

EEE 102 C++ Programming and Software Engineering II

Assessment 2 SDP Report

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Problem statement:

This exercise requires student to complete the whole codes on ICE so that the computer game could be executed. This computer has three roles, which are swordsman, mage and archer. Each role has individual special attack and normal attack. The special attack might be related to individual properties. Luck could be added in the game to enhance the variety in this game. During programming, two other classes should be designed, which are archer and mage. After designing, students should identify the aims and responsibilities of each class, list all the public, protected and private member and illustrate the collaboration with others. In addition, in this game, enemies should be created randomly.

Model Answer – Software Development Process**Analysis**

Inputs:

- Input the name of the player.
- Input the operations that user want to choose (It has normal attack, Special attack, use HPheal, use MWheal and exit).

Outputs:

- It will show the process of battling and instant information of player and enemy.
- If enemy win, it will display "game over".
- If human win, it will display "Congratulations". Then player will obtain the items from the enemy and go into the next battle.

Design:

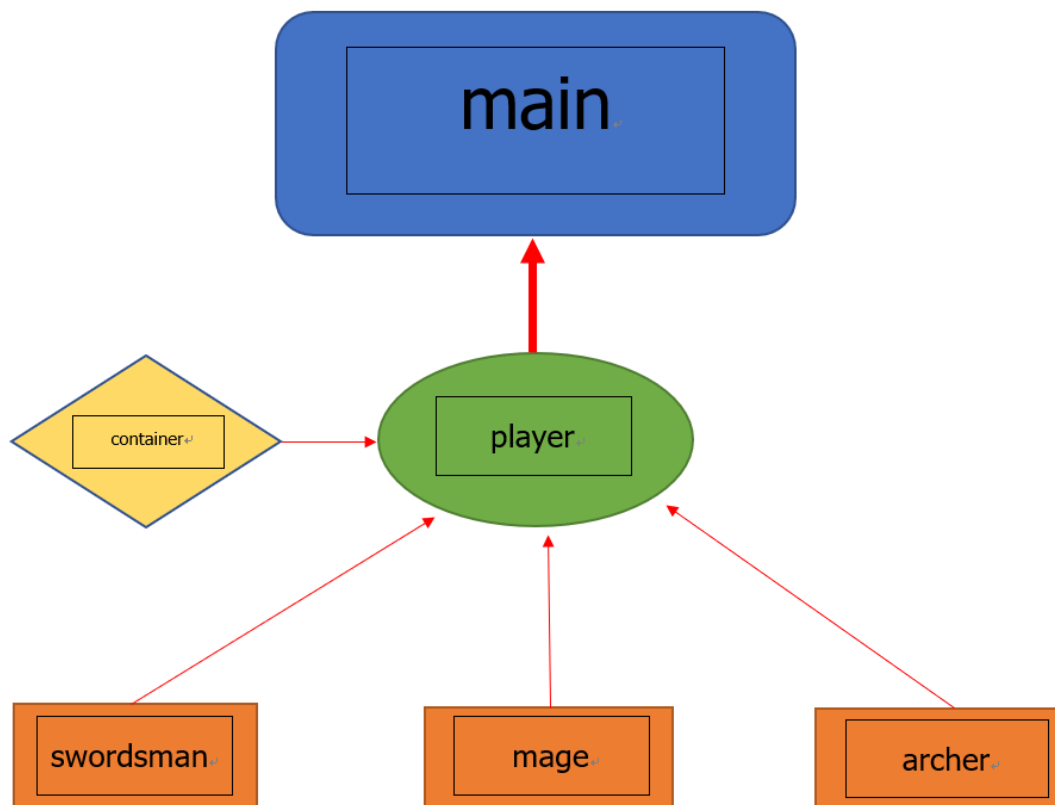
In this section, it will briefly explain the responsibilities of each class and then a hierarchy chart of them will be also provided.

In class container, it contains functions: initialize the container, set the number of Heal and MW, display the information after using Heal or MW and decrease Heal or MW after using.

In terms of class player, it collects the basic information of user such as HP and MP. In addition, it controls the life of the user. This class is related to class container. Lastly, It will show the role and output the instant situation of the user.

As for class swordsman, mage, archer, their relationships are parallel and similar. Each of them has unique property, subsequently, their HP, MP, AP, AD and speed will be different.

In class main, it will add enemy who will be randomly chose in the game. In addition, it will show a menu to user: normal attack, Special attack, use HPheal, use MWheal and exit. Lastly, it will show relevant information when the end of the game.



