OOP Lab 6

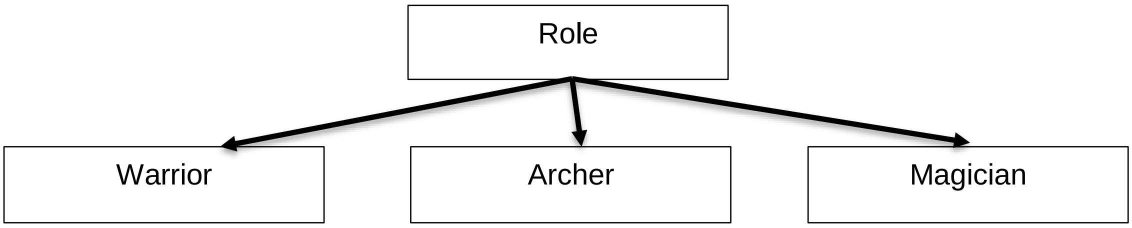
2019/4/1

Role

For this problem, we will implement inheritance and polymorphism.

The architecture is shown as the following figure.

We have a base class Role, and three derives class



● **Class Role**

- Role(string ID, int level, int money, int hp)
  Public constructor.
  - ID: Role's name.
  - level: Role's level.
  - money: Amount of money that the role have.
  - hp: Role's hp.
- void PrintAllInfo()
  Print this character's name, level, money and hp. You can see the format in the sample output.
- virtual void ShowRole()
  Pure virtual function.
- String getID()
  Public function to get the Role's ID. (name)

● **Class Warrior**

- Warrior (string ID, int level, int money, int hp)
  Public constructor. This class inherits class Role.
- void ShowRole()
  Print "Role's name is Warrior "

● **Class Archer**

- Archer (string ID, int level, int money, int hp)
  Public constructor. This class inherits class Role.
- void ShowRole ()
  Print "Role's name is Archer "

- **Class Magician**

    - Magician(string ID, int level, int money, int hp)
      Public constructor. This class inherits class Role.
    - void ShowRole ()
      Print “Role name is Magician "

Class Staff

Private:

Bool isMagician(Role* role)

Check whether the dynamic casting is success.

Public:

Staff(string staffName, int damage)

staffName: The name of the staff

damage: The damage that the staff do

Bool equipable(Role* role);

Check whether the role can equip this staff.

- **Function**

    - bool isMagician(Role* role)
      In this function, we would like to assign a pointer of a base class type (Role) to a pointer of its derived class type (Magician). The advantage of dynamic casting is that it can be used to check whether casting is performed successfully.
      Implement dynamic casting, and return true and print ” Player is a magician” if casting success. Return False and print out “bad cast” if casting failed. Using this function to check whether the player is a magician
    - bool equipable(Role* role)
      In this function, you need to use the isMagician to check whether the player is magician, if the player is magician then he/she can equip the staff.

Example :

```
Role* player1 = Warrior("Steve", 1, 1987, 200);
Warrior->printAllInfo();
Staff* staff = Staff("Flame",10);
Staff->equiable(player1);
cout << endl;

player1 = Magician("Lisa", 15, 981, 145);
Staff->equiable(player2);
cout << endl;
```

Output wil be :

```
ID is : Steve.
Level is : 1.
Money is : 1987.
Hp is : 200.
bad cast.

Lisa is a magician.
Lisa can equip this staff.
```

* **Hint:**

1. We will provide template (main.cpp and staff.h) .
2. Please declare the class in header file respectively. (Named Role.h, Archer.h …)