**Week 10:Inheritance and Abstraction**

Develop a Game "**Legends of Valor**", where players can choose different types of characters such as **Warrior**, **Mage**, and **Archer**. Each character type has its own unique abilities and traits, but shares common actions such as attacking, defending, and using special skills.

Features of the Application:

1. **CharacterActions** Class declares **attack**(), **defend**()[the attack will be blocked and health will not reduce], **useSpecialAbility**(), and **displayStats**()[display the name, current health and current mana].
2. **BaseCharacter** class implements **CharacterActions** and possesses common features for all characters: name, health, and mana (0).
3. **Warrior**, **Mage**, and **Archer** classes inherit the **BaseCharacter** class.
4. **GameEngine** class can work with any CharacterActions object, allowing dynamic behavior at runtime based on the character type passed.

Character specific behaviors:

| Character | Initial Health | Attack Power | Special Ability | Special Ability Power |
| --- | --- | --- | --- | --- |
| Warrior | 100 | 25 | Berserk Rage | 35 |
| Mage | 120 | 20 | Arcane Blast | 30 |
| Archer | 90 | 20 | Fire Arrow | 35 |

After each attack(), the mana increases by 50. When the mana reaches 100, characters can unleash their special ability. Reset mana after using special ability. The game will have one **BossEnemy** (initial health:150 and attack power: 30). These 3 characters will play together to defeat the **BossEnemy.** In order to win the game, none of the characters can die before the **BossEnemy.** Implement the GameEngine class, so that the characters win the game.

Sample Output is given below:

| Game begins! Players vs. Boss  Warrior attacks with power 25!  Boss takes 25 damage! Health now: 125  Mage attacks with power 20!  Boss takes 20 damage! Health now: 105  Archer attacks with power 20!  Boss takes 20 damage! Health now: 85  Boss attacks Warrior with power 30!  Warrior takes 30 damage! Health now: 70  Boss attacks Mage with power 30!  Mage takes 30 damage! Health now: 90  Boss attacks Archer with power 30!  Archer takes 30 damage! Health now: 60  Warrior attacks with power 25!  **Warrior uses Berserk Rage with power 35!**  Boss takes 60 damage! Health now: 25  Mage attacks with power 20!  **Mage uses Arcane Blast with power 30!**  Boss takes 50 damage! Health now: -25  Boss defeated! Players win! |
| --- |

| **Task 1: Implement CharacterAction, BaseCharacter, Warrior, Mage, Archer and BossEnemy Classes (basic functionalities). Task 2: Implement the initial GameEngine Class (Characters and Enemy objects can be called).**  **Task 3: Basic game logics are implemented.**  **Task 4: useSpecialAbility() and defend() are used.** |
| --- |