

Teacher's Assessment - I

Problem Statement :-

Create a Gym Membership System for Power Gold Gym by creating a class GymMembershipSystem, where

- Class Variables: String gymName, String membershipPlan, double amount;
 - Gym Name, Membership Plans and amounts shall be initialized and should not be changed.

- Class Methods:

- Design a method to display the membership plans (regular|prime) and their membership amount per year (Rs. 12000 | Rs. 240000)

- void display();

- Design a method to display the membership plans monthwise. An integer value is to be passed as a parameter and the method calculates the amount at runtime, displaying the amount

- For example: void display(2) : scenario for finding the membership plan for two years. It shall print, Rs. 2000 for Regular and Rs. 4000 for prime.

- void display(int)

Create a subclass Member Class extends the base class GymMembershipSystem

- Class Variables: int id, String name, int mobile, char gender (M: Male, F: Female, O: Others)

- Class Methods:

- Design a method to register a member for the Gym Membership

- void registerMember(id,name,mobile,membershipPlan)

- Design a method to renew the membership of an already registered member.

- void renewMembership(id)

- If id = valid, it shall first display the current membership status of the member and then ask the renewal details (type of

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membershipPlan and display the amount required to register for it and display a final message as “membership renewed”).)

- If id = invalid, it shall display error message “Invalid ID”

- Design a method to cancel membership

- void cancelMembership(id)

- If id=valid and the remaining membership is less than 3 months, display “Membership is canceled with No refund”

- Else, if id=valid and the remaining membership is in between 4 months to 1 year, display “Membership is canceled with 25% refund”

- Else, if id=valid and the remaining membership is greater than 1 year, display “Membership is canceled with 50% refund”

- Else, if id=invalid, display error message “Invalid ID”

Create a subclass CheckInRecord Class extends the base class GymMembershipSystem

- Class variables: checkInTime, checkOutTime

- Class methods:

- Design a method which updates a time when a member checks in the gym. It shall also print the collective information of the gym member.

- void enterGym(id);

- Design a method which updates a time when a member checks out from the gym, including the total time gymed today. It shall also print the collective information of the gym member.

- void leaveGym(id);

Create a subclass GymStatistics Class extends the base class GymMembershipSystem

- Class Variables: activeMember (boolean), revenueGenerated(double),

totalMembershipDuration(double)

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- Class Methods:
 - Sets the statistics of the various class members such that:
 - activeMember: true if membership is active | false if canceled
 - revenueGenerated: total fee paid
 - totalMembershipDuration:
 - If active: total duration of active membership plan
 - If canceled: total duration till cancellation.
 - Display the current statistics of all the members of the gym, displaying their information along with class variables.
- Create a main class where perform the following tasks:
- 1) Create an array of objects of 12 members:
 - a) 5 members of Regular Membership, where 2 are active and 3 are now canceled.
 - b) 5 members of Prime Membership, where 2 are active and 3 are now canceled.
 - 2) Print only the records where the membership is still active.
 - 3) Print only records of female members, irrespective of the membership plan.

Code :-

```
class GymMembershipSystem {  
  
    static String gymName = "Power Gold GYM";  
    String membershipPlan;  
    double amount;  
  
    void display() {  
        System.out.println("membership Plans");  
        System.out.println("Regular: Rs. 12,000 per year\n Prime: Rs. 24,000  
per year");  
    }  
}
```

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```
void display(int month) {  
  
    System.out.println("your " + month + " month plan consist of" + amount  
/ 6 + " rupees");  
}  
  
}
```

```
import java.util.*;  
class Member extends GymMembershipSystem{  
  
    int id;  
    String name;  
    int mobile;  
    char gender;  
    int remainingMembership;  
    CheckInRecord c1;  
    Gymstatics g1;  
  
    Member(CheckInRecord c1, Gymstatics g1){  
        this.c1 = c1;  
        this.g1 = g1;  
    }  
  
    void registerMember(int id, String name,int mobile, String membershipPlan,  
char gender){  
        this.id = id;  
        this.name = name;  
        this.mobile = mobile;  
        this.membershipPlan = membershipPlan;  
        this.gender = gender;  
    }  
  
    void info(){  
        System.out.println("Members Information : \n" + this.name + "\n" +  
this.gender + "\n"+ this.id + "\n"+ this.mobile + "\n"+ this.membershipPlan);  
    }  
  
    void renewMembership(int id){  
  
        if(this.id != id){  
            System.out.println("invalid id");  
            return;  
        }  
  
        Scanner sc = new Scanner(System.in);  
  
        System.out.println("your current status is : " + this.membershipPlan);  
    }  
}
```

```
        System.out.print("enter the membership Plan : ");
        this.membershipPlan = sc.nextLine();

        if(this.membershipPlan.equals("prime")){
            System.out.println("amount payable is : 24000" );
        }
        else if(this.membershipPlan.equals("regular")){
            System.out.println("amount payable is : 12000" );
        }

        System.out.println("Your membership was Renewed successfully");
    }

    void cancelMemebership(int id){

        if(this.id != id){
            System.out.println("invalid id");
            return;
        }
        if(remainingMembership < 3){
            System.out.println("Membership canceled with no refund");
        }
        else if(remainingMembership >= 4 && remainingMembership <= 12){
            System.out.println("Membership canceled with 25% refund");
        }
        else if(remainingMembership > 12){
            System.out.println("Membership canceled with 50% refund");
        }

        this.membershipPlan = null;
        g1.activeMember = false;

