming code

```
// Java Program to calculate speed  
// distance and time
```

```
class GFG
```

```
{  
    static double calSpeed(  
        double dist, double time)
```

```
{  
    System.out.print("\n Distance  
(km): " + dist);
```

```
    System.out.print("\n Time (hr): " +  
        time);
```



```

    } return dist/time;
}
static double cal_dis(double speed,
double time)
{
    System.out.print("\n Time (hr):"
+ time);
    System.out.print("\n Speed (km/hr):"
+ speed);
    return speed * time;
}
static double cal_Time(double
dist, double speed)
{
    System.out.print("\n Distance (km):"
+ dist);
    System.out.print("\n Speed (km/hr):"
+ speed);
    return speed * dist;
}
// Driver Code
public static void main (String[] args)
{
    System.out.println("\n the
calculated speed (km/hr) is : " +
cal_speed (45.9, 2.0));
    // calling function cal_dis()
}

```



```
System.out.println("\n The calculated  
Distance (km): " + cal-dis (62.9, 2.5));
```

```
// calling function calTime()
```

```
System.out.println("\n The calculated  
Time (hr): " + cal-time (48.0, 4.5));
```

```
}
```

```
}
```

Output:-

Distance (km): 45.9

Time (hr): 2

The calculate speed (km/hr) is:
22.95

Time (hr): 2.5

Speed (km/hr): 62.9

The calculated Distance (km): 157.25

Distance (km): 48

Speed (km/hr): 4.5

The calculated Time (hr): 216