**Deliverable 1**

**1. Scenario**

**A console-based application simulating a turn-based combat game. Players choose a character unit from a list of templates (permanently locked for the session), configure their stats and loadout (weapon), and face off against computer-generated enemies in sequential battles. The goal is to level up and acquire rare weapons through strategic play.**

**2. Design Paradigm**

* **Select Unit: Choose from predefined units (Firefly, Feixiao, Aventurine), each with unique stats and abilities. Unit selection is permanent for the duration of the game session. Stats include HP, DEF, SPD, and are capped based on level (1–20). All units start at level 1 with CR = 5%, CD = 50%. Each level gained adds +2% CR and +4% CD.**
* **Player Attacks:**
  + ***Basic Attack*: Always available, uses weapon DMG, regenerates 1 SP and a fixed amount of energy.**
  + ***Skill*: Consumes SP (up to 4 max), performs a unit-specific ability, and regenerates unit-dependent energy.**
  + ***Ultimate*: Available when Energy reaches a unit-specific threshold (stored as a variable within the unit). Performs the unit’s most powerful ability.**
* **Enemy Scaling:**
  + **Enemy stats (HP, DEF, SPD) scale based on player level.**
  + **Enemies have one base ATK stat and use one of three moves per turn:**
    - **Basic Attack (55% chance): 90% ATK**
    - **Heavy Attack (30%): 150% ATK**
    - **Special Attack (15%): 225% ATK + effect**
  + **Defeating an EliteEnemy grants double experience (two level-ups).**
* **Configure Loadout:**
  + **Players equip weapons (DMG stat capped by level). All begin with a basic Dagger.**
  + **SignatureWeapons drop from Bosses and provide unique buffs:**
    - ***DualPlasmaBlades* (Firefly’s signature weapon)**
    - ***Waraxe* (Feixiao’s signature weapon)**
    - ***LuckyDie* (Aventurine’s signature weapon)**
  + **Weapons gain experience and level alongside the player only when actively equipped.**
* **View Loadout:**
  + **Show equipped gear, computed stats. Initially planned to include "turn cycles" based on SPD; however, to simplify implementation, SPD will only determine who goes first in combat.**
* **Enemy Tiers:**
  + **StandardEnemy (65%)**
  + **EliteEnemy (25%)**
  + **BossEnemy (10%, guaranteed SignatureWeapon drop)**

**3. Expected Output**

* **Console output detailing:**
  + **Unit selection, stat configuration**
  + **Combat turn logs (damage, SP, energy)**
  + **Level ups, weapon drops**
  + **Final battle results and unit progression**
* **User input handled via Scanner class (Java) for unit selection, attack choices, and other in-game decisions.**

**4. Class Hierarchies**

**Hierarchy 1: Units**

* **AbstractUnit**
  + **PlayerUnit**
    - **Firefly**
    - **Feixiao**
    - **Aventurine**
  + **EnemyUnit**
    - **StandardEnemy**
    - **EliteEnemy**
    - **BossEnemy**

**Hierarchy 2: Weapons**

* **Weapon**
  + **BasicDagger**
  + **SignatureWeapon**
    - **DualPlasmaBlades**
    - **Waraxe**
    - **LuckyDie**

**5. Interface**

**Interface: CombatInterface**

**Methods:**

* **performBasicAttack(AbstractUnit target)**
* **takeTurn()**
* **receiveDamage(int amount)**
* **isAlive()**

**All PlayerUnits and EnemyUnits implement this interface, enabling a unified combat system and polymorphic behavior in turn logic.**

**6. Runtime Polymorphism**

**The project demonstrates runtime polymorphism primarily through the CombatInterface, which is implemented by all combat-capable units (PlayerUnits and EnemyUnits). This allows the game to treat all units interchangeably in combat loops, regardless of their specific type.**

**7. Text I/O**

* **GameStateManager Class**
  + **Read/write player save data, including level, equipped weapon, unlocked items**
* **Game Console Input**
  + **Utilizes Scanner for in-game decisions (unit selection, combat actions, etc.)**

**8. Comparable and Comparator**

* **Weapon implements Comparable<Weapon> to compare by DMG**
* **WeaponNameComparator implements Comparator<Weapon> for alphabetical sorting**

**9. UML Class Diagram**

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**10. Deliverable 2 Scope (50% Checkpoint)**

* **Implement:**
  + **AbstractUnit, PlayerUnit, EnemyUnit, StandardEnemy, EliteEnemy, BossEnemy**
  + **Weapon, BasicDagger, SignatureWeapon, DualPlasmaBlades, Waraxe, LuckyDie**
  + **Interface: CombatInterface**
  + **Base combat system**
  + **Initial console menus**