BITAM/9/21/004/TZ

CYCLE SHEET ONE

Question 1: Basic Program/Personal Information

```
import java.util.Scanner;
class Personal{
    public static void main(String[] args){
        try{
            Scanner put = new Scanner(System.in);
            System.out.println("Enter Registration number");
            String reg = put.nextLine();
            System.out.println("Enter FullName ");
            String name = put.nextLine();
            System.out.println("Enter CGPA");
            float gpa = put.nextFloat();
            System.out.println("Enter Program name");
            String program = put.nextLine();
            System.out.println("Enter School name");
            String school = put.nextLine();
            System.out.println("Enter Proctor name");
            String proctor = put.nextLine();

            System.out.println("Your information is:\n");

            System.out.println("Registration: "+reg);
            System.out.println("FullName: "+name);
            System.out.println("CGPA: "+gpa);
            System.out.println("Program: "+program);
            System.out.println("school: "+school);
            System.out.println("Proctor name: "+proctor);
        }catch(Exception e){
            System.out.println("Something went wrong ");
        }


    }
}
```

Question 2: Airline

```
import java.util.Scanner;
public class AirlinesReservation{
    //Array of seats
```

```
    boolean[] flightSeats = new boolean[11];
    Scanner put = new Scanner(System.in);

    public void start(){
        while (true){
            bookSeat();
        }
    }
    public void bookSeat(){
        //Asks user for his preffered class to travel
        System.out.println("Choose Your preference : type '1' for
First Class or '2' for Economy Class:");
        int pessangerClass = put.nextInt();
        if(pessangerClass == 1)firstClassBooking();
        else economyClassBooking();
    }
    // Check and book for first class seating
    public void firstClassBooking(){
        for(int cnt = 1; cnt <= 5; cnt++){
            //check if seat is available to allocate to user booking.
            if(flightSeats[cnt] == false )
            {
                //book seat
                flightSeats[cnt] = true;
                System.out.printf("First Class Seat Booking: Seat#
%d\n", cnt);
                break;
            }
            else if( flightSeats[5] == true )
            {
                if ( flightSeats[10] == true)
                {
                    //if both classes are fully booked
                    System.out.println("Apologies!! All seats are
booked. Next flight is scheduled in '3' hours.");
                }
                else
                {
                    // provide pessanger another available class
option
                    System.out.println("Sorry,First Class bookings are
over. Would you like to opt for Economy class ? select '1' for Yes and
'2' for No");
                    int selection = put.nextInt();
                    if ( selection == 1 )
```

```
                    {
                    economyClassBooking();
                    start();
                    }
                    else
                    {
                    System.out.println("Next flight is scheduled in
'3' hours.");
                    System.exit(0);
                    }
                }
            }
        }
    }

    // Check and book for economy class seating
    public void economyClassBooking() // assign an economy seat
    {
        for ( int cnt = 6; cnt <= 10; cnt++ )
        {
            if ( flightSeats[cnt] == false )
            {
                flightSeats[cnt] = true;
                System.out.printf("economy class seat booking :#
%d\n", cnt);
                break;
            }
            else if ( flightSeats[10] == true )
            {
                if ( flightSeats[5] == true)
                {
                    System.out.println("Apologies!! All seats are
booked. Next flight is scheduled in '3' hours.");
                    System.exit(0);
                }
                else
                {
                    System.out.println("Sorry, Economy Class seat
bookings are over. Would you like to opt for first Class seat? press
'1' for Yes and '2' for No");
                    int selection = put.nextInt();
                    if ( selection == 1 )
                    {
                        firstClassBooking();
                        start();
```

```
                    }
                    else
                    {
                        System.out.println("Next flight is scheduled
in 3 hours");
                        System.exit(0);
                    }
                }
            }
        }
    }
    public static void main(String[] args) {
        System.out.println("WELCOME TO AIRLINES RESERVATION SYSTEM");
        AirlinesReservation airline = new AirlinesReservation();
        airline.start();
    }
}
```

Question 3: Mathpremier League

```
import java.util.*;
class MPL{
    Scanner put=new Scanner(System.in);
    int standard;
    int num_students;
    public int first;
    public float average;
    int student_first;
    MPL(int a, int b){
        standard = a;
        num_students=b;
        mark(num_students);
    }
    public void mark(int num_students){
        int max =0;
        int[] marks = new int[num_students];
        int average_class=0;
        System.out.println("Enter the marks of students");
        for(int i =0;i<num_students;i++){
            marks[i]=put.nextInt();
            average_class=average_class+marks[i];
            if(marks[i]>max){
                max=marks[i];
                student_first=i+1;
```

```
            }
        }
        first=student_first;
        average=average_class/num_students;
    }
    public void display(){
        System.out.println("Standard:- "+ standard);
        System.out.println("No of students:- "+ num_students);
        System.out.println("First student:- "+ first);
        System.out.println("Average of the class:- "+ average);
    }
}


import java.util.*;
class TestMathpremier{
    static MPL mpl[] = new MPL[2];
    public static void main(String args[]){
        Scanner put = new Scanner(System.in);
        int first=0;
        float avg=0;
        for(int i=0;i<2;i++){
            System.out.println("Enter the number of students in class
"+(i+1));
            int students = put.nextInt();
            mpl[i] = new MPL(i,students);
            mpl[i].display();
        }
        bestclass();
        avgbestclass();
    }
    public static void bestclass(){
        float max=0;int standard=0;
        for(int i=0;i<2;i++){
            if(mpl[i].average>max){
                max=mpl[i].average;standard=i+1;
            }
        }
        System.out.println("The best class on the basis of average is
: "+standard);
    }
    public static void avgbestclass(){
        float max=0;
        int standard=0;
        for(int i=0;i<2;i++){
```

```
            if(mpl[i].first>max){
                max=mpl[i].first;
                standard=i+1;
            }
        }
        System.out.println("The best class on the basis of average is
: "+standard);
    }
}
```

Question 4: Inheritance

```
class TestDetails {
    float[][] marks;
    int numOfStudents = 25;

    void storeMarks(int studentId, int numTests, float[] testScores) {
        if (marks == null) {
            marks = new float[numOfStudents][7];
        }
        for (int i = 0; i < numTests; i++) {
            marks[studentId][i] = testScores[i];
        }
    }

    void displayMarks() {
        for (int i = 0; i < numOfStudents; i++) {
            System.out.print("Student " + i + ": ");
            for (int j = 0; j < 7; j++) {
                System.out.print(marks[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

```
class NoticePeriod extends TestDetails {
    void countInBench() {
        int count = 0;
        for (int i = 0; i < numOfStudents; i++) {
            int numTestsTaken = 0;
            int numTestsPassed = 0;
            for (int j = 0; j < 7; j++) {
                if (marks[i][j] != 0) {
```

```
                    numTestsTaken++;
                    if (marks[i][j] >= 50) {
                        numTestsPassed++;
                    }
                }
                if (numTestsPassed >= 3 || numTestsTaken >= 3) {
                    break;
                }
            }
            if (numTestsTaken < 3 || numTestsPassed < 3) {
                count++;
                System.out.println("Student " + i + " is in bench");
            }
        }
        System.out.println("Number of students in bench: " + count);
    }
}
```

```
class Main {
    public static void main(String[] args) {
        TestDetails td = new TestDetails();
        td.storeMarks(0, 4, new float[]{60, 70, 80, 90});
        td.storeMarks(1, 3, new float[]{50, 60, 70});
        td.displayMarks();

        NoticePeriod np = new NoticePeriod();
        np.countInBench();
    }
}
```

Question 5:Interface

```
public interface GCD{
    abstract int computeGCD(int num1,int num2);
}
```

```
import java.util.*;
class APPROACH1 implements GCD{
    // Euclid Method (num1>num2)
    public int computeGCD(int num1, int num2){
        if (num2 == 0) {
            return num1;
        }else return computeGCD(num2, num1 % num2);
```

```
    }
}

class APPROACH2 implements GCD{
    // Listing all factors (Assuming num1>num2)
    public int computeGCD(int num1, int num2){
        int gcd = 1;
        for(int i=num2;i>1;i--){
            if(num1%i == 0 && num2%i==0){
                gcd = i;
                break;
            }
        }
        return(gcd);
    }
}

class ProblemTest{
    public static void main(String[] args){
        Scanner put = new Scanner(System.in);
        System.out.println("Enter num1");
        int num1 = put.nextInt();
        System.out.println("Enter num2");
        int num2 = put.nextInt();
        APPROACH1 newAPPROACH1 = new APPROACH1();
        APPROACH2 newAPPROACH2 = new APPROACH2();
        System.out.println("GCD by Euclid's method: "
+newAPPROACH1.computeGCD(num1,num2));
        System.out.println("GCD by listing all factors: " +
newAPPROACH2.computeGCD(num1,num2));
    }
}
```

Question 6: Exception Handling

```
public class SameColourBallException extends Exception{
    SameColourBallException(int x){
        System.out.println("Same colour was picked more than thrice");
    }
}
```

```
import java.lang.Math;
public class Balls{
```

```
    public static void main(String[] args) {
        int rand;
        int r=0,g=0,b=0,y=0;
        for(int i=0;i<10;i++){
            rand = (int) ((Math.random() * ((4 - 1) + 1)) + 1);
            if(rand==1)r++;
            if(rand==2)g++;
            if(rand==3)b++;
            if(rand==4)y++;
            try{
                if(r>3 || g>3 || b>3 || y>3){
                    throw new SameColourBallException(0);
                }
            }catch(SameColourBallException exp){
                    System.out.println("Error Caught");
                }
            }
            System.out.println(r);
            System.out.println(g);
            System.out.println(b);
            System.out.println(y);
        }
    }
```