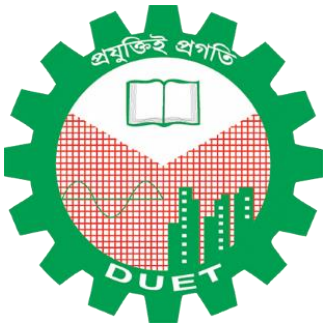

Dhaka University of Engineering & Technology, Gazipur.

Course Title: Object Oriented Programming Language Sessional
Course Code: CSE - 2112

Final Project Class Design

Submitted To

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Submission Date: - 01/07/2021

Project Selection:

My ID is 194095. So, last 3 digits of my ID is **095** mode by 20. Reminder is 15 now addition 1 with this reminder**. So, My Project number is 16.**

16. Discount System. You are asked to write a discount system for a saloon, which provides service and sells beauty products. It offers 3 types of memberships Premium, Gold and Silver members receive a discount of 20%,15% and 10% respectively. For all services provided customers without memberships receives no discount. All members receive a flat 10% discount on product purchased (that might change in future)

Project Analysis:

This project for a **Saloon Discount system** that provides **services** and sells **beauty products**. So firstly, we need to store those available services and products for saloon serves customers. So, we have needed two separate **classes for services and beauty products** which required member variables and functions. Now focus on customers membership, every customer is a member, So we need a **class member** then we separate members to different memberships like as **Premium, Gold, Silver** and General member. This all-different membership is a separate class that contains different discount percentages.

Membership criteria

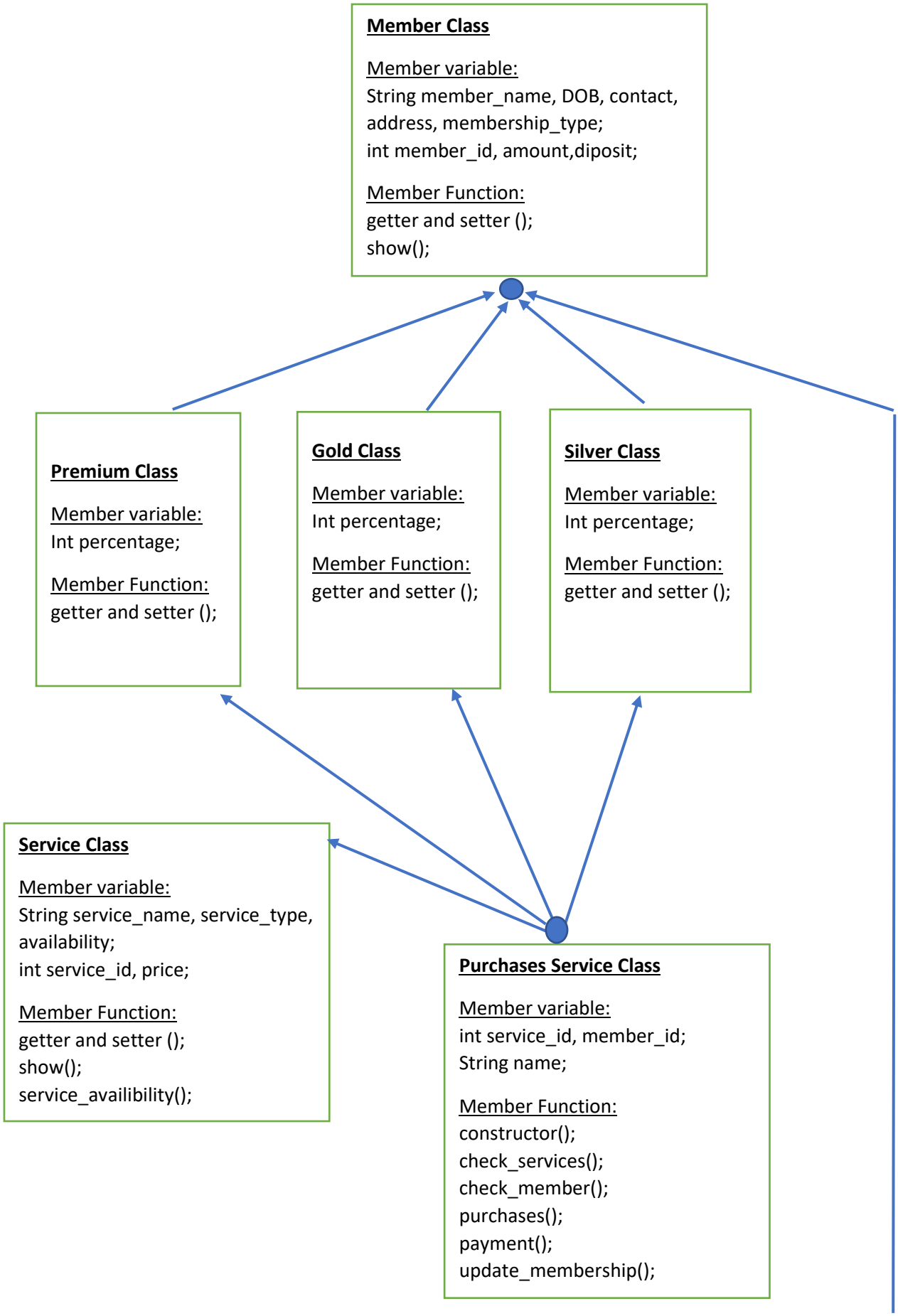
If a member deposits **7,000 BDT**, then he gets **Premium** membership. When he purchased a service, he gets **20% discount** on that service's price.

