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BATCH: B2

Q1:

odd id program1. Write an `abstract class` Course with an abstract method `studentDetails()`.

Create 2 classes Comps and IT which inherits class Course and implements `studentDetails()`.

The `studentDetails()` method should print the name, UID, and year (FE, SE, TE) of students of that Course. These details have to be taken from the user.

Write a program that asks the user to choose a Course and prints details of all students in that course in a sorted manner as per the year(FE, SE, TE).

CODE:

```
/*Comp=1 and IT =2 */
```

```
import java.util.*;
```

```
abstract class Course{
```

```
    int dep;
```

```
    String name;
```

```
    int uid;
```

```
    int year;
```

```
    Course(String name,int uid,int year){
```

```
        this.name=name;
```

```
        this.uid=uid;
```

```
        this.year=year;
```

```
        this.dep=0;
```

```
    }
```

```
    abstract void printDetails();
```

```
}
```

```
class IT extends Course{
```

```
IT(String name,int uid,int year){
```

```
    super(name, uid, year);
```

```
    this.dep=2;
```

```
}
```

```
@Override
```

```
void printDetails() {
```

```
    System.out.println("Name of student :"+this.name);
```

```
    System.out.println("UID of student :"+this.uid);
```

```
    switch(this.year){
```

```
        case 1:
```

```
        {
```

```
            System.out.println("Student is of FE");
```

```
        }
```

```
        case 2:
```

```
        {
```

```
            System.out.println("Student is of SE");
```

```
        }
```

```
        case 3:
```

```
        {
```

```
            System.out.println("Student is of TE");
```

```
        }
```

```
    }
```

```
    System.out.println("Department of student : IT");
```

```
}
```

```
}
```

```
class Comps extends Course{

    Comps(String name,int uid,int year){

        super(name, uid, year);

        this.dep=1;
    }

    @Override

    void printDetails() {

        System.out.println("Name of student :"+this.name);

        System.out.println("UID of student :"+this.uid);

        switch(this.year){

            case 1:

                {

                    System.out.println("Student is of FE");

                }

            case 2:

                {

                    System.out.println("Student is of SE");

                }

            case 3:

                {

                    System.out.println("Student is of TE");

                }

        }

        System.out.println("Department of student : Computer Engineering");

    }

}
```

```
}
```

```
public class Main {  
  
    public static void main(String[] args) {  
  
        Scanner sc= new Scanner(System.in);  
  
        System.out.println("Enter the number of students:");  
  
        int n=sc.nextInt();  
  
        Course [] c= new Course[n];  
  
        for(int i=0;i<n;i++){  
  
            System.out.println("Enter the name of student:"+i);  
  
            String name=sc.next();  
  
            System.out.println("Enter the UID of student:"+i);  
  
            int uid=sc.nextInt();  
  
            System.out.println("Enter the year of student:"+i);  
  
            int year = sc.nextInt();  
  
            System.out.println("Enter the department of student :"+i);  
  
            int dept=sc.nextInt();  
  
            if(dept==1){  
  
                c[i]=new Comps(name, uid, year);  
  
            }  
  
            else if(dept==2){  
  
                c[i]=new IT(name, uid, year);  
  
            }  
  
        }  
    }  
}
```

```

for(int j=0;j<n-1;j++){
    for(int k=j+1;k<n;k++){
        if(c[j].year > c[k].year){
            int temp;
            temp=c[j].year;
            c[j].year=c[k].year;
            c[k].year=temp;
        }
    }
}

System.out.println("Enter the course of which you want the details:");
System.out.println("Courses are 1)Comps and 2)IT");
int course=sc.nextInt();
if(course==1){
    for(int h=0;h<n;h++){
        if(c[h].dep==1){
            c[h].printDetails();
        }
    }
}
if(course==2){
    for(int u=0;u<n;u++){
        if(c[u].dep==2){
            c[u].printDetails();
        }
    }
}
}

```

```
}  
}
```

Output:

```
Enter the number of students:  
4  
Enter the name of student:1  
a  
Enter the UID of student:1  
1  
Enter the year of student:1  
3  
Enter the department of student :1  
2  
Enter the name of student:2  
b  
Enter the UID of student:2  
2  
Enter the year of student:2  
3  
Enter the department of student :2  
2
```

```
Enter the name of student:3
c
Enter the UID of student:3
3
Enter the year of student:3
2
Enter the department of student :3
2
Enter the name of student:4
d
Enter the UID of student:4
4
Enter the year of student:4
3
Enter the department of student :4
1
```

```
Enter the course of which you want the details:
Courses are 1)Comps and 2)IT
2
Name of student :a
UID of student :1
Student is of year TE
Department of student : IT
Name of student :b
UID of student :2
Student is of year TE
Department of student : IT
Name of student :c
UID of student :3
Student is of year SE
Department of student : IT
```

Q2:

Design a Quiz System as following

There is a `abstract class` Questions

- It includes a variable `question_text`- This contains the text of the question
- You can set question text using constructors
- It includes a method `verifyAnswer()` to verify .
- It includes abstract method specifications for `getQuestion()`, `getSolution()`

There are 2 other classes True or False Questions, Multiple Choice Question

- They all inherit the Question class and provide implementation for its methods.
- They all have a variable called `mySolution`(Note: different class will have different data type for this variable)
- Child classes will call parents `getType` method to get the question type
- Multiple Choice Question also has variables for different options

Note:

- Make a Main class where you can make and give the quiz
- Write an interactive program in Java
- Shuffle all the questions randomly
- Each question must specify which type of question it is.
- Total score and solution must be displayed in the end.

