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## Lab Assignment - 2 (JP)

AIM:

Write a java program to showcase classes, object creation, methods, constructors access specifiers.

Objectives:

- To study classes, object and creation of object of class.
- To study methods, return value from methods and pass parameters to this methods.
- To study constructors and use of constructors.
- To study different access specifiers in java and their use for encapsulation.

Theory:

(1) Define what is class and object with example.

→ Class is group of objects which have common properties. It is a template or blue print from which objects are created. It is a logical entity.

Object → is a basic unit of Object oriented programming and represents the real life entity.

Eg -

```
Class Student {  
    int id ;  
    String name ;  
    Public Static void main (String [] args) {  
        Student S1 = new Student (); → creating an object  
        System.out.println (S1.id);  
        System.out.println (S1.name);  
    }  
}
```

(2) Give the syntax / format to define methods in a class and give examples for parameters passed and returning a value from methods.

```
class Demo {  
    int age ;  
    int RollNo ;  
    void demo (int x, int y)  
    {  
        x++ ;  
        y++ ;  
    }  
}
```

```
Public class Main  
Public static void main (String [] args)
```



{

```
int a = 10;
int b = 20;
```

```
call by Value Object = new call By value ();
System.out.println ("a:" + a + "&b:" + b);
Object-Example (a,b);
System.out.println ("a:" + a + "&b" + b);
}
```

}

(3) Write about the use of constructors with examples.

Java allows objects to initialize of themselves when they are created. This automatic initialization is performed through use of constructors.

Ex -

Class Demo {

String name;

Demo () {

System.out.println ("Constructors called = ");

name = "Raghu";

}

Public Static Void main (String [] args) {

Demo Object = new <sup>Demo</sup> ~~main~~ ();

System.out.println ("The name is:" + Object.name);

}

}

## FAQ

Q1 What is class and object?

Ans Class is a group of Objects which have common properties. It is a template or blueprint from which objects are created. It is a logical entity.

Object is a basic unit of object oriented programming and represents real life entities.

Q2 What are the different ways in which parameters are passed?

Ans There are 2 ways by which parameters are passed.

→ Call by value

→ Call by reference

Q3 When is pass by value applied when parameters are passed?

Ans This approach copies value of an arguments into formal parameters of subroutine. So, changes made to parameter of subroutine have no effect on arguments.

Q4 What is Constructor in Java?

Ans A constructor initializes an object immediately upon creation. It has same name as the class in which it resides is



Syntactically similar to a method.

Q5 What is default access specifier and what is its scope?

Ans In Java, the default access specifier is public. The scope of default access specifier is that default members are available only within package.

Q6 What are the different access specifiers?

Ans The different access specifiers are

- i) public
- ii) protected
- iii) private.

~~Seen~~

CODE:

```
Helloworld.java  EmpManagement.j...  assig4.java  assig4b.java  Labassign2.java  assig2.java X
1  /*Write a Java Program to take information for students like Name, RollNo, Marks for five subjects.
2  * Find the average marks(or percentage) and display his Grade A,B or C.
3  *Make use of the concepts for classes , methods ,access specifier and constructor.
4  *
5  * Name Raghav Maheshwari
6  * PAnel A
7  *Roll no 53
8  */
9  import java.util.*;
10
11  class Student1{
12      int roll;
13      float maths,oop,toc,os,jp,total,perc;
14      String name;
15      Scanner in = new Scanner(System.in);
16      Student1()
17      {
18          name = "--";
19          roll =0;
20          maths =0;
21          oop = 0;
22          toc = 0;
23          os = 0;
24          jp = 0;
25      }
26      void getdata(){
27          System.out.println("STUDENT MARKSHEET DEMONSTRATION");
28          System.out.println("Student name: ");
29          name = in.next();
30          System.out.println("Roll no:");
31          roll = in.nextInt();
32
33          System.out.println("Enter marks as follows");
34          System.out.println("Math");
35          maths = in.nextFloat();
36
37          System.out.println("OOP");
38          oop = in.nextFloat();
39
40          System.out.println("TOC");
41          toc = in.nextFloat();
42
43          System.out.println("OS");
44          os = in.nextFloat();
45
46          System.out.println("JP");
47          jp = in.nextFloat();
48      }
49
50      void display()
51      {
52          System.out.println("Student name:"+name);
53      }
54  }
```

```

51     {
52         System.out.println("Student name:"+name);
53         System.out.println("roll no:"+roll);
54
55         System.out.println("Marks are as follows");
56         System.out.println("Math:"+maths);
57         System.out.println("OOP:"+oop);
58         System.out.println("TOC:"+toc);
59         System.out.println("OS:"+os);
60         System.out.println("JP:"+jp);
61
62     }
63
64     void cal_perc(){
65         total = maths +oop + os + toc + jp ;
66         perc = (total/500)*100 ;
67
68         System.out.println("Total percentage:"+perc );
69     }
70     void grade()
71     {
72         if (perc>=90)
73             System.out.println("Grade: A");
74         else if(perc >=80 && perc <=89)
75             System.out.println("Grade: B");
76         else if(perc>=70 && perc <=79)
77             System.out.println("Grade: C");
78         else if(perc>=60 && perc<=59)
79             System.out.println("Grade: D");
80
81     }
82 }
83
84 public class assig2 {
85
86     public static void main(String[] args) {
87
88         System.out.println("Student report demonstration");
89
90         Student1 s1 = new Student1();
91
92         s1.getdata();
93         s1.display();
94         s1.grade();
95         s1.cal_perc();
96
97     }
98
99 }

```

OUTPUT:

```
Problems Javadoc Declaration Console X
<terminated> assig2 [Java Application] /Library/Java/JavaVirtualMachines/jdk-17.0.2.jdk/Contents/Ho
Student report demonstration
STUDENT MARKSHEET DEMONSTRATION
Student name:
Raghav
Roll no:
53
Enter marks as follows
Math
100
OOP
70
TOC
80
OS
87
JP
90
Student name:Raghav
roll no:53
Marks are as follows
Math:100.0
OOP:70.0
TOC:80.0
OS:87.0
JP:90.0
Total percentage:85.399994
```