Hair Shop
:고객과 디자이너 관리

진행 순서

```
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│         프로그램 설명            │
└─────────────────────────────────┘
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│          클래스 구조            │
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│        멤버 변수, 메소드         │
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│      소스 코드 & 실행 화면      │
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```
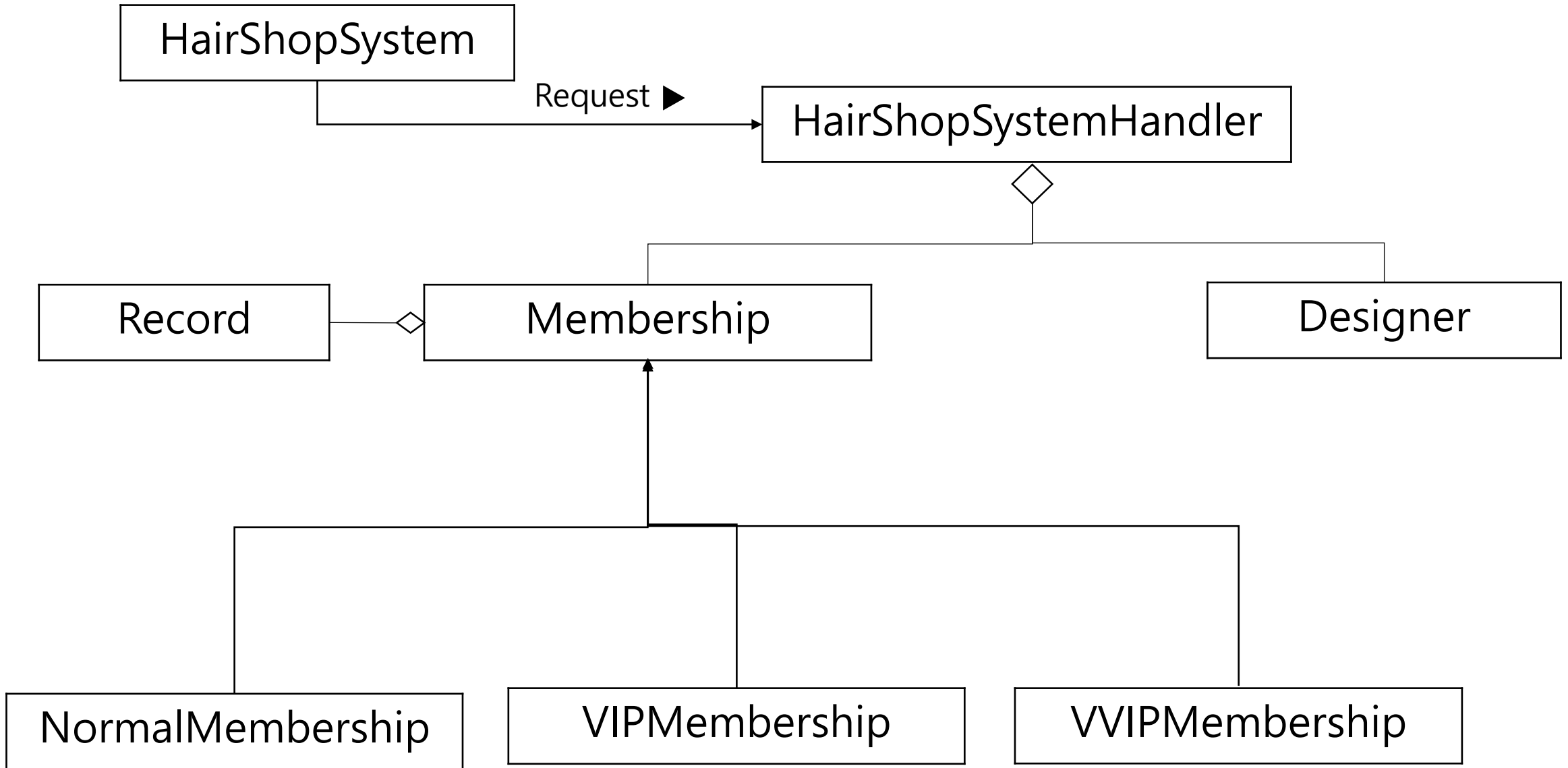
프로그램 설명

✓고객과 디자이너를 따로 관리할 수 있다.

✓중재자를 통해 고객과 디자이너 사이를 연결할 수 있다.

<가정>

• 급여, 비용 등 모두 정수로 처리된다.

• 아이디 중복 입력은 하지 않는다.

• try-catch 문으로 예외 처리시 프로그램이 중단되어, while문 등으로 예외를   처리한다.

클래스 멤버변수&메소드

Membership

int memID, d_id;
int balance,cost;
int record_count=0;
String cusName;
Record *record[100];

Membership(int id, int money, String name,
int dsn_sel);
~Membership();
void Deposit(int money);
virtual void ShowMemInfo() const=0;
virtual int getDisRate() = 0;
void hairCost(int cost);
int GetMemID() const;
int GetDsnID() const;
bool reserved(int cost) ;
Membership(const Membership &ref);
void showAllRecords();
void record_history(int t, int length);

Record

int count=1;
int type;
int length;

Record();
void showRecord();

NormalMembership

int n_dis=5;

virtual void Deposit(int money);
 void ShowMemInfo() const;
 int getDisRate();

VVIPMembership

int v_dis=10;

VVipMembership();
virtual void Deposit(int money);
 void ShowMemInfo() const();
 int getDisRate();

VIPMembership

int v_dis=10;

VipMembership();
virtual void Deposit(int money);
 void ShowMemInfo() const();
 int getDisRate();

클래스 멤버변수&메소드

HairShopSystem

HairShopSystemHandler sh;

String

int len;
char * str;

String();
String(const char * s);
String(const String& s);
~String();
String& operator= (const String& s);
String& operator+= (const String& s);
bool operator== (const String& s);
String operator+ (const String& s);
friend ostream& operator<< (ostream& os

HairShopSystemHandler

Membership *memArr[100];
Designer *dsnArr[100];
int memNum;
int dsnNum;

HairShopSystemHandler();
~HairShopSystemHandler();
void ShowMenu(void) const;
void ShowMemMenu(void) const;
void ShowDsnMenu(void) const;
void Register(void);
void DepositMoney(void);
void DepositMoney(int id);
void doHair(void);
void showHistory();
void ShowAllMemInfo(void) const;
void ShowAllDesigner(void) const;
void ShowCareerInfo(void) const;
void ShowPayCheckInfo(void) const;
void DRegister(void);
void RegisterNormalMembership();
void RegisterVIPMembership();
void RegisterVVIPMembership();

Designer

int d_id;
String d_name;
int memID[100];
int memNum;
int cut, perm, color, treatment;
int paycheck;

Designer(int id, String name);
~Designer()
virtual void Career(int hair);
virtual void Paycheck(int cost);
void ShowCareerInfo() const;
void ShowPayCheckInfo() const;
int GetDsnID() const;
void addCus(int c);
Designer(const Designer &ref);
void ShowDesigner() const;

HairShopSystem

