

Design Plan Document

1 Requirements

The requirements for this project include:

- Create a Rogue class
- Rogue will have following Stat Growth

Stat	Initial	Per Level	Description
Hit Points	75	18	Health Points
Strength	10	1	Strength translates to attack power at 1 strength = 1 attack power. Directly increases the damage of Ambush.
Agility	12	2	Agility translates to attack power at 1 agility = 1 attack power and defense power at 2 agility = 1 defense power. Also decreases the chance you'll surprise attacked in battle. Directly increases the damage of Ambush.
Intelligence	5	1	Directly increases the damage of Rogue poisons.
Luck (special)	1	1/2	Luck can empower Rogue abilities
Experience	0	$35x^2$	Rogue progress levels faster than average

- Rogue Equipment will be

Slot	Types	Expected Stats
Weapon	Dagger	Rogue Weapons have attack power equal to approximately their level. They also have a modifier approximately equal to their level which modifies all Physical damage dealt. Weapons over level 10 have a modifier approximately equal to half their level to which modifies all Poison damage dealt. They have a chance to additional bonus attack power of approximately half their level.
Armor	Medium	Rogue Armors have defense power equal to approximately their 0.85 times their level +8. They have defensive modifiers to 2 damage types. They have a chance to have additional bonus defense power or attack power of approximately half their level. Armor defensive modifiers have approximately $20 + (\text{level} * 2)$ modification value across both stats.
Accessory	Thieves Tools	The Rogues Accessory are Thieves Tools. Thieves Tools have attack power equal to approximately $0.75 * \text{level} + 10$ of their level and defensive modifiers to 2 damage types. Thieves Tools use the same defensive modifier scaling as Armor. Thieves Tools sometimes have additional Physical or Poison damage modifiers equal to approximately 30% of their level or a defensive modifier for Physical Damage equal to approximately their half their level + 10.

- Rogue will have following skills

Skill	Level	Description
Attack	1	Rogue attacks deal damage with a base of their attack power. Empower: Attack Empowered with luck always deal their maximum damage as base damage.
Luck	1	Rogue uses a Luck point to empower their next ability. Using Luck does not pass the Rogue's turn.
Theives Tricks	1	passive: Rogues gain 30% more gold from winning a battle.
Preparation	3	The Rogue analyzes the battlefield, gaining 10 to their Physical and Poison damage modifiers, and coating their weapon in poison. Adding additional Poison damage to each attack which deals Physical damage (base Poison damage done equal to intelligence). Increase damage modifier adjustments by 5 if the Rogue's weapons are already coated in poison. Empower: Preparation also Identifies the enemy.
Healing Affinity Potion	5	passive: Using a Healing_Potion during combat also gives the Rogue time to coat their weapon in poison. Rogues have a percentage chance equal to their level * 1.5 to find a Healing_Potion after winning a battle.
Surprise Attack	8	passive: The first Attack each turn a Rogue does deals 50% increased damage and lowers the enemies Poison defensive modifier by an amount equal to the Rogue's level.
Evasion	10	Rogue has a 50% chance to avoid 100% of the damage from the next two events which would cause the Rogue 1 or more damage. Empower: Evasion has a 10% additional chance to avoid 100% of the damage and lasts 1 additional damage event.
Ambush	13	Once per Battle: Rogue attacks for damage equal to Attack Power + Agility + Strength. Ambush can consume Surprise Attack. Empower: Ambush does its maximum damage as base damage deals x3 the normal poison damage if weapons are coated in poison.
Increase Luck	17	Deal an attack which does 70% normal damage, the Rogue gains 1 Luck point, up to their maximum.
Auto-Potion	20	passive: Rogues automatically consume a Healing_Potion on their first action in combat. If the Rogue is at maximum hit points, no "Healing_Potion" is consumed but the Rogue gains all other benefits of Healing Potion Affinity
Enhanced Abilities	25	passive: Base modifier adjustment of Preparation is increased to 20, Surprise Attack now increases damage 75%, Evasion has a base avoidance chance of 60% and lasts for 3 damage events. Ambush now deals additional damage equal to the Rogue's agility, Increased Luck now does 85% of Normal Damage.
Damage/Variance	Physical, Poision	Rogues only do Physical damage with their attacks with additional Poison damage if their weapons are coated in poison. All Rogue variance is the base damage normally distributed 8% of the base damage with a standard deviation of 4% of the base damage, up to 24% additional damage + $\max(0, \min(\text{base} \cdot .24, \text{random.gauss}(\text{base} \cdot .08, \text{base} \cdot .04)))$. Equipment variance follows the same formula as Fighter variance.

- Source codes for Rogue class should produce no warnings or errors with pycodestyle
- Playing the game with Rogue class should not make the program crash or fall into an infinite loops

2 Architecture

2.1 Overview

The example Fighter class gave a lot of insights on how to construct a playable class. Most of passive skills will utilize flag variables within the class. All special attack skills will have their own functions.

2.1.1 Class Variables

Rogue class will have following additional and class exclusive variables to account for all skills.

```
self._empowered: bool = False
self._poison_coated: bool = False
self._surprise_attack_left: bool = True
self._ambush_left: bool = True
self._evasion_active: bool = False
self._evasion_count: int = 0
self._evasion_chance: int = 0
self._auto_potion_active: bool = False
self._first_action: bool = True
self._enhanced_abilities_on: bool = False
```

2.1.2 Class Methods

All of Rogue active skills will have their own functions as class methods. Followings will be Rogue class exclusive methods.

- luck: Consume special and turn empowered flag on
- preparation: return Battle Cry for physical and poison
- use_healing_potion: This method should be overwritten due to the Healing Potion Affinity Passive.
- evasion: Set evasion flag with appropriate count and chance
- ambush: Once executed, change ambush flag to remove the skill from the list
- increase_luck: Increase special by 1 and attack the enemy
- auto_potion: gets called on every special attacks and normal attack first, set the flag off once successfully executed

3 Class Diagram

