Experiment No._____ **Date___/___/2020**

TITLE OF EXPERIMENT: - A Java program which implements interface

DIVISION:_____ **BRANCH: _____**

BATCH:_____ **ROLL NO.: _____**

PERFORMED ON DATE: _____

SIGNATURE OF TEACHING STAFF:

EXPERIMENT NO. 8

Aim: Write a Java program which implements interface.

Objective: To learn implements interface in Java

Software:

1. Eclipse
2. JDK 16

Theory:

Interface in Java

An **interface in Java** is a blueprint of a class. It has static constants and abstract methods.

The interface in Java is *a mechanism to achieve* ***abstraction*.** There can be only abstract methods in the Java interface, not method body. It is used to achieve abstraction and multiple inheritance in Java.

There are mainly three reasons to use interface. They are given below.

- It is used to achieve abstraction.
- By interface, we can support the functionality of multiple inheritance.
- It can be used to achieve loose coupling.

Declaration of interface:

An interface is declared by using the interface keyword. It provides total abstraction; means all the methods in an interface are declared with the empty body, and all the fields are public, static and final by default. A class that implements an interface must implement all the methods declared in the interface.

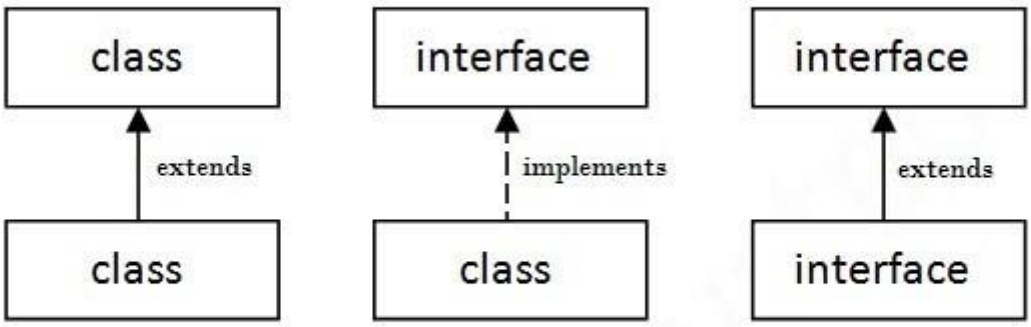
Syntax:

```
interface <interface_name>{

   // declare constant fields
   // declare methods that abstract
   // by default.
}
```

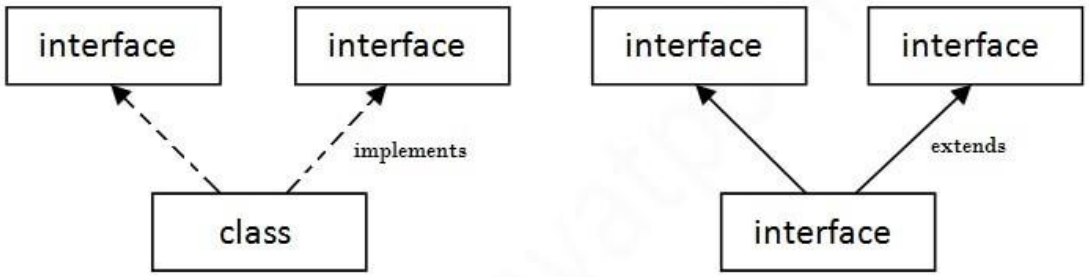
The relationship between classes and interfaces

As shown in the figure given below, a class extends another class, an interface extends another interface, but a **class implements an interface**.



Multiple inheritance in Java by interface

If a class implements multiple interfaces, or an interface extends multiple interfaces, it is known as multiple inheritance.



Multiple Inheritance in Java

Program:

1. Program for interface:

```
public interface sports {


        int sportsWt=5;
   public  void putWt();

}
```

2. Program for Class:

```
import java.util.Scanner;

/**Java Program calculating marks of a student using multiple
inheritance
 * implemented through interface
 * Create class result to calculate student result using its test
marks and sports marks
 * Declare class student and class test. Use student class in
test class.
 * Create interface of sports.
 * use sports and test in result class.
 *
 *
 */


class student
{
int rollNo;
```

```
            void getNumber(int n)
          {
          rollNo=n;
          }
          void putNumber()
          {
          System.out.println("Roll No is: "+ rollNo);
          }
}

class test extends student
{
    int inSem, endSem;
    void getMarks(int m1, int m2)
    {
        inSem=m1; endSem=m2;
    }
    void putMarks()
    {
        System.out.println("Marks obtained:");
        System.out.println("Part 1 INSEM  marks = "+inSem);
        System.out.println("Part 2 ENDSEM marks = "+endSem);
    }
}

/*interface sports
{
        int sportsWt=5;
        void putWt();
}*/

class results extends test implements sports
{
int total;
@Override
public void putWt()
{
    System.out.println("Sports wieght = "+ sportsWt);
}
void display()
{
    total=inSem+endSem+sportsWt;
    if(total>100)

        total=100;
    putNumber();
    putMarks();
    putWt();
    System.out.println("Total score = "+ total);
```

```
}
}

public class InterfaceDemo {
    public static void main(String args[])
{           Scanner input= new Scanner(System.in);
            results r1=new results();

            System.out.println(" Enter the student's roll
number:");
            int rollno=input.nextInt();
            r1.getNumber(rollno);
            System.out.println(" Enter the student's INSEM Marks
out of 30:");
            int inMarks=input.nextInt();
            System.out.println(" Enter the student's ENDSEM Marks
out of 70:");
            int endMarks=input.nextInt();
            r1.getMarks(inMarks,endMarks);
            r1.display();
}

}
```

Output:

```
Enter the student's roll number:
12
 Enter the student's INSEM Marks out of 30:
24
 Enter the student's ENDSEM Marks out of 70:
57
Roll No is: 12
Marks obtained:
Part 1 INSEM  marks = 24
Part 2 ENDSEM marks = 57
Sports wieght = 5
Total score = 86
```

Conclusion:

Screenshot's of Program and Result: