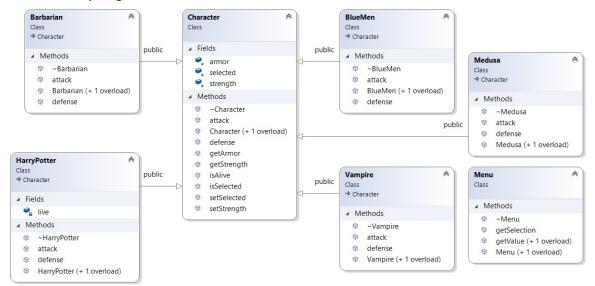
Project 3 Reflection

1. Class hierarchy diagram



2. Design description

- a. Base abstract class:
 - i. Character
 - 1. Attribute
 - a. Armor: object's armor
 - b. Strength: object's strength
 - c. Selected: object's state while choosing the character from the list
 - 2. Method
 - a. Attack: pure virtual method
 - b. Defense: pure virtual method
 - c. Getter
 - i. getArmor():int
 - ii. getStrength(): int
 - iii. isAlive(): bool
 - iv. isSelected(): bool
 - d. Setter
 - i. setStrength(): void
 - ii. setSelected(): void
 - e. Constructor
 - f. Destructor
- b. Subclass classes: inheriting from Character class
 - i. Barbarian
 - ii. HarryPotter
 - 1. Attribute

- a. live: Harry Potter's life
- iii. BlueMen
- iv. Vampire
- v. Medusa
- c. Extra class:
 - i. Menu
 - 1. Constructor
 - 2. Destructor
 - 3. getValue(): double
 - 4. getValue(): int
 - 5. getSelection(): int
- 3. Reflection
 - a. Changes in design
 - i. I have to add a new class named Menu to the project to validate all user's inputs
 - b. Problem encountered
 - i. It's hard to tell the defender that Medusa is glaring at him
 - c. Solution
 - i. The damage of Medusa's glare is set to the biggest integer "INT_MAX"

4. Test table

Test case	Input value	Driver function	Expected Outcome	Observed Outcome
Vampire	01	void	First fighter:	First fighter:
vs.		play(Character	Choose an alive and free	Choose an alive and free
Barbarian		** fighters,	fighter	fighter
		string *	0. Vampire	0. Vampire
		fighter_names,	1. Barbarian	1. Barbarian
		int size)	2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 0	Enter value from 0 to 4: 0
			Second fighter:	Second fighter:
			Choose an alive and free	Choose an alive and free
			fighter	fighter
			0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 1	Enter value from 0 to 4: 1
			First attacking:	First attacking:
			Attacker type: Barbarian	Attacker type: Barbarian
			Defender type: Vampire,	Defender type: Vampire,
			armor: 1, strength point:	armor: 1, strength point: 18

			The attacker's attack dice roll: 9 The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 16 Second attacking: Attacker type: Vampire Defender type: Barbarian, armor: 0, strength point: 12 The attacker's attack dice roll: 8 The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 10	The attacker's attack dice roll: 9 The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 16 Second attacking: Attacker type: Vampire Defender type: Barbarian, armor: 0, strength point: 12 The attacker's attack dice roll: 8 The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 10
Vampire vs Bluemen	02	void play(Character ** fighters, string * fighter_names, int size)	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 2 First attacking: Attacker type: BlueMen	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 2 First attacking: Attacker type: BlueMen

			Defender type: Vampire, armor: 1, strength point: 18 The attacker's attack dice roll: 15 The defender's defend dice roll: 6 Total inflicted damage calculation: 8 The defender's updated strength point amount after subtracting damage: 10 Second attacking: Attacker type: Vampire	Defender type: Vampire, armor: 1, strength point: 18 The attacker's attack dice roll: 15 The defender's defend dice roll: 6 Total inflicted damage calculation: 8 The defender's updated strength point amount after subtracting damage: 10 Second attacking: Attacker type: Vampire Defender type: BlueMen, armor: 3, strength point: 12
			Defender type: BlueMen, armor: 3, strength point: 12 The attacker's attack dice roll: 8 BlueMen uses Mob The defender's defend dice roll: 10 Total inflicted damage calculation: 0 The defender's updated strength point amount after subtracting damage: 12	The attacker's attack dice roll: 8 BlueMen uses Mob The defender's defend dice roll: 10 Total inflicted damage calculation: 0 The defender's updated strength point amount after subtracting damage: 12
Vampire vs. Medusa	03	void play(Character ** fighters, string * fighter_names, int size)	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter

		Enter value from 0 to 4: 2	Enter value from 0 to 4: 2
		First attacking: Attacker type: BlueMen Defender type: Vampire, armor: 1, strength point: 18 The attacker's attack dice roll: 15 The defender's defend dice roll: 6 Total inflicted damage calculation: 8 The defender's updated strength point amount after subtracting damage: 10 Second attacking: Attacker type: Vampire Defender type: BlueMen, armor: 3, strength point: 12 The attacker's attack dice roll: 8 BlueMen uses Mob The defender's defend dice roll: 10 Total inflicted damage calculation: 0 The defender's updated strength point amount after subtracting damage: 12	First attacking: Attacker type: BlueMen Defender type: Vampire, armor: 1, strength point: 18 The attacker's attack dice roll: 15 The defender's defend dice roll: 6 Total inflicted damage calculation: 8 The defender's updated strength point amount after subtracting damage: 10 Second attacking: Attacker type: Vampire Defender type: BlueMen, armor: 3, strength point: 12 The attacker's attack dice roll: 8 BlueMen uses Mob The defender's defend dice roll: 10 Total inflicted damage calculation: 0 The defender's updated strength point amount after subtracting damage: 12
Vampire vs. Harry Potter	void play(Character ** fighters, string * fighter_names, int size)	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0	First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 0
		Second fighter: Choose an alive and free fighter 0. Vampire	Second fighter: Choose an alive and free fighter 0. Vampire

	1	T	T	
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 4	Enter value from 0 to 4: 4
			First attacking:	First attacking:
			Attacker type: HarryPotter	Attacker type: HarryPotter
			Defender type: Vampire,	Defender type: Vampire,
			armor: 1, strength point:	armor: 1, strength point: 18
			18	The attacker's attack dice
			The attacker's attack dice	roll: 9
			roll: 9	The defender's defend dice
			The defender's defend	roll: 6
			dice roll: 6	Total inflicted damage
			Total inflicted damage	calculation: 2
			calculation: 2	The defender's updated
			The defender's updated	strength point amount after
			strength point amount	subtracting damage: 16
			after subtracting damage:	8 1 1 8 1 1 8 1 1 8 1
			16	Second attacking:
			10	Attacker type: Vampire
			Cocond attacking	
			Second attacking:	Defender type: HarryPotter,
			Attacker type: Vampire	armor: 0, strength point: 10
			Defender type:	The attacker's attack dice
			HarryPotter, armor: 0,	roll: 8
			strength point: 10	The defender's defend dice
			The attacker's attack dice	roll: 6
			roll: 8	Total inflicted damage
			The defender's defend	calculation: 2
			dice roll: 6	The defender's updated
			Total inflicted damage	strength point amount after
			calculation: 2	subtracting damage: 8
			The defender's updated	0 1 0 1
			strength point amount	
			after subtracting damage:	
			8	
Dorborion	1.2	waid		First fightor
Barbarian	12	void	First fighter:	First fighter:
VS.		play(Character	Choose an alive and free	Choose an alive and free
Bluemen		** fighters,	fighter	fighter
		string *	0. Vampire	0. Vampire
		fighter_names,	1. Barbarian	1. Barbarian
		int size)	2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 1	Enter value from 0 to 4: 1
			Second fighter:	Second fighter:
	l		Jecona namen.	Second righter.

		T	T	l
			Choose an alive and free	Choose an alive and free
			fighter	fighter
			0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 2	Enter value from 0 to 4: 2
			First attacking:	First attacking:
			Attacker type: BlueMen	Attacker type: BlueMen
			Defender type: Barbarian,	Defender type: Barbarian,
			armor: 0, strength point:	armor: 0, strength point: 12
			12	The attacker's attack dice
			The attacker's attack dice	roll: 15
	1		roll: 15	The defender's defend dice
			The defender's defend	roll: 8
	1		dice roll: 8	Total inflicted damage
			Total inflicted damage	calculation: 7
			calculation: 7	The defender's updated
			The defender's updated	strength point amount after
			strength point amount	subtracting damage: 5
			after subtracting damage:	
			5	Second attacking:
				Attacker type: Barbarian
			Second attacking:	Defender type: BlueMen,
			Attacker type: Barbarian	armor: 3, strength point: 12
			Defender type: BlueMen,	The attacker's attack dice
			armor: 3, strength point:	roll: 7
			12	BlueMen uses Mob
			The attacker's attack dice	The defender's defend dice
			roll: 7	roll: 7
	1		BlueMen uses Mob	Total inflicted damage
	1		The defender's defend	calculation: 0
			dice roll: 7	The defender's updated
				strength point amount after
			Total inflicted damage	,
			calculation: 0	subtracting damage: 12
	1		The defender's updated	
	1		strength point amount	
	1		after subtracting damage:	
			12	
Barbarian	13	void	First fighter:	First fighter:
vs.	1	play(Character	Choose an alive and free	Choose an alive and free
Medusa		** fighters,	fighter	fighter
		string *	0. Vampire	0. Vampire
		fighter_names,	1. Barbarian	1. Barbarian
	1	int size)	2. Blue men	2. Blue men
	1	,	3. Medusa	3. Medusa
	1	I	1	

		1	1 4 Harris Ballian	A Harris Ballian
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 1	Enter value from 0 to 4: 1
			Second fighter:	Second fighter:
			Choose an alive and free	Choose an alive and free
			fighter	fighter
			0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 3	Enter value from 0 to 4: 3
			First attacking:	First attacking:
			Attacker type: Medusa	Attacker type: Medusa
			Defender type: Barbarian,	Defender type: Barbarian,
			armor: 0, strength point:	armor: 0, strength point: 12
			12	The attacker's attack dice
			The attacker's attack dice	roll: 9
			roll: 9	The defender's defend dice
			The defender's defend	roll: 8
			dice roll: 8	Total inflicted damage
			Total inflicted damage	calculation: 1
			calculation: 1	
				The defender's updated
			The defender's updated	strength point amount after
			strength point amount	subtracting damage: 11
			after subtracting damage:	
			11	Second attacking:
				Attacker type: Barbarian
			Second attacking:	Defender type: Medusa,
			Attacker type: Barbarian	armor: 3, strength point: 8
			Defender type: Medusa,	The attacker's attack dice
			armor: 3, strength point: 8	roll: 7
			The attacker's attack dice	The defender's defend dice
			roll: 7	roll: 1
			The defender's defend	Total inflicted damage
			dice roll: 1	calculation: 3
			Total inflicted damage	The defender's updated
			calculation: 3	strength point amount after
			The defender's updated	subtracting damage: 5
			strength point amount	
			after subtracting damage:	
Barbarian	14	void	5 First fighter:	First fighter:
vs Harry		play(Character	Choose an alive and free	Choose an alive and free
Potter		** fighters,	fighter	fighter
rottei			_ ~	-
		string *	0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian

,			
	fighter_names,	2. Blue men	2. Blue men
	int size)	3. Medusa	3. Medusa
		4. Harry Potter	4. Harry Potter
		Enter value from 0 to 4: 1	Enter value from 0 to 4: 1
		Second fighter:	Second fighter:
		Choose an alive and free	Choose an alive and free
		fighter	fighter
		0. Vampire	0. Vampire
		1. Barbarian	1. Barbarian
		2. Blue men	2. Blue men
		3. Medusa	3. Medusa
		4. Harry Potter	4. Harry Potter
		Enter value from 0 to 4: 4	Enter value from 0 to 4: 4
		Enter value from 0 to 4. 4	Efficer value from 0 to 4. 4
		First attacking:	First attacking
		· ·	First attacking:
		Attacker type: HarryPotter	Attacker type: HarryPotter
		Defender type: Barbarian,	Defender type: Barbarian,
		armor: 0, strength point:	armor: 0, strength point: 12
		12	The attacker's attack dice
		The attacker's attack dice	roll: 9
		roll: 9	The defender's defend dice
		The defender's defend	roll: 8
		dice roll: 8	Total inflicted damage
		Total inflicted damage	calculation: 1
		calculation: 1	The defender's updated
		The defender's updated	strength point amount after
		strength point amount	subtracting damage: 11
		after subtracting damage:	
		11	Second attacking:
			Attacker type: Barbarian
		Second attacking:	Defender type: HarryPotter,
		Attacker type: Barbarian	armor: 0, strength point: 10
		Defender type:	The attacker's attack dice
		HarryPotter, armor: 0,	roll: 7
		strength point: 10	The defender's defend dice
		The attacker's attack dice	roll: 5
		roll: 7	Total inflicted damage
		The defender's defend	calculation: 2
		dice roll: 5	The defender's updated
		Total inflicted damage	strength point amount after
		calculation: 2	subtracting damage: 8
			Subtracting dallidge. o
		The defender's updated	
		strength point amount	
		after subtracting damage:	
		8	