Code:

```
import java.util.*;

abstract class Questions{

    static int marks=0;

    String question_text;

    void verifyAnswer(){}

    void getQuestion(){}

    void getSolution(){};

}
```



```
class t_f extends Questions{

    String q1,q2,q3,o,s1,s2,s3,a1,a2,a3;

    t_f(){};

    void t_f_1(String a1){

        this.a1=a1;

    }

    void t_f_2(String a2){

        this.a2=a2;

    }

    void t_f_3(String a3){

        this.a3=a3;

    }

    String mySolution;

    void getQuestion(){

        q1="Is 5 a prime number?\n";

        q2="Steve Jobs was the CEO of microsoft?\n";

        q3="Shivaji Maharaj was born on 19 Feb 1630?\n";

    }

    void options(){

        o="True/False: ";

    }

    void getSolution(){

        s1="True";

        s2="False";

        s3="True";

    }

    void verifyAnswer_1(){
```

```
    if(a1.equals("True")){  
        System.out.println("Correct Answer");  
        marks++;  
    }  
    else{  
        System.out.println("Wrong Answer :(\nCorrect answer is True");  
    }  
}  
void verifyAnswer_2(){  
    if(a2.equals("False")){  
        System.out.println("Correct Answer");  
        marks++;  
    }  
    else{  
        System.out.println("Wrong Answer :(\nCorrect answer is False");  
    }  
}  
void verifyAnswer_3(){  
    if(a3.equals("True")){  
        System.out.println("Correct Answer");  
        marks++;  
    }  
    else{  
        System.out.println("Wrong Answer \nCorrect answer is True");  
    }  
}  
}
```

```
class mcq extends Questions{

    int a1,a2,a3,s1,s2,s3;

    String o1,o2,o3;

    String q1,q2,q3;

    mcq(){}

    void mcq_1(int a1) {

        this.a1=a1;

    }

    void mcq_2(int a2) {

        this.a2=a2;

    }

    void mcq_3(int a3) {

        this.a3=a3;

    }

    void getQuestion(){

        q1="What is the capital of Maharashtra?";

        q2="Who is current chief minister of Maharashtra?";

        q3="Which is the national flower of India?";

    }

    void options(){

        o1="\n1) Akola\n2) Pune\n3) Nagpur\n4) Mumbai";

        o2="\n1) Eknath Shinde\n2) Uddhav Thackeray\n3) Devendra Fadnavis\n4) Sanjay Raut";

        o3="\n1) Rose\n2)Lily\n3)Lotus\n4) Sunflower";

    }

    void getSolution(){

        s1=4;
```

```
s2=1;

s3=3;

}

void verifyAnswer_1(){

    if(a1==4){

        System.out.println("Correct Answer\n");

        marks++;

    }

    else{

        System.out.println("Wrong Answer :(\nCorrect answer is 4\n");

    }

}

void verifyAnswer_2(){

    if(a2==1){

        System.out.println("Correct Answer\n");

        marks++;

    }

    else{

        System.out.println("Wrong Answer \nCorrect answer is 1\n");

    }

}

void verifyAnswer_3(){

    if(a3==3){

        System.out.println("Correct Answer \n");

        marks++;

    }

    else{
```

```

        System.out.println("Wrong Answer \nCorrect answer is 3\n");
    }
}
}

class Main{

    public static void main(String[] args) {

        Scanner sc=new Scanner(System.in);

        t_f q=new t_f();

        q.getQuestion();

        q.getSolution();

        q.options();

        System.out.println("\nQuestion 1:");

        System.out.println(q.q1 + q.o);

        q.t_f_1(sc.next());

        q.verifyAnswer_1();

        System.out.println("\nQuestion 2:");

        System.out.println(q.q2 + q.o);

        q.t_f_2(sc.next());

        q.verifyAnswer_2();

        System.out.println("\nQuestion 3:");

        System.out.println(q.q3 + q.o);

        q.t_f_3(sc.next());

        q.verifyAnswer_3();


        mcq m=new mcq();

        m.getQuestion();

        m.getSolution();
    }
}

```

```
m.options();

System.out.println("\nQuestion 4:");

System.out.println(m.q1 + m.o1);

m.mcq_1(sc.nextInt());

m.verifyAnswer_1();

System.out.println("\nQuestion 5:");

System.out.println(m.q2 + m.o2);

m.mcq_2(sc.nextInt());

m.verifyAnswer_2();

System.out.println("\nQuestion 6:");

System.out.println(m.q3 + m.o3);

m.mcq_3(sc.nextInt());

m.verifyAnswer_3();

System.out.println("\nMarks obtained: "+q.marks);

}

}
```

Output:

Question 1:

Is 5 a prime number?

True/False:

True

Correct Answer

Question 2:

Steve Jobs was the CEO of microsoft?

True/False:

False

Correct Answer

Question 3:

Shivaji Maharaj was born on 19 Feb 1630?

True/False:

True

Correct Answer

Question 4:

What is the capital of Maharashtra?

- 1) Akola
- 2) Pune
- 3) Nagpur
- 4) Mumbai

4

Correct Answer

Question 5:

Who is current chief minister of Maharashtra?

- 1) Eknath Shinde
- 2) Uddhav Thackeray
- 3) Devendra Fadnavis
- 4) Sanjay Raut

1

Correct Answer

Question 6:

Which is the national flower of India?

- 1) Rose
- 2) Lily
- 3) Lotus
- 4) Sunflower

1

Wrong Answer

Correct answer is 3

Marks obtained: 5