```cpp
int main()
{
    int sel = 0;

    HairShopSystemHandler sh;
    while (1) {
        sh.ShowMenu();
        cout << ">> "; cin >> sel;
        switch (sel) {
        case MEM:
            sh.ShowMemMenu(); break;
        case DSN:
            sh.ShowDsnMenu(); break;
        case EXIT:
            exit(0);
        }
        if (sel == 1) {
            cout << ">> "; cin >> sel;
            switch (sel) {
            case REGISTER:
                sh.Register(); break;
            case DEPOSIT:
                sh.DepositMoney(); break;
            case DOHAIR:
                sh.doHair(); break;
            case PRINT:
                sh.ShowAllMemInfo(); break;
            case HISTORY_PRINT:
                sh.showHistory(); break;
            default:
                cout << "Illegal Selectoin ..." << endl;
```

```cpp
        else if (sel == 2) {
            cout << ">> "; cin >> sel;
            switch (sel) {
            case DREGISTER:
                sh.DRegister(); break;
            case PRINTD:
                sh.ShowAllDesigner(); break;
            case SHOWCAR:
                sh.ShowCareerInfo(); break;
            case SHOWPAY:
                sh.ShowPayCheckInfo(); break;
            default:
                cout << "Illegal Selectoin ..." << endl;
            }
        }
        else cout << "error" << endl;
```

<실행 결과>

```
----------Menu----------
1. Membership
2. Designer
3. Exit
>> 2
--------Designer--------
1. Register Designer
2. Show All Designers' Info
3. Show Career
4. Show PayCheck
>> 1
[Register Designer]
Designer ID: 1
Name: 1
```

HairShopSystemHandler

<소스 코드>

```cpp
void HairShopSystemHandler::Register(void) {

    int mem_sel;
    cout << "[Membership Type]" << endl;
    cout << "1. Normal" << endl;
    cout << "2. VIP" << endl;
    cout<< "3. VVIP" << endl;
    cout << ">>"; cin >> mem_sel;
    if (mem_sel == NORMAL) {
        RegisterNormalMembership();
    }
    else if ((mem_sel == VIP)) {
        RegisterVIPMembership();
    }
    else if ((mem_sel == VVIP)) {
        RegisterVVIPMembership();
    }
}
```

