

## CS162 – Project 3

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### Project 3 Reflection

This project to me displayed a thorough use of inheritance and polymorphism. After doing the reading and seeking additional help from multiple sources, I was able to complete the assignment, but it was not an easy path. Typically for me, I will start the program with ideas in mind in how I am going to approach the situations. I initially designed the class thinking the special abilities of some of the creatures as an afterthought. I used the barbarian as a base point since it was the most straightforward. This is where I spent time writing code to work just to get the battle sequence done. It worked, but when I got to creating the special abilities, I realized I needed to approach the battle sequence in another way to accommodate the abilities. My first design had used two separate vectors, one for the creature and player. I could have combined them by pointing to the creature class within the player class but did not think about it until it was too late and I had needed to re-write code anyways.

What I ended up with was a single creatures vector. The player ID just coincided with the creature element number, as it was a static number. This allowed me to eliminate the unnecessary player class because there was no score, just the creature health. If developed further, a score could be kept tracked by adding the player class, but for the purpose of this assignment, it was not necessary. When coding the special abilities, the easier ones were the defensive types. For instance, Harry Potter had a separate variable that states that he has 1 extra life. This allowed me to reset his strength points and times it by 2 in while subtracting the life counter. This is because my modified type defense is reliant on the attack as a variable in order to calculate the damage that is done or not done. This worked for Blue Men and Vampire was well. The problem was Medusa's Glare ability. It was easy to trigger, but a little more difficult to deliver. I was not able to figure out the correct way send the attack to the defense saying it doesn't matter, Medusa used glare and it is instant defeat. Instead, I set her glare ability to do 100 damage, 5x more than the highest Strength point amount. This may be incorrect but it does its purpose in defeating opponent in one hit.

I reused a lot of my code in this project. I had my typical menu and validation class, but I also used the die class from the previous lab. This saved me a time in not having to recreate it. By calling the die and modifying the number of sides, I was able to correctly use the class within the die portion of the project.

My test case was based on the following, I wanted to assure that the creatures special abilities worked as intended correctly displaying their remaining strength points.

Creatures		Rolls					Expected Results	Actual Results
1 (armor)	2 (armor)	Atk	Def	Result	1: SP	2: SP		
Medusa (3)	Barb (0)	B.10	M.2	Medusa takes 5 damage	3	12	3, 12	3, 12
		M.2	B.6	No damage, $D > A$	3	12	3, 12	3, 12
		B.4	M.1	No damage, $D = A$	3	12	3, 12	3, 12
		M.12	B.10	Medusa uses Glare!, (90 damage)	3	-88	3, -88	3, -88

Creatures		Rolls					Expected Results	Actual Results
1 (armor)	2 (armor)	Atk	Def	Result	1: SP	2: SP		
Vampire (1)	Medusa(3)	V.10	M.6	Medusa takes 1 damage.	18	7	18, 7	18, 7
		M.10	V.12	No damage, D > A	18	7	18, 7	18, 7
		V.5	M.4	No damage, D > A	18	7	18, 7	18, 7
		M.10	V.C	Vampire uses Charm!	18	7	18, 7	18, 7
		V.10	M.4	Medusa takes 3 damage.	18	4	18, 4	18, 4
		M.G	V.C	Medusa uses Glare, Vampire uses Charm, no damage.	18	4	18, 4	18, 4
		V.10	2	Medusa takes 5 damage.	18	-1	18, -1	18, -1

Creatures		Rolls					Expected Results	Actual Results
1 (armor)	2 (armor)	Atk	Def	Result	1: SP	2: SP		
Harry P (0)	Blue Men(3)	BM.18	HP.2	Harry Potter takes 18 damage. Activate Hogwarts.	18	-8	18, -8	18, -8
		HP.12	BM.21	No damage, D > A	18	20	18, 20	18, 20
		BM.18	HP.2	Harry Potter takes 16 damage.	18	4	18, 4	18, 4
		HP.8	BM.21	No damage, D > A	18	4	18, 4	18, 4
		BM.12	HP.6	Harry Potter takes 6 damage. Activate Hogwarts fails.	18	-2	18, -2	18, -2

Creatures		Rolls					Expected Results	Actual Results
1 (armor)	2 (armor)	Atk	Def	Result	1: SP	2: SP		
Harry P (0)	Medusa(3)	M.2	HP.4	No damage, D > A	10	8	10, 8	10, 8
		HP.8	M.2	Medusa takes 3 damage.	10	5	10, 5	10, 5
		M.G	HP.5	Medusa uses Glare. Harry Potter activates Hogwarts.	20	5	20, 5	20, 5
		HP.12	BM.9	No damage, D > A	20	5	20, 5	20, 5
		M.G	HP.6	Medusa uses Glare. Activate Hogwarts fails.	0	5	0, 5	0, 5

In the end, this project was greatly helpful in understanding the dynamics of polymorphism. I had actually enjoyed seeing the progress I was able to make and learning that it's okay to re-code if something happens to change. With this, I look forward to use this learning experience in the future to help my design my code better and possible expand this code on the sides as a practice project.