Experiment   8

Packages

Aim: Create a package 'studpack' which incorporates Student class and Sports interface. Create a Result class that extends Student class and implements a sports interface to display the total marks. The details of the classes and interfaces described below. Use appropriate access specifier as per the requirement. (*method, - variable)

Create a java program Hybrid.java that imports Result class from studpack and display the total for 5 students.

Concepts Used: Interface, Package

Algorithm:
1. Package studpack
2.   Interface Sports
3.   grade: int
4.   displayGrad(): void
5.   Class Student
6.   name: String
7.   rollNo: int
8.   mark1: int
9.   mark2: int
10.   mark3: int
11.   Class Result implements Sports and extends Students
12.   total : int
13.   displayGrade():
14.   Step1: print grade
15.
16.   displayTotal():
17.   Step 1: total = mark1+mark2+mark3+grade
18.   Step 2: print total
19.   Step 3: print rollNo
20.   Step 4: stop
21.
22.   Class Hybrid
23.   import studpack.Result
24.   main()
25.   r = new Result()
26.   r.displayTotal()
27.   r.displayGrade()

Result: The program is successfully compiled and the required output is obtained.

Program Code:

```java
/*  File Name: Student.java
 *
 *  Done by Rohit Karunakaran
 *
 * */
package studpack;

public class Student
{

    String name;
    int rollNo;
    int mark1,mark2,mark3;

    public Student(String name, int rollNo,int mark1,int mark2,int mark3)
    {
        this.name = name;
        this.rollNo = rollNo;
        this.mark1 = mark1;
        this.mark2 = mark2;
        this.mark3 = mark3;
    }

    public Student()
    {
        this("",0,0,0,0);
    }

    public void displayTotal()
    {
        int total = mark1+mark2+mark3;
        System.out.println("Total marks earned by "+this.name+" is : "+total);
    }
}



//Results
/*  File name : Result.java
 *
 *  Done by : Rohit Karunakaran
 *
 */

package studpack;

interface Sports
{
    int grade = 34; //This is public static final
```

```java
    void displayGrade();
}

public final class Result extends Student implements Sports
{
    private int total;

    public void displayGrade()
    {
        System.out.println("Grade = "+this.grade);
    }

    public Result(String name, int rollNo, int mark1, int mark2, int mark3)
    {
        super(name,rollNo,mark1,mark2,mark3);

        // total = marks + grade;
        this.total = this.mark1+this.mark2+this.mark3+this.grade;
    }

    public Result()
    {
        this("",0,0,0,0); //Constructor chaining
    }

    public void displayTotal()
    {
        System.out.println("\n======================================");
        System.out.println("Name of the student is "+this.name);
        System.out.println("Roll No: "+this.rollNo);
        System.out.println("Total = "+this.total);
        System.out.println("===================================\n");
    }

}


//Hybrid.java
/*  File Name : Hybrid.java
 *
 *  Done By: Rohit Karunakaran
 *
 *  The package studpack contains the classes Result and Students and a Sports
interface
 *
 *  The Result class implements Sports and inherits Student.
 * */
import studpack.Result;
import studpack.Student;

public class Hybrid
{
    public static void main(String args[])
```

```java
    {
        String name[] = {"Bhaskaran Pilla","Chandra Mohan","Sivadasan","Mani
Vessel","Narayani"};
        int rollNo[] = {4,11,56,34,41};
        int marks[] = {45,69,23};

        //Create an arry of 5 students
        Student A[]=new Result[5];  //Dynamic Method Dispatch

        //Set the values for the Students
        for(int i = 0;i<5;i++){
            A[i] = new Result(name[i],rollNo[i],marks[i%3]+2*i,marks[i
%3]+3*i,marks[i%3]+4*i);
        }

        //Print out the values for the students
        for(int i = 0;i<5;i++){
            A[i].displayTotal();
        }

    }
}
```

Sample output:

```
=====================================
Name of the student is Bhaskaran Pilla
Roll No: 4
Total = 169
=====================================



=====================================
Name of the student is Chandra Mohan
Roll No: 11
Total = 250
=====================================



=====================================
Name of the student is Sivadasan
Roll No: 56
Total = 121
=====================================



=====================================
Name of the student is Mani Vessel
Roll No: 34
Total = 196
=====================================
```

```
=====================================
Name of the student is Narayani
Roll No: 41
Total = 277
=====================================
```