DAY 3 lecture

Introduction

- We're gonna talk about construct and its تبعيات

Body

1. in the balance example if i want to make an initial deposit i deposit when i open the account only so i want to make a function to deposit one time only with out making spagity code , if , else , loops an so one to make this:
    - i make the function with the same name of the data type in the public

      ex :

```
public :
Account (){
this-> number =1;
this-> Balance =1600;
};
main ()
{
Account A1 ();
Account A2 ();
}
```

- this function is called **Constructor**

  ITS A SPECIAL FUNCTION (METHOD)

  here we have a problem that the number and the balance is constant with 1 and 1600 and in real life its not constant.
- **solution:** to make the **Constructor** it self take a number when i call it in the main

```
public :
Account (){
this-> number =1;
this-> Balance =1600;
};
main ()
{
Account A1 (1);
Account A2 (2);
}
```

- but this syntax isn't suitable so i make this the same as function
- i will give it also another parameter because the balance may change

```
public :
Account (){
this-> number =1;
this-> Balance =1600;
};
main ()
{
Account A1 (1 , 1900);
Account A2 (2 , 2300);
}
```

- but also i have to but the 1600 as a constant parameter and give a variable number as another option and when the user not giving a number between the () it give a 0 , and this is called **Polymophism**
- **تعدد الاوجه - Polymophism:** this mean the same function can do more than one option

```
public :
Account (){
this-> Number =_Number;
this-> Balance =1600;
}
Account (){
this-> Number =_Number;
this-> Balance =_Balance;
}
Account (){
this-> Number =0;
this-> Balance =0;
}

void Display(){
// the input
}
};
main ()
{
Account A1 (1 , 1900);
A1.Display();
Account A2 (2 , 2300);
A2.Display();
Account A3 = Account (3); //this will give the 1600//
A3.Display();
```

```
Account A4 (4 , 2300);
A4.Display();
Account A5 = Account (); //this will give zero//
A5.Display();
}
```

Part 2

simulating a calculator program

```
code :
```

1. **Polymorphism**
   - **Binding** ربط : when i بربط between two functions
   - the parameter number , data type and ترتيب differ between the two symmetric binding function and this is called **function signature**
   - **function overloading :** more than one function similar in everything so, *polymorphism solved this problem*

   note*: the return data type isn't include in the function signature*

   ex:

```
sum (int x){
x
}

sum (float int y)
{}
sum (int x , int y)
{}

main(){
int x;
sum(30.2)
int y;
sum(30 , 20)
int z;
sum(30)
```

the following code has a problem in mentability :

```
public :
Account (){
this-> Number =_Number;
this-> Balance =1600;
}
Account (){
this-> Number =_Number;
this-> Balance =_Balance;
}
Account (){
this-> Number =0;
this-> Balance =0;
}
void Display(){
// the input
}
};
main ()
{
Account A1 (1 , 1900);
A1.Display();
Account A2 (2 , 2300);
A2.Display();
Account A3 = Account (3); //this will give the 1600//
A3.Display();
Account A4 (4 , 2300);
A4.Display();
Account A5 = Account (); //this will give zero//
A5.Display();
}
```

so if i want to solve this problem to make the function call another function (constructor call another constructer)
and this called **constructor chaining, *ex:***

```
public :
Account () : Account (0, 0){
}
Account (int _number) : Account (_number, 1600)
{
}
Account (int _number ,float balance)
{
this-> Number =_Number;
this-> Balance =_Balance;
}

void Withdraw(float _amount)
{
this->balance
void Display(){
```

```
// the input
}
};
main ()
{
Account A1 (1 , 1900);
A1.Display();
Account A2 (2 , 2300);
A2.Display();
Account A3 = Account (3); //this will give the 1600//
A3.Display();
Account A4 (4 , 2300);
A4.Display();
Account A5 = Account (); //this will give zero//
A5.Display();
}
```

if i want to make the number 0 and the balance with a value i have to put (0,1500) because the **default parameter** reads the parameter with arrangement

```
int sum (int _x=10, int _y=30, int _z=16)
```

in the previous constructor i said when the user doesn't give the first value i suppose its 10 second 20 third 16
the default parameter must be in the end if its one default in the parameter
يا يبقي كلهم فيهم قيم يا اما تبقي في الاخر

```
int sum (int _x, int _y, int _z=16)
{return _x+_y+_z)}
```

note: the default parameter isn't an oop it is a feature in c++
field: private data

for searching: