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Project 4 design

3/1/17

Problem:

Create 5 derived classes of a Creature class, Vampire, Medusa, Harry Potter, BlueMen, and Barbarian. Each class has similar attributes, but several differences. Create a main that calls a menu to give the option to pick x fighters to fight each other. The 2 player then picks the two teams of X fighters and they fight. When one dies, it is sent to the death pile. When one wins, it gains back 50% of its lost health.

Design:

**Int Main():**

Main function calls menu to start the game.

Seeds srand().

**Void Menu():**

Asks if the user wants to see each round displayed.

Asks the user how many creatures they want on each team.

Asks which of the 5 fighter types you want each creature in the team to be.

Creates the player1 queue structure to point to those types of fighters.

Creates the player2 queue structure to point to those types of fighters.

Calls the queue::fight() function.

**Queue Fight():**

Calls the corresponding attack roll for the attacker.

Sends the attack roll to the defense roll.

Switches attacker and defender.

Checks to see if one has died.

Loops attack and defense until one dies.

Moves the front pointer forward so that the winner is at the back of its queue.

Moves loser into the death queue.

Says which player won if applicable.

Loops until one player is at the total number of wins possible.

**Creature and creature derived classes:**

All 5 subclasses inherit from Creature.

The various Creature constructors fill in the appropriate number of die, att and def.

Fills in the number of sides on those dice.

Sets the armor and strength depending on which creature is called.

**Int Roll attack:**

Attack is rolled based on the number of attack dice and the number of sides. It will loop through, adding to the total until the number of dice is 0.

Medusa attack roll will override this and return 400 if they get a perfect roll. A perfect roll means the enemy gazed into their eyes and dies.

**Void Roll Def(int):**

This will work the exact same way as Roll Attack, except it will use the number of defensive dice and sides. It will also take in the attack roll and subtract the defense roll and armor from that to determine hit.

Vampire def will override this function to incorporate charm. If charm is true, it will not deduct the damage sent to it.

Bool Charm:

Charm will be a vampire only function that will use Rand to determine if the attack is calculated or ignored. There is a 50% chance that an attack will not be counted against the vampire.

**Bool Death():**

Death will be called after each round to see if the strength of the defender is at 0. If it is at 0, the game will end and the victor will be displayed by Menu()

Harry Potter Death():

Harry Potter will have a death value that is set to 0 by his constructor. Death will be overridden for Harry Potter and if his strength is at 0, he will be resurrected with 2x as much strength as before. If his death counter is at 1, he will die like normal.

Blue Men Death():

This will override the death function for Blue Men. Blue Men are a mob of little critters. For each 4 dmg they take, they lost one of their mob. This decreases the number of their defensive dice.

**Void Winner()**

Takes the current strength and max strength and returns half of the missing strength back to the player.

Test Plan:

|  |  |  |
| --- | --- | --- |
| Input | Expected results | Viewed results |
| 10HP vs 10Vamp | HP wins more because of extra life. | HP 10 wins Vamp 3 win. |
| 10Vamp Vs 10Barbarian | Vamp wins more because of charm | Vamp 10, Barb 2. |
| 10Blue men vs 10Barb | Blue men win most because of mob | BM 10, Barb 1. |
| 10Medusa Vs 10Barb | Medusa wins most because barbarian is pain and boring. | Barbarian 10, Medusa 4. Damage of Barbarian lets it win unless Medusa uses glare. |

**Reflection:**

I was able to reuse most of the code from the previous assignments. I had to change a few things to make it work with this program. I am having a lot of issues with memory leaks or crashes when I try to fix the memory leaks. I was unable to resolve this issue in the time I had available. I did not have to change anything from the plan.