

Design description:

In this project, we will develop the game from project 3 to run a tournament between 2 teams of fighters. In project 3, it develops a fantasy combat game. The game universe contains Vampire, Barbarian, Blue Men, Medusa, and Harry Potter. Each character has attributes of attack, defense, armor, and strength points.

- In the tournament, the fighter at the head front of each lineup will battle.
- Each combat between 2 characters ends when one of the characters die.
- Each round consists of two attacks, one for each character. For each attack, attacker and defender both generate dice rolls.
- $\text{Damage} = \text{attacker's roll} - \text{defender's roll} - \text{defender's armor}$. Then the value of that damage is subtracted from the defender's strength points.
- The two attack will happen in the same time at the beginning of each combat. The two attacker can both die in the same combat.
- The winner of each fight gets put at the back of their lineup, while loser goes to the top of the loser container
- If a fighter won, it may have taken damage, so the game should restore some percentage of the damage they took when they get back in line.

Project Structure:

It has one base class called `Character_base`, and five inherit class called Vampire, Barbarian, Blue Men, Medusa, and Harry Potter.

class hierarchy diagram

base class:



My design

- In the menu, user first input the number of fighters for both team. Then user should choose the type from 1 "Vampire", 2 "Barbarian", 3 "BlueMen", 4 "Medusa", 5 "Harry_potter" and enter the name for each player.
- After enter the information, it will print result for each combat, and the final winner.

Test table:

Test Case	Input Values	Driver Functions	Expected Outcomes	Observed Outcomes
Input float number	1.5	bool validation_int(string s) ;	Show enter wrong number, please enter again	Show enter wrong number, please enter again
Input character	A or bb or #	bool validation_int(string s) ;	Show enter wrong number, please enter again	Show enter wrong number, please enter again
Input negative number	-12	bool validation_int(string s) ;	Show enter wrong number, please enter again	Show enter wrong number, please enter again
Input 0 for steps and sides	0	bool validation_int(string s) ; int validation_positive_int(string temp) ;	Show enter wrong number, please enter again (for steps and sides it can not be 0)	Show enter wrong number, please enter again
Input not only 0 or 1 for the choose parts.	2	bool validation_int(string s) ; int validation_one_zero(string temp);	Show enter wrong number, please enter again (when user choose something, it has to be 0/1 according to the design.	Show enter wrong number, please enter again

Input 0 for start the game	0	bool validation_int(string s) ; int validation_one_zero(string temp);	Exit the game	Exit the game
Vampire VS Vampire	1 1	fight();	print result for the combat, both vampire have the chance to use Charm	print result for the combat, both vampire have the chance to use Charm
Medusa VS Vampire	4 1	fight();	print result for the combat, vampire have the chance to use Charm, and medusa may use the Glare. The charm will trumps glare.	print result for the combat, vampire have the chance to use Charm, and medusa may use the Glare. The charm will trumps glare. Medusa win.
Blue Men VS Medusa	3 4	fight();	print result for the combat, medusa may use the Glare, and blue men's defence will change	print result for the combat, medusa may use the Glare, and blue men's defence will change. BlueMen win.
Medusa VS Medusa	4 4	fight();	print result for the combat, both medusa may use the Glare	print result for the combat, both medusa may use the Glare. Medusa win.
Harry Potter VS Barbarian	5 2	fight();	print result for the combat, harry potter use Hogwarts.	print result for the combat, harry potter use Hogwarts. Harry_potter win.
Medusa VS Harry Potter	4 5	fight();	print result for the combat, medusa may use the Glare, and the first time harry potter may use Hogwarts to against Glare	print result for the combat, medusa may use the Glare, and the first time harry potter may use Hogwarts to against Glare. Harry_potter win.
display the content of the loser pile	1	menu_loser()	display the content of the loser pile	display the content of the loser pile

Reflection:

When I run the game, it has segmentation fault, but I didn't have this kind of situation in my Project 3. I use a lot of time to debug.

It is important to design the logic for the project, and to make containers for the team lineups and the loser containers.

It is same logic for the game play with project 3, but to deal with the detail with the team.