Diverses	2.2	id	First fighter.	First fishton
Bluemen	2 3	void	First fighter:	First fighter:
VS.		play(Character	Choose an alive and free	Choose an alive and free
Medusa		** fighters,	fighter	fighter
		string *	0. Vampire	0. Vampire
		fighter_names,	1. Barbarian	1. Barbarian
		int size)	2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 2	Enter value from 0 to 4: 2
			Second fighter:	Second fighter:
			Choose an alive and free	Choose an alive and free
			fighter	fighter
			0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 3	Enter value from 0 to 4: 3
			First attacking:	First attacking:
			Attacker type: Medusa	Attacker type: Medusa
			Defender type: BlueMen,	Defender type: BlueMen,
			armor: 3, strength point:	armor: 3, strength point: 12
			12	The attacker's attack dice
			The attacker's attack dice	roll: 9
			roll: 9	BlueMen uses Mob
			BlueMen uses Mob	The defender's defend dice
			The defender's defend	roll: 10
			dice roll: 10	Total inflicted damage
			Total inflicted damage	calculation: 0
			calculation: 0	The defender's updated
			The defender's updated	strength point amount after
			strength point amount after subtracting damage:	subtracting damage: 12
			12	Second attacking:
				Attacker type: BlueMen
			Second attacking:	Defender type: Medusa,
				I - I
			Attacker type: BlueMen	armor: 3, strength point: 8
			Defender type: Medusa,	The attacker's attack dice
			armor: 3, strength point: 8	roll: 10
			The attacker's attack dice roll: 10	The defender's defend dice roll: 4
			The defender's defend	_
				Total inflicted damage
			dice roll: 4	calculation: 3
			Total inflicted damage	The defender's updated
			calculation: 3	strength point amount after
				subtracting damage: 5

			The defender's updated strength point amount after subtracting damage:	
Bluemen vs. Harry Potter	24	void play(Character ** fighters, string * fighter_names, int size)		First fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 2 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 4 First attacking: Attacker type: HarryPotter Defender type: BlueMen, armor: 3, strength point: 12 The attacker's attack dice roll: 9 BlueMen uses Mob The defender's defend dice roll: 10 Total inflicted damage calculation: 0 The defender's updated strength point amount after subtracting damage: 12 Second attacking: Attacker type: BlueMen
			Second attacking: Attacker type: BlueMen Defender type: HarryPotter, armor: 0, strength point: 10 The attacker's attack dice roll: 10	Defender type: Blackers armor: 0, strength point: 10 The attacker's attack dice roll: 10 The defender's defend dice roll: 6

			The defender's defend	Total inflicted damage
			dice roll: 6	calculation: 4
			Total inflicted damage	The defender's updated
			calculation: 4	-
				strength point amount after
			The defender's updated	subtracting damage: 6
			strength point amount	
			after subtracting damage: 6	
Medusa	3 4	void	First fighter:	First fighter:
vs. Harry	.	play(Character	Choose an alive and free	Choose an alive and free
Potter		** fighters,	fighter	fighter
l otte.		string *	0. Vampire	0. Vampire
		fighter_names,	1. Barbarian	1. Barbarian
		int size)	2. Blue men	2. Blue men
		1110 3120)	3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 3	Enter value from 0 to 4: 3
			Enter value from 0 to 4: 3	Enter value from 0 to 4: 3
			Second fighter:	Second fighter:
			Choose an alive and free	Choose an alive and free
			fighter	fighter
			0. Vampire	0. Vampire
			1. Barbarian	1. Barbarian
			2. Blue men	2. Blue men
			3. Medusa	3. Medusa
			4. Harry Potter	4. Harry Potter
			Enter value from 0 to 4: 4	Enter value from 0 to 4: 4
			First attacking.	First attacking:
			First attacking:	First attacking:
			Attacker type: HarryPotter	Attacker type: HarryPotter
			Defender type: Medusa,	Defender type: Medusa,
			armor: 3, strength point: 8	armor: 3, strength point: 8
			The attacker's attack dice roll: 9	The attacker's attack dice roll: 9
			The defender's defend	The defender's defend dice
			dice roll: 2	roll: 2
			Total inflicted damage	Total inflicted damage
			calculation: 4	calculation: 4
			The defender's updated	The defender's updated
			strength point amount	strength point amount after
			after subtracting damage:	subtracting damage: 4
			4	
				Second attacking:
			Second attacking:	Attacker type: Medusa
			Attacker type: Medusa	Defender type: HarryPotter,
			Defender type:	armor: 0, strength point: 10
			HarryPotter, armor: 0,	The attacker's attack dice
			strength point: 10	roll: 8
	1		Su engui ponit. 10	1011.0

Duplicated character selection Second fighter Choose an alive and free fighter				The attacker's attack dice roll: 8 The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 8	The defender's defend dice roll: 6 Total inflicted damage calculation: 2 The defender's updated strength point amount after subtracting damage: 8
2. Blue men 2. Blue men 3. Medusa 4. Harry Potter 4. Harry Potter	character	11	play(Character ** fighters, string * fighter_names,	Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 1 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 1 The selected figher has been selected before Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa	Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 1 Second fighter: Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa 4. Harry Potter Enter value from 0 to 4: 1 The selected figher has been selected before Choose an alive and free fighter 0. Vampire 1. Barbarian 2. Blue men 3. Medusa