Hierarchy chart

Implementation:

See the codes for exercise 2 in the file: exercise 2

Testing

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

#####
# Player   Mike   LV.  1 # Opponent  Worier  LV.  1 #
# HP 150/150 | MP 75/ 75 # HP 160/160 | MP 90/ 90 #
# AP 25 | DP 25 | speed 25 # AP 23 | DP 18 | speed 24 #
# EXP 75 Job: Swordsman # EXP 75 Job: Archer #
#Luck Index: 17

Luck Index: -842150451
#

-----
Your bag contains:
Heal(HP+100): 1
Magic Water (MP+80): 1
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
1
Mike uses bash, Worier's HP decreases 17
Mike obtained 20 experience.
请按任意键继续. . .
Mike Level UP!
HP improved 8 points to 158
MP improved 2 points to 77
Speed improved 2 points to 27
AP improved 4 points to 29
DP improved 5 points to 30
Luck has improved as well!30
请按任意键继续. . .
Worier uses shot, Mike's HP decreases 10
Worier obtained 10 experience.
请按任意键继续. . .
```

Figure 1: When choosing Attack.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

#####
# Player   mike   LV.  2 # Opponent  Worier  LV.  1 #
# HP 129/158 | MP 35/ 77 # HP 145/160 | MP 90/ 90 #
# AP 29 | DP 30 | speed 27 # AP 23 | DP 18 | speed 24 #
# EXP 93 Job: Swordsman # EXP 96 Job: Archer #
#Luck Index: 17

Luck Index: -842150451
#

-----
Your bag contains:
Heal(HP+100): 1
Magic Water (MP+80): 1
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
4
mike used Magic Water, MP increased by 100.
请按任意键继续. . .
```

Figure 2: When choosing use Magic Water.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

#####
# Player   mike   LV.   2 # Opponent  Worier  LV.   1 #
# HP 116/158 | MP 77/ 77 # HP 145/160 | MP 90/ 90 #
# AP 29 | DP 30 | speed 27 # AP 23 | DP 18 | speed 24 #
# EXP 93 Job: Swordsman # EXP 109 Job: Archer #
#Luck Index: 17

                                                                    Luck Index: -842150451
                                                                    #

-----
Your bag contains:
Heal(HP+100): 1
Magic Water (MP+80): 0
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
2
mike uses leap attack, Worier's HP decreases 54
mike obtained 81 experience.
请按任意键继续. . .
```

Figure 3: When choosing special attack.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

                                                                    GAME OVER
mike is Dead.
请按任意键继续. . .
```

Figure 4: When player is dead.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

#####
# Player      mike  LV.  4 # Opponent  Worier  LV.  2 #
# HP 24/187 | MP 98/102 # HP 25/158 | MP 37/ 77 #
# AP 41 | DP 36 | speed 36 # AP 29 | DP 29 | speed 27 #
# EXP 695 Job: Archer # EXP 516 Job: Swordsman #
#Luck Index: -842150451

#####
# Luck Index: 18

-----
Your bag contains:
Heal(HP+100): 0
Magic Water (MP+80): 1
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
1
mike uses shot, Worier's HP decreases 31
mike obtained 31 experience.
请按任意键继续. . .
Worier is Dead.
请按任意键继续. . .
YOU WIN
mike got 0 Heal, and 0 Magic Water.
请按任意键继续. . .
```

Figure 5: When user win.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe

#####
# Player      MIKE  LV.  1 # Opponent  Worier  LV.  1 #
# HP 160/160 | MP 90/ 90 # HP 160/160 | MP 90/ 90 #
# AP 23 | DP 18 | speed 24 # AP 23 | DP 18 | speed 24 #
# EXP 75 Job: Archer # EXP 75 Job: Archer #
#Luck Index: -842150451

#####
# Luck Index: -842150451

-----
Your bag contains:
Heal(HP+100): 1
Magic Water (MP+80): 1
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
0
Are you sure to exit? Y/N
Y
```

Figure 6: When player want to leave.

```
C:\Users\mike\source\repos\Assignment 2 exercise 2\Debug\Assignment 2 exercise 2.exe
#####
# Player      mike  LV.  1 # Opponent  Worier  LV.  1 #
# HP 150/150 | MP 75/ 75   # HP 160/160 | MP 90/ 90   #
# AP 25 | DP 25 | speed 25 # AP 23 | DP 18 | speed 24 #
# EXP 75 Job: Swordsman  # EXP 75 Job: Archer  #
# Luck Index: 17
                                           Luck Index: -842150451
                                           #
-----
Your bag contains:
Heal (HP+100): 1
Magic Water (MP+80): 1
#####
Please give command:
1 Attack; 2 Special Attack; 3 Use Heal; 4 Use Magic Water; 0 Exit Game
3
mike used Heal, HP increased by 100.
请按任意键继续. . .
```

Figure 7: When player using Heal.