```cpp
void HairShopSystemHandler::RegisterNormalMembership() {
    int id;
    int money;
    int YorN;
    int dsn_sel;
    String name;
    cout << "[Register Membership]" << endl;
    cout << "Membership ID: ";  cin >> id;
    cout << "Name: ";   cin >> name;
    if (dsnNum == 0)
    {
        cout << "Designer Register First Please" << endl; return;
    }
    cout << "[Choose Designer]" << endl;
    ShowAllDesigner();
    cout << "Designer ID >>"; cin >> dsn_sel;
    //디자이너를 찾아 고객의 아이디를 추가해준다.
    for (int j = 0; j < dsnNum; j++)
    {
        if ((dsnArr[j]->GetDsnID()) == dsn_sel) {
            dsnArr[j]->addCus(id); break;
        }
    }
    cout << "Would you like to Deposit? (Yes:0, No:1)  "; cin >> YorN;
    if (!YorN)
    {
        cout << "How Much would you like to Deposit?  "; cin >> money;
    }
    else money = 0;
    memArr[memNum++] = new NormalMembership(id, money, name, dsn_sel);
}
```

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HairShopSystemHandler

<실행 결과>

```
-----------Menu-----------
1. Membership
2. Designer
3. Exit
>> 1
----------Member----------
1. Register Membership
2. Deposit
3. Do Hair
4. Show All Members' Info
5. Show History
>> 1
[Membership Type]
1. Normal
2. VIP
3. VVIP
>>1
[Register Membership]
Membership ID: 1
Name: 1
```

```
[Choose Designer]
-----------------------
>ID: 1
>Name: 1
<Career>
-Cut: 0
-Perm: 0
-Color: 0
-Treatment: 0
-Total: 0
-----------------------
>ID: 2
>Name: 2
<Career>
-Cut: 0
-Perm: 0
-Color: 0
-Treatment: 0
-Total: 0
-----------------------
```

```
-----------------------
>ID: 3
>Name: 3
<Career>
-Cut: 0
-Perm: 0
-Color: 0
-Treatment: 0
-Total: 0
Designer ID >>1
Would you like to Deposit? (Yes:0, No:1)  0
How Much would you like to Deposit?  20
```

HairShopSystemHandler

<소스 코드>

```cpp
void HairShopSystemHandler::ShowAllMemInfo(void) const {

    for (int i = 0; i < memNum; i++)
    {
        memArr[i]->ShowMemInfo();
        cout << endl;
    }
}
```

```cpp
void ShowMemInfo() const {
    cout << "---------------" << endl;
    cout << "ID: " << memID << endl;
    cout << "Name: " << cusName << endl;
    cout << "Membership Type : Normal" << endl;
    cout << "Balance: " << balance << endl;


}
```

<실행 결과>

```
-------------Member-----------
1. Register Membership
2. Deposit
3. Do Hair
4. Show All Members' Info
5. Show History
>> 4
-----------------
ID: 1
Name: 1
Membership Type : Normal
Balance: 20

-----------------
ID: 2
Name: 2
Membership Type : VIP
Balance: 50

-----------------
ID: 3
Name: 3
Membership Type : VVIP
Balance: 100
```

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HairShopSystemHandler <소스 코드>

```cpp
void HairShopSystemHandler::doHair(void) {

    int id; int type; int cost; int length; int d_id=0;
    int mem_index=0;
    int find = 0;
    while (find != 1) {
        cout << "MemberID: "; cin >> id;
        for (int i = 0; i < memNum; i++)
        {
            if (memArr[i]->GetMemID() == id)
            {
                mem_index=i;
                d_id = memArr[i]->GetDsnID();
                find = 1;
                break;
            }
        }
        //아이디를 못찾았으면
        if (find == 0)
            cout << "Invalid ID ..." << endl << endl;
        //else break;
    }
    while (1) {
        cout << "----------Menu-----------" << endl;
        cout << "1.Cut(2)" << endl;
        cout << "2.Perm(15)" << endl;
        cout << "3.Color(10)" << endl;
        cout << "4.Treatment(5)" << endl;
        cout << "What Kind of Hair Would you like? "; cin >> type;
        cout << "How long is your hair? (Medium=1, Long=2) "; cin >> length;
```

