

Testing Suite

I tested throughout the creation of each character creation to make sure each basic character worked properly before moving on. Once I had all the characters working properly then I tested their special abilities. I then tested the special abilities by having two of the same character fight each other with 1000 strength to be sure that the special ability would have time to proc. Once I got that working I then tested all of the fighting each other and recorded the results below.

Each of the following matchups were ran 5 times with who went first being decided by a dice roll at the beginning of the fight with the character on the left going first in the case of a tie.

1. Reptile vs. Reptile: Reptile would be expected to not damage each over several turns. Due to its high armor. Throughout the testing it was shown that they would frequently be unable to hurt each other due to their armor and defense. When one would win though the program announced the correct winner and the program exited properly.
2. Reptile vs. Blue Men: The Blue Men frequently beat the Reptile. The Blue Men's special was activating properly against Reptile. When one would win though the program announced the correct winner and the program exited properly.
3. Reptile vs. Medusa: As expected Reptile won every time except when Medusa would roll a max roll and win the game. It took five games for Medusa to activate her skill and when the game. This is what would be expected. When Medusa won the proper text was shown and the program exited properly.
4. Reptile vs. Gollum: Reptile easily beats Gollum as would be expected from the stats. Gollum would activate his skill occasionally but it would take multiple activations for him to beat Reptile but with only a five % proc rate it was very unlikely to occur.
5. Reptile vs. Harry Potter: Harry Potter had a very bad matchup against Reptile. Reptile has 7 armor and rolls 1 d6 for defense and Harry Potter only has 2 d 6 for attack, because of this Harry Potter had a very hard time damaging Reptile. He lost multiple games without dealing any damage to Reptile. Harry Potter's skill would activate and give him an additional 10 health, at the appropriate time though.
6. Blue Men vs. Blue Men: As was to be expected the first Blue Men to take damage to go below eight almost always lost. The removing of a defensive die made it very hard for that Blue Men to get back into the game.
7. Blue Men vs. Medusa: Medusa never lasted more than 3 turns against Blue Men, in the 5 games ran between the two of them. She lost four games, and one the fifth by activating her skill on the second turn and turning him to stone.
8. Blue Men vs. Gollum: Blue Men won all 5 fights between the two of them. The longest fight took 3 turns for them to win. Even during the game when Gollum's skill activated it was not enough for him to win.

9. Blue Men vs. Harry Potter: Blue Men won all five fights between the two of them. The fights were closer than the Blue Men vs. Gollum fights though as was to be expected. The activation of Harry Potter's skill allowed him to have closer fights but he was never able to win since he has no armor. It was only a matter of time before the Blue Men would kill him.
10. Medusa vs. Medusa: It went as expected they matches were even unless one of them activated their skill. Everything worked properly and the program exited as expected.
11. Medusa vs. Gollum: Medusa won all five of the games. The fights between the two of them went to over 10 turns twice making them the closest non-mirror matchup yet. This is to be expected because their stats are the same except for skills and Medusa gets an extra defensive die. This allowed Medusa enough leverage to win all five games between the two of them.
12. Medusa vs. Harry Potter: Harry Potter won 4 out of 5 of the matchups. This is not surprising because he rolls an additional defensive die and has 20 health total. While Medusa only has 8 health.
13. Gollum vs. Gollum: These fight took a very long time to end since Gollum rolls 1 d6 for both defense and attack while having 3 armor. This made it to where whoever activated their skill more would win. As expected these fights could last longer than 20 turns for there to be a winner.
14. Gollum vs. Harry Potter: As expected Harry Potter won all five of the fights between them and only activated his skill in one of them. The fact that Harry Potter rolled 2d6 for defense and Gollum only rolled 1d6 for attack made it very hard on him to do any damage.
15. Harry Potter vs. Harry Potter: The fights between the two Harry Potter's went as expected the only edge one had over the other was who went first.

Each possible matchup was ran in Valgrind to assure there was not memory leaks. None were found.

Reflection:

This program was very straightforward and the easiest of the assignments to date. The directions were clear and the goal was easy to visualize making it easier to design and therefore code. The only issue I ran into during coding was assigning the character pointer variables to the different derived classes. I realized that the issue was that I was forgetting to place {} after the class name while assigning the pointer. With this realization the rest of the program came together nicely.