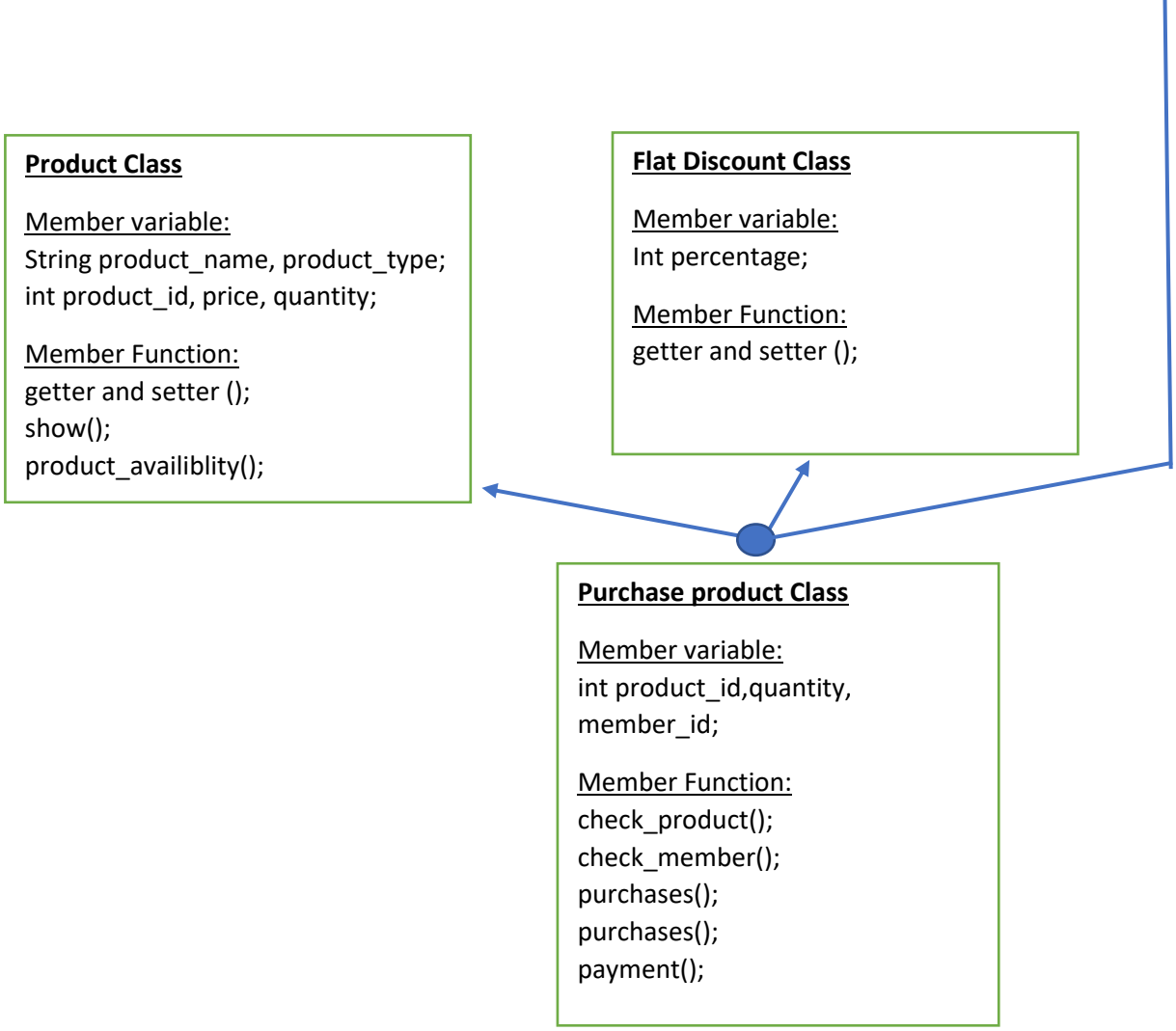
If a member deposits **5,000 BDT**, then he gets a **Gold** membership. When he purchased a service, he gets **15% discount** on that service's price.