```cpp
        if (!(type == CUT || type == PERM || type == COLOR || type == TREATMENT))
        {
            cout << "type: "<< type << endl;
            continue;
        }


        if (!(length == MEDIUM_LENGTH || length == LONG))
        {
            cout << "type: " << type << endl;
            continue;
        }


        //머리 서비스 종류에 따른 비용
        if (type == CUT)
        {
            cost = 2; break;
        }
        else { //커트를 제외한 나머지, 머리 길이에 따른 추가요금
            if (type == PERM)
                cost = 15;
            else if (type == COLOR)
                cost = 10;
            else if (type == TREATMENT)
                cost = 5;

            //머리 길이에 따른 추가요금
            if (length == MEDIUM_LENGTH)
            {
                cost += (int)(cost * 0.1); //10% 추가요금
                cout << "Additional Carhges 10% Occurred" << endl;
                break;
```

HairShopSystemHandler   <소스 코드>

```cpp
//멤버십 종류에 따른 할인
int discount=memArr[mem_index]->getDisRate( );

cout << "discountRate: " << discount << endl;
cost = cost * (1-discount/100);
cout << "After: " << cost << " " << discount << "% discounted" << endl;

//기록하기
memArr[mem_index]->record_history(type, length);

int sel = 0;
// 비용을 지불하게 한다.
if(memArr[mem_index]->reserved(cost))
    memArr[mem_index]->hairCost(cost);
else{
    cout << "[Short of Deposit] " << endl;
    cout << "1. Deposit Money " << endl;
    cout << "2. Pay the rest by cash or card" << endl;
    cout << ">>";
    cin >> sel;
    if (sel == 1)
    {
        while (1) {
            DepositMoney(mem_index);
            if (memArr[mem_index]->reserved(cost))
            {
                memArr[mem_index]->hairCost(cost); break;
            }
            else continue;
        }
```

```cpp
//d_id를 사용해 몇번 배열인지 찾고 경력 올려주기
//cout << "dsnNum  " << d_id << endl;
for (int i = 0; i < dsnNum+1; i++)
{
    //cout << "dsnArr[i]->GetDsnID( )=" << dsnArr[i]
    if ((dsnArr[i]->GetDsnID( )) == d_id)
    {
        //cout << "type: " << type << endl;
        dsnArr[i]->Career(type);
        dsnArr[i]->Paycheck(cost);
        break;
    }
}
```

HairShopSystemHandler \<소스 코드\>

디자이너

```cpp
void Designer::Career(int hair){
    //cout << "hair type: " << hair << endl;
    switch (hair) {
    case CUT:cut++; break;
    case PERM:perm++; break;
    case COLOR:color++; break;
    case TREATMENT:treatment++; break;
    default: break;
    }
}
void Designer::Paycheck(int cost) {
    //고객이 지불한 비용의 60%를 급여로 받는다.
    paycheck = paycheck+cost*0.6;
}
```

멤버

```cpp
bool Membership::reserved(int cost) {
    //잔액이 충분하면 비용 지불
    if (balance >= cost)
        return true;
    else return false;

}
void Membership::hairCost(int cost)
{

    //예치금에서 비용 차감
    balance -= cost;
    cout << "Cost: " << cost << endl;
    cout << "Balance: " << balance << endl;
    cout << "Payment Completed " << endl;
        //cout << "Short amount of Balance: "<< cost-balance << endl;

}
void Membership::record_history(int t, int length) {
    record[record_count++] = new Record(t, length);

}
```

HairShopSystemHandler <소스 코드>

```cpp
int sel = 0;
// 비용을 지불하게 한다.
if(memArr[mem_index]->reserved(cost))
    memArr[mem_index]->hairCost(cost);
else{
    cout << "[Short of Deposit] " << endl;
    cout << "1. Deposit Money " << endl;
    cout << "2. Pay the rest by cash or card" << endl;
    cout << ">>";
    cin >> sel;
    if (sel == 1)
    {
        while (1) {
            DepositMoney(mem_index);
            if (memArr[mem_index]->reserved(cost))
            {
                memArr[mem_index]->hairCost(cost); break;
            }
            else continue;
        }
    }
    else if(sel == 2)
        cout << "Payment Completed" << endl;
    else cout << "error" << endl;
}
```

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HairShopSystemHandler <실행 결과>

```
----------Member----------
1. Register Membership
2. Deposit
3. Do Hair
4. Show All Members' Info
5. Show History
>> 3
MemberID: 1
----------Menu----------
1.Cut(2)
2.Perm(15)
3.Color(10)
4.Treatment(5)
What Kind of Hair Would you like? 2
How long is your hair? (Medium=1, Long=2) 2
Additional Carhges 20% Occurred
discountRate: 10
After: 18 10% discounted
Cost: 18
Balance: 2
Payment Completed
```

