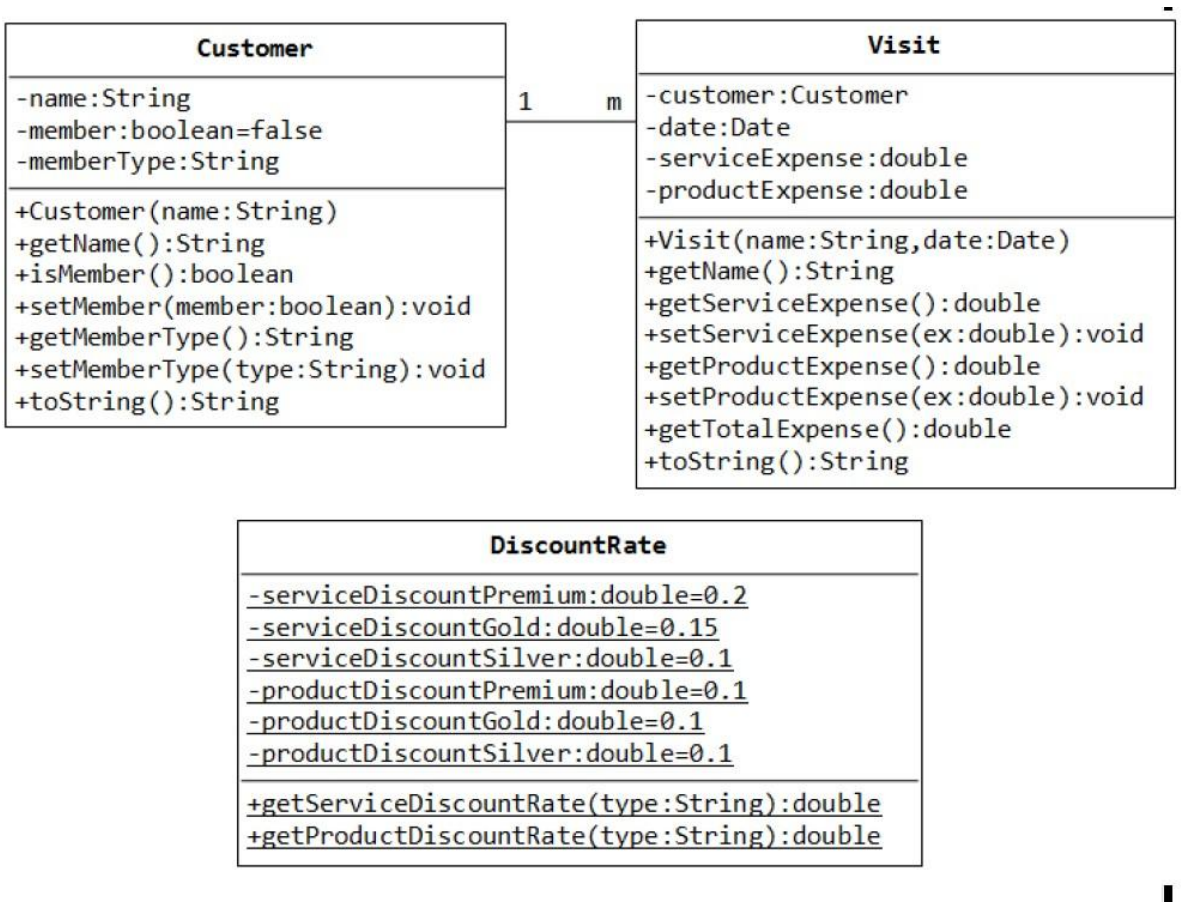
Sheet 9

1. **You are asked to write a discount system for a beautySaloon, which provides services and sells beauty products. It offers 3 types of memberships: Premium, Gold and Silver. Premium, gold and silver members receive a discount of 20%, 15%, and 10%, respectively, for all services provided. Customers without membership receive no discount.All members receives a flat 10% discount on products purchased (this might change in future).Your system shall consist of three classes: Customer, Discount and Visit, as shown in the class diagram. It shall compute the total bill if a customer purchases $x of products and $y of services, for a visit. Also write a test program to exercise all the classes.**



The class DiscountRate contains only static variables and methods (underlined in the class diagram).

2. Create a **class** called **SoccerPlayer** Create 4 protected attributes:
    a. **First Name, Last Name, Games** and **Start Date**, Start Date should be of type **CustomDate1**.
    b. Have **one constructor** in **SoccerPlayer that accepts input** of **first name, last name, games** and **start date.**
    c. Create **get and set methods** for each of the **first three attributes** and **a toString.**
    d. Create **3 additional classes** that **extend** SoccerPlayer**.**
        i. These three classes should be called **Forward, Defense and Goalie.**
        ii. Each of these **classes** needs their own **constructor t**hat calls the **Superclass constructor** as well as **fills** in **the new protected attributes for the class.**

        iii. Class **Forward** should include **two additional** protected attributes for **Goals Scored** and **Average Goals per game.**
            1. Create a **get and set** method for **goals.**
            2. Create a **method** that **calculates the average number of goals scored per game.**
                a. This method checks for **zero games played**:
                    i. If there are zero played, display an error and set average to 0;
                    ii. If greater than zero, do the maths and set the average to the result of calculation.
                    iii.
                b. Create a toString method that displays all of the inherited info, the number of total goals scored and the average number of goals per game displayed to one decimal place.

iv. Class **Goalie** should include **two additional** protected attributes for **Saves Made** and **Average Saves per game.**

1. Create a **get** and **set method** for **Saves Made.**
2. Create a **method** that **calculates the average number of saves per game.**
    a. This **method checks for zero games played:**
        i. If there are zero played, display an error and set average to 0;
        ii. If greater than zero, do the maths and set average to result of calculation
    b. Create a **toString** method that displays all of the **inherited** info, the **number of total saves** and the **average number of saves per game** displayed to one decimal place.

v. Class **Defence** should include **two additional** protected attributes for **total number of tackles** and **if the player has a red card** (which should be a **Boolean**)**.**

1. Create **get** and **set method** for both attributes
2. Create a **toString** method that displays all of the **inherited** info, the **number of tackles** and **displays** a **message** stating if the player is playing or is **suspended** due to a red card.

vi. Create a **test program** called **SoccerPlayerTest**:

1. Create four instances of players.
2. The first should be a forward
3. The second should be a goalie
4. The third should be a defenseman who does not have a red card
5. The fourth should be a defensemen who does have a red card
6. Display the info about the players by calling the appropriate toString() methods.