If a member deposits **3,000 BDT**, then he gets **Silver** membership. When he purchased a service, he gets **10% discount** on that service's price.

Otherwise, members do not get any membership and discount when they purchased any services. But all member who bought of any **beauty products** he gets a flat discount from that product price, that's why we need a **flat discount class**. If the authority wants this flat percentage discount to be changeable in the future.

Necessary classes with member variable and function and class Hierarchy:





In this Project I use:

1. Object Oriented Concept.
2. Class, object.
3. Virtual class.
4. Inheritance.
5. Friend function.
6. Function Overloading.
7. Operator Overloading.
8. Exception Handling.
9. Vector.
10. Iterator.

Some Important portion code of my project:

```
#include<iostream>
#include<iomanip>
#include<vector>
#include<iterator>
#include <algorithm>
```

Header File

```
int integer(){
    int a;
    cin>>a;
    while(1)
    {
        try
        {
            if(!cin.fail()){
                return a;
                break;
            }else
                throw "You have entered wrong input. Please a Enter Integer input : ";
        }
        catch(const char *msg)
        {
            cin.clear();
            cin.ignore(numeric_limits<streamsize>::max(),'\n');
            cout<<msg;
            cin>>a;
        }
    }
}
```

Valid Data (integer) function

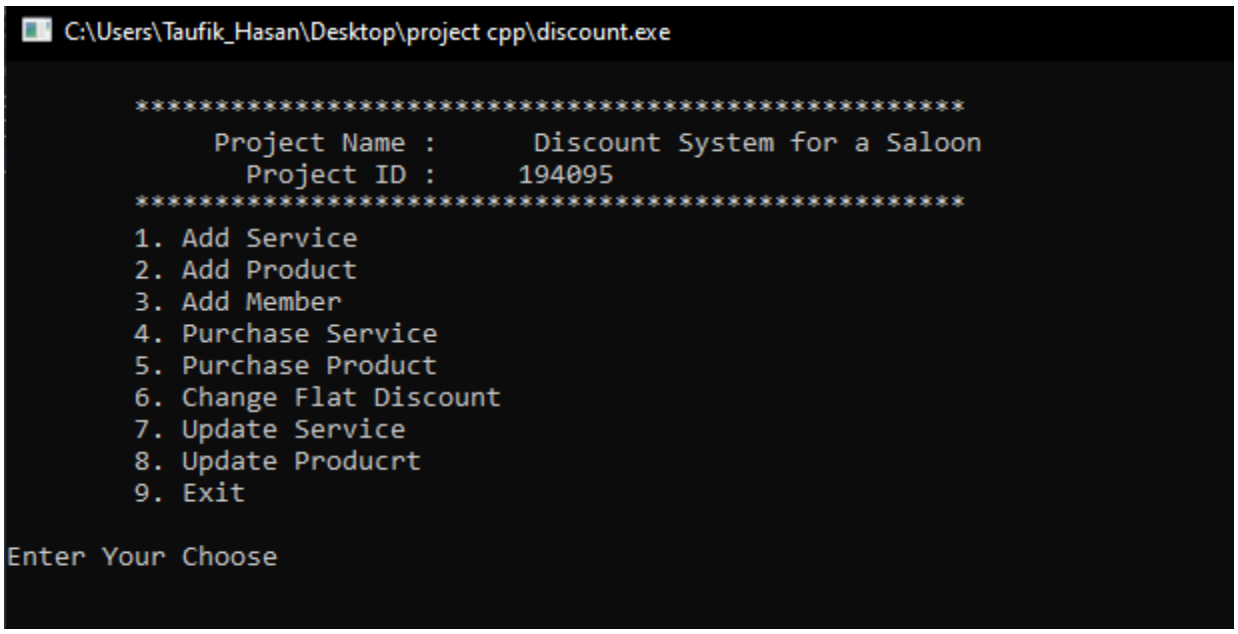
```
class Flat_Discount{
    private:
        static int percentage;
    public:
        void set_flat_dicount(){
            cout<<"\tEnter Discount Rate : ";
            percentage=integer();
            cout<<"\tFlat Discount Updated Successfully\n";
            }
        int get_flat_discount(){return percentage;}
};
int Flat_Discount:: percentage=10;
```

Flat Discount Class

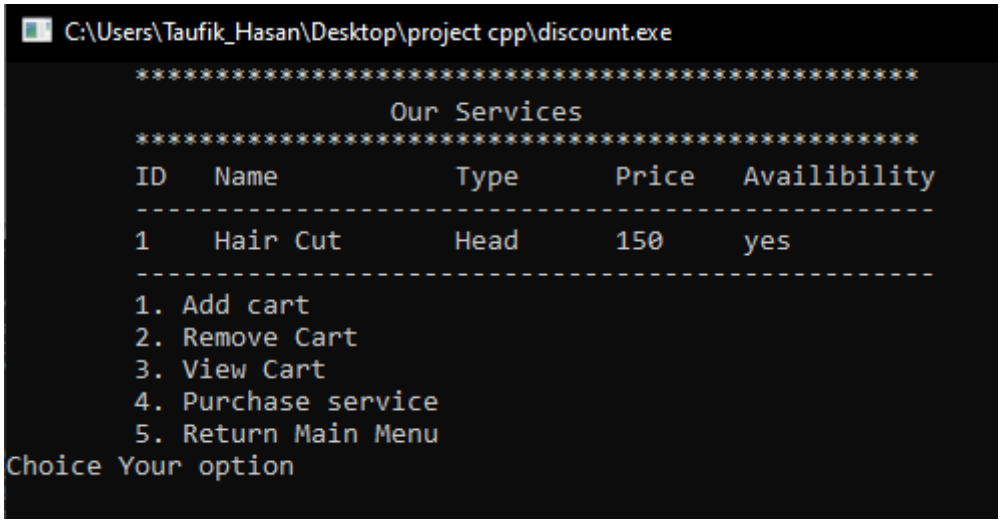
```
ostream& operator<<(ostream& out, const Services &s){
    out<<"\t"<<setw(5)<<left<<s.service_id<<setw(15)<<left<<s.service_name<<setw(10)<<left<<s.service_type<<setw(8)<<left<<s.price<<setw(
    return out;
}
ostream& operator<<(ostream& out, const Product &p){
    out<<"\t"<<setw(5)<<left<<p.product_id<<setw(15)<<left<<p.product_name<<setw(10)<<left<<p.product_type<<setw(8)<<left<<p.price<<setw(
    return out;
}
ostream& operator<<(ostream& out, const Member &m){
    out<<"\t"<<setw(5)<<left<<m.member_id<<setw(15)<<left<<m.member_name<<setw(10)<<left<<m.membership_type<<setw(8)<<left<<m.purchases_s
    return out;
}
```