```
----------Menu----------
1.Cut(2)
2.Perm(15)
3.Color(10)
4.Treatment(5)
What Kind of Hair Would you like? 2
How long is your hair? (Medium=1, Long=2) 2
Additional Carhges 20% Occurred
Before: 18 10% discounted
discountRate: 10
After: 18
[Short of Deposit]
1. Deposit Money
2. Pay the rest by cash or card
>>1
[Deposit Money]
How Much would you like to Deposit?10
Deposit Completed

[Deposit Money]
How Much would you like to Deposit?10
Deposit Completed

Cost: 18
Balance: 2
Payment Completed
```

Membership & Record

<소스 코드>

```cpp
void HairShopSystemHandler::showHistory() {
    int id;
    int mem_index = 0;
    int find = 0;

    cout << "[History]" << endl;
    while (find != 1) {
        cout << "MemberID: "; cin >> id;
        for (int i = 0; i < memNum; i++)
        {
            if (memArr[i]->GetMemID() == id)
            {
                mem_index = i;
                find = 1;
                break;
            }
        }
        //아이디를 못찾았으면
        if (find == 0)
            cout << "Invalid ID ..." << endl << endl;
    }
    memArr[mem_index]->showAllRecords();
}
```

```cpp
class Record {
private:
    int count=1;
    int type;
    int length;
public:
    Record(int t,int l)
        :type(t),length(l){
    }
    void showRecord() {
        String s;
        String len;
        switch(type) {

        case CUT: s = "cut"; break;
        case PERM: s = "perm"; break;
        case COLOR: s = "color"; break;
        case TREATMENT: s = "treatment"; break;
        default: s = "error";

        }
        switch (length) {
        case MEDIUM_LENGTH: len = "medium-length"; break;
        case LONG: len = "long"; break;

        }
        cout <<s<<", "<< len <<endl;
    }
}
```

```cpp
void Membership::record_history(int t, int length) {
    record[record_count++] = new Record(t, length);
}
```

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Membership & Record

<실행 화면>

```
----------Member----------
1. Register Membership
2. Deposit
3. Do Hair
4. Show All Members' Info
5. Show History
>> 5
[History]
MemberID: 3
1. perm, long
1. treatment, long
1. cut, long
1. perm, long
```

HairShopSystemHandler & Designer

<소스 코드>

```cpp
void Designer::ShowCareerInfo( ) const{
    cout << "----------------" << endl;
    cout << ">ID: " << d_id << endl;
    cout << ">Name: " << d_name << endl;
    cout << "<Career>" << endl;
    cout << "-Cut: " << cut<< endl;
    cout << "-Perm: " <<perm << endl;
    cout << "-Color: " << color << endl;
    cout << "-Treatment: " << treatment << endl;
    cout << "-Total: " << cut+ perm+ color+treatment << endl;
}

void Designer::ShowPayCheckInfo( ) const {
    cout << "-----------------" << endl;
    cout << ">ID: " << d_id << endl;
    cout << ">Name: " << d_name << endl;
    cout << ">Paycheck: " << paycheck << endl;
}

void Designer::ShowDesigner( )const {
    cout << "--------------" << endl;
    cout << ">ID: " << d_id << endl;
    cout << ">Name: " << d_name << endl;
    cout << ">Number of Cus: " << memNum<<endl;
    cout << "<Career>" << endl;
    cout << "-Cut: " <<cut<< endl;
    cout << "-Perm: " << perm << endl;
    cout << "-Color: " << color << endl;
    cout << "-Treatment: " << treatment << endl;
    cout << ">Paycheck: " << paycheck << endl;
```

```
----------Designer---------
1. Register Designer
2. Show All Designers' Info
3. Show Career
4. Show PayCheck
>> 4
-------------------------
>ID: 1
>Name: 1
>Paycheck: 21
-------------------------
>ID: 2
>Name: 2
>Paycheck: 17
-------------------------
>ID: 3
>Name: 3
>Paycheck: 24
----------Menu---------
```

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평가 및 확장성

✓'머리를 한다'는 메소드를 실행했을 때,

   고객과 디자이너에 일어나야 하는 반응이 다르다.

   따로 관리하며 둘 사이를 중재할 수 있다.

✓디자이너를 추상클래스로 하고 하위 클래스를 만들 수 있다.

✓리셋할 수 있는 기능을 추가한다. (매 달, 매 년 등)

감사합니다.