# Program Based on Interface and abstract class

1. Write an interface called Exam with a method Pass ( ) that returns the total marks. Write another interface called Classify with a method Average (int total) which returns a string. Write a Class called Result which implements both Exam and Classify. The Pass method should get the marks from the user and finds the total marks and return. The Division method calculate the average marks and return "First" if the average is 60 or more, "SECOND" when average is 50 or more but below 60, "NO DIVISION" when average is less than 50

2. Write an abstract class special with an abstract method double Process (double P,double R). Create a subclass Discount and implement the Process() method with the following formula: net=P-P*R/100. Return the Process() method with the following formula: total=P+P*R/100. Return the total.

Question no 1:

Code:

```
import java.util.*;

interface Exam {
    int Pass(int mark[]);
}

interface Classify {
    String Average(int total, int num);
}

class Result implements Exam, Classify {
    public int Pass(int[] mark) {
        int total = 0;
        for (int i = 0; i < mark.length; i++) {
            total = total + mark[i];
        }
        return total;
    }

    public String Average(int tot, int num) {
        int tot1 = tot / num;
```

```
        if (tot1 >= 60)
            return "First";
        else if (tot1 >= 50)
            return "Second";
        else
            return "No-Division";
    }
}

public class MyResult {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int pass;
        System.out.println("Enter number of marks : ");
        int n = sc.nextInt();
        int mark[] = new int[n];
        String division;
        Result res = new Result();
        try {
            for (int i = 0; i < n; i++) {
                System.out.println("Enter the mark : ");
                mark[i] = sc.nextInt();
            }
            pass = res.Pass(mark);
            division = res.Average(pass, n);
            System.out.println("you passed with division: " + division + ".");
        } catch (Exception e) {
            System.out.println("Error : " + e);
        }
    }
}
```

Output:

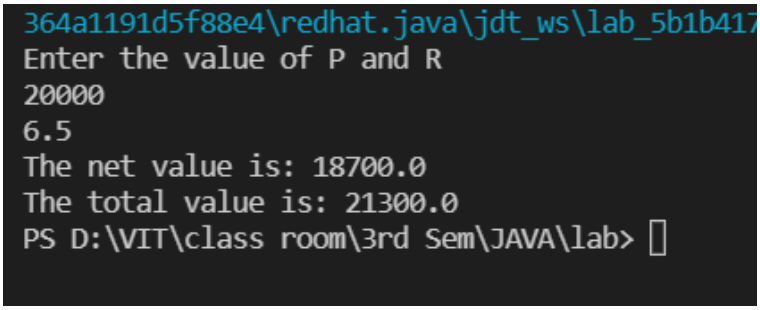
```
Enter number of marks :
5
Enter the mark :
33
Enter the mark :
40
Enter the mark :
60
Enter the mark :
70
Enter the mark :
77
you passed with division: Second.
PS D:\VIT\class room\3rd Sem\JAVA\lab>
```

Question no 2:

Code:

```java
import java.util.*;

abstract class Special {
    abstract double process(double P, double R);
}

class Discount extends Special {
    double process(double P, double R) {
        double net = P - ((P * R) / 100);
        System.out.println("The net value is: " + net);
        return net;
    }
}

class Total extends Special {
    double process(double P, double R) {
        double total = P + ((P * R) / 100);
        System.out.println("The total value is: " + total);
        return total;
    }
}

public class Interest {
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);
        System.out.println("Enter the value of P and R");
        double P = s.nextDouble();
        double R = s.nextDouble();
        Special s1 = new Discount();
        s1.process(P, R);
        Special s2 = new Total();
        s2.process(P, R);
    }
}
```

Output:


364a1191d5f88e4\redhat.java\jdt_ws\lab_5b1b417
Enter the value of P and R
20000
6.5
The net value is: 18700.0
The total value is: 21300.0
PS D:\VIT\class room\3rd Sem\JAVA\lab>