Operator Overloading

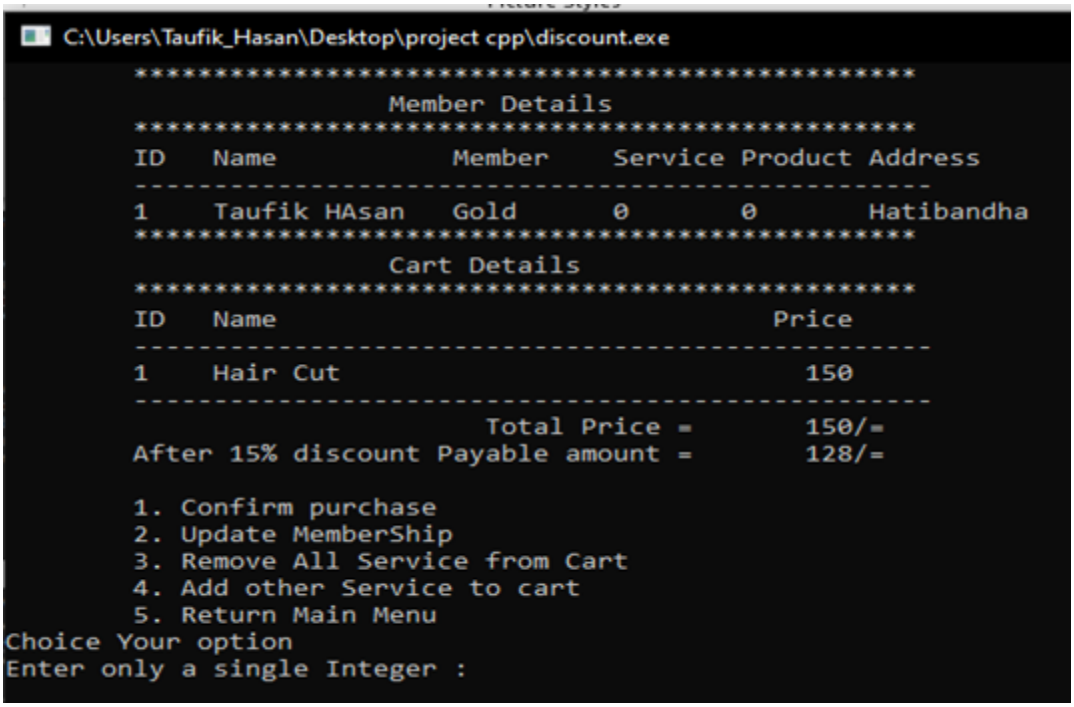
Final Project Output Interface Sample:



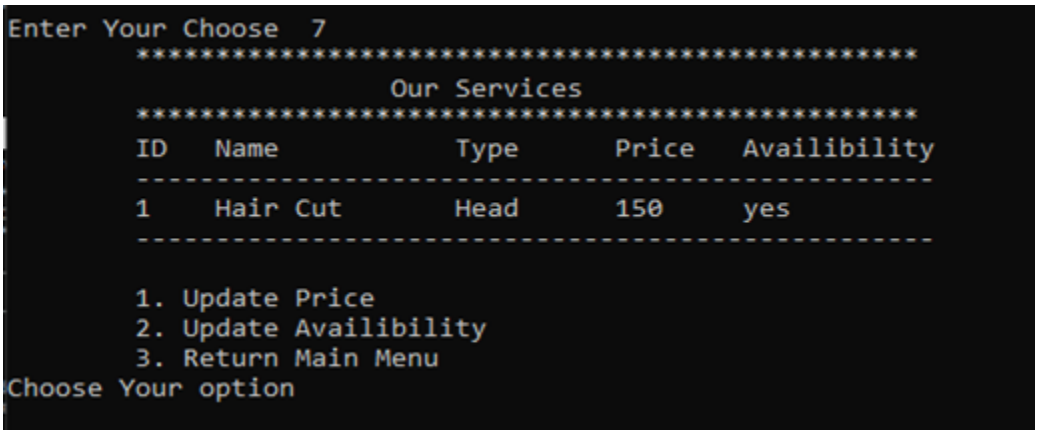
Main Interface or Option Menu: Program execute main screen look like this. when i selected a particular option then my program work with this particular task.



Purchase service or Sub Menu Option: when a member add once or multiple service bought he can perform by in this section



Purchase service or Sub Menu Option: when a user purchase that he added his cart in previous. He will get discount of his membership criteria.



Update service or Sub Menu Option: when the authority changed his service price or service availability then he will can do this by in this section .

End Of the Project Analysis and Class Hierarchy Design Structure with final Report **. ID 194095**