

Design Rationale

The system introduces a game with a Broadsword item that has both active and passive abilities. The player can wield the Broadsword, which grants passive bonuses and an active skill called Focus. DRY is applied by centralizing the logic for the Broadsword's active and passive abilities within the Broadsword and Focus classes. This approach reduces redundancy and makes it easier to maintain and modify the behavior of the Broadsword and its skills. While DRY promotes code clarity and maintainability, it may lead to more complex class structures. In this system, it requires the creation of several classes and their interactions to implement the desired behavior. However, the benefits of reduced redundancy outweigh this drawback.

The system utilizes loose coupling; the Broadsword, Focus, and Player classes interact through well-defined interfaces, reducing dependencies between them. This allows for easier maintenance and extensibility. Each class has a clear and focused responsibility. The Broadsword class handles weapon attributes, while the Focus class manages the activation and deactivation of the skill. This high cohesion ensures that each class has a single, well-defined purpose.

The design choice to use both active and passive abilities enhances gameplay complexity and strategy creates a more engaging gaming experience. The inclusion of both active and passive abilities adds complexity to the system, which can make it harder to understand and test. However, the benefits of enhanced gameplay outweigh these drawbacks.

Active Abilities: The Focus active skill adds depth to gameplay by allowing the player to make strategic decisions about when to activate it. The extension of Action in PerformSkillAction is created in the process of following SRP to provide Player with actions to perform an active skill. Player has a dependency on Action to check if they are available in the CapabilitySet.

Passive Abilities: The passive ability of the Broadsword is triggered automatically when the Broadsword is in the player's inventory. This provides a straightforward way to apply bonuses without requiring active player involvement.