    }
}
```

```
class CheckInRecord extends GymMembershipSystem{

    double checkInTime, checkOutTime;
    Member m1;

    CheckInRecord(){

    }

    CheckInRecord(Member m1, double checkInTime, double checkOutTime)
    {
```

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```
        this.checkInTime = checkInTime;
        this.checkOutTime = checkOutTime;
        this.m1 = m1;
    }

    void info(){
        System.out.println("Members Information : \n" + m1.name + "\n" +
m1.gender + "\n" + m1.id + "\n" + m1.mobile + "\n" + m1.membershipPlan);
    }

    void enterGym(int id) {
        System.out.println("Member checked in: " + id);
        info();
    }

    void leaveGym(int id) {
        System.out.println("Member checked out: " + id + "\n" + "Total Time
Gymed today = " + Math.abs(checkOutTime - checkInTime));
        info();
    }
}
```

```
class Gymstatics extends GymMembershipSystem{

    boolean activeMember;
    double revenueGenreated, totalMembershipDuration;
    Member m1;
    Gymstatics(){

    }

    Gymstatics(boolean activeMember, double revenueGenreated, double
totalMembershipDuration, Member m1){
        this.activeMember = activeMember;
        this.revenueGenreated = revenueGenreated;
        this.totalMembershipDuration = totalMembershipDuration;
        this.m1 = m1;
    }

    void info(){
        System.out.println("Members Information : \n" + m1.name + "\n" +
m1.gender + "\n" + m1.id + "\n" + m1.mobile + "\n" + m1.membershipPlan);
    }
}
```

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```
void setStatistics(){  
  
    if(this.membershipPlan.equals(null)){  
        this.activeMember = false;  
    }  
    else  
        this.activeMember = true;  
  
    this.revenueGenerated = this.amount;  
  
    info();  
  
}  
}
```

```
public class Main {  
    public static void main(String[] args) {  
        Member m[] = new Member[10];  
  
        for(int i = 0; i < 10; i++){  
            m[i] = new Member(new CheckInRecord(m[i], 9, 5), new  
GymStatistics(true, 24000, 12, m[i]));  
        }  
        // Regular Members  
  
        m[0].registerMember(0, "sujal", 999999999, "regular", 'm');  
        m[1].registerMember(1, "prajakta", 199999999, "regular", 'f');  
        m[2].registerMember(2, "pratik", 119999999, "regular", 'm');  
        m[3].registerMember(3, "vansh", 111999999, "regular", 'm');  
        m[4].registerMember(4, "vedant", 111199999, "regular", 'm');  
  
        // Prime Members  
        m[5].registerMember(5, "sujal1", 999999999, "prime", 'm');  
        m[6].registerMember(6, "prajakta1", 199999999, "prime", 'f');  
        m[7].registerMember(7, "pratik1", 119999999, "prime", 'm');  
        m[8].registerMember(8, "vansh1", 111999999, "prime", 'm');  
        m[9].registerMember(9, "vedant1", 111199999, "prime", 'm');  
  
        m[2].remainingMembership = 5;  
        m[3].remainingMembership = 9;  
        m[4].remainingMembership = 8;  
        m[7].remainingMembership = 2;  
        m[8].remainingMembership = 2;  
        m[9].remainingMembership = 13;  
        m[2].cancelMembership(2);  
        m[3].cancelMembership(3);  
        m[4].cancelMembership(4);  
    }  
}
```

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```
m[7].cancelMemebership(7);
m[8].cancelMemebership(8);
m[9].cancelMemebership(9);

System.out.println("following is the information of active members:");

for(int i = 0; i < 10; i++){
    if(m[i].g1.activeMember){
        m[i].info();
    }
}

System.out.println("following is the information of only female members: ");
for(int i = 0; i < 10; i++){
    if(m[i].gender == 'f'){
        m[i].info();
    }
}
}
```

Output :-

Female members only :

```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL
Windows PowerShell
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Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\java\assignment> & 'C:\Program Files\Eclipse Adoptium\jdk-17.0.6.10-hotspot\bin\java.exe'
NIMJE\AppData\Roaming\Code\User\workspaceStorage\4905ab4380d7dd53b10be7f2805c8c1d\redhat.java
following is the information of only female members:
Members Information :
prajakta
f
1
199999999
regular
Members Information :
prajakta1
f
6
199999999
prime
PS C:\java\assignment> █
```


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Active members only :

```
PS C:\java\assignment> c:; cd 'c:\java\assignment'; & 'C:\Program Files\Java\jre7\bin\java.exe' -cp 'C:\Users\SUJAL NIMJE\AppData\Roaming\Code\bin' n'
Membership canceled with 25% refund
Membership canceled with 25% refund
Membership canceled with 25% refund
Membership canceled with no refund
Membership canceled with no refund
Membership canceled with 50% refund
following is the information of active members:
Members Information :
sujal
m
0
999999999
regular
Members Information :
prajakta
f
1
199999999
regular
Members Information :
sujal1
m
5
999999999
prime
Members Information :
prajakta1
f
6
199999999
prime
PS C:\java\assignment>
```

Renewing membership :

```
PROBLEMS 1 OUTPUT DEBUG CONSOLE TERMINAL

prime
PS C:\java\assignment> c:; cd 'c:\java\assignment'; & 'C:\Program Files\Java\jre7\bin\java.exe' -cp 'C:\Users\SUJAL NIMJE\AppData\Roaming\Code\bin' n'
your current status is : regular
enter the membership Plan : prime
amount payable is : 24000
Your membership was Renewed successfully
PS C:\java\assignment> █
```