

Dungeon Dudes

Project Design

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Problem

Dungeon Dudes is a text-based RPG, where each hero and monster have their own unique set of skills, stats, stat growth, and equipment. Create a 'Ranger' hero and equipment class, implementing all of the requirements listed in the dungeon manual. Once the class is created, it should seamlessly work with rest of the program seamlessly.

Requirements

Skills

Attack - Ranger attacks deal damage with a base of their attack power

Nature's Defense - passive: Ranger defense power mitigates against Poison, Fire, and Ice damage in addition to Physical damage.

Summon Wolf Companion - Ranger summons a Wolf Companion.

Whenever the Ranger deals damage this combat, the Wolf attacks, dealing Physical damage based on 60% of the Ranger's attack power. The Ranger's in combat defensive modifier against Physical and Ice damage are improved by 10 while Wolf is the active Animal Companion. Animal Companions share all the same Offensive and Defensive Modifiers as the Ranger. Only 1 Animal Companion can be active at any time.

Awareness - passive: Whenever the Ranger spends a turn without directly damaging the opponent, they gain Awareness. Their next damaging attack or special ability will attempt to consume 1 point of Focus to deal 50% increased damage. Ignore this effect if the Ranger is out of Focus.

Take Aim - Ranger takes aim with their weapon. Next turn they will Attack in addition to any other actions preformed. (Take Aim triggers Awareness)

Summon Bear Companion - Ranger summons a Bear Companion.

Whenever the Ranger deals damage this combat, the Bear attacks, dealing Physical damage based on 60% of the Ranger's attack power. The Ranger's in combat defensive modifier against Physical damage is improved by 10 and the Ranger's defense power is increased by 10% while the Bear is the active Animal Companion. Animal Companions share all the same Offensive and Defensive Modifiers as the Ranger. Only 1 Animal Companion can be active at any time.

Steel Trap - Ranger traps their opponent. Dealing Physical damage based on 75% of the Ranger's attack power this turn, and Physical damage based on 50% of the Ranger's attack power each turn for the remainder of the encounter. All steel trap damage is calculated using the Ranger's attack power on the turn Steel Trap was originally used. Only 1 steel trap can be active on an opponent at any time.

Improved Awareness - passive: gaining Awareness also increases the attack power scaling of the Ranger's next damaging action by 25%, improves the

Ranger's defense modifiers against Ice, Poison, and Physical damage by 10 for the remainder of the encounter, and heals the Ranger for 10% of their maximum hit points.

Focused Regeneration - passive: The Ranger recovers a % of their hit points equal to their current focus after defeating an enemy.

Summon Cat Companion - Ranger summons a Cat Companion. Whenever the Ranger deals damage this combat, the Cat attacks, dealing Physical damage based on 75% of the Ranger's attack power. The Ranger's in combat defensive modifier against Lightning and Fire damage is improved by 10 and the Ranger's Attack Power is increased by 10% while the Cat is the active Animal Companion. Animal Companions share all the same Offensive and Defensive Modifiers as the Ranger. Only 1 Animal Companion can be active at any time.

Improved Animal Companion - The first animal companion summoned each encounter does not pass the Ranger's turn. Adjustments to defensive modifiers provided by companions is improved by 10. The Ranger may have up to 2 animal companions active at any time.

Lucky Strike - passive: Whenever the Ranger attacks, it has a 50% chance to consume 1 point of focus and deal 50% increased damage. The Ranger recovers 1 focus after defeating an enemy, and 1 additional focus after defeating an enemy for each active animal companion. This focus point recovery is calculated before Focused Regeneration.

Improved Animal Companion 2 - passive: The first 2 animal companion's summoned each encounter do not pass the Ranger's turn. Adjustments and attack power and defense power provided by animal companions is doubled. Animal companions deal an additional 10% of the Ranger's attack power in damage per animal companion active (other than themselves).

Equipment

Weapon - Bow - Ranger Weapons have attack power equal to approximately their level + 20 and having Physical damage offensive modifiers equal to approximately their level+10. Ranger weapons have a chance to have defense power or additional bonus attack power approximately half their level.

Armor - Light - Ranger Armors have defense power equal to approximately their 0.65 times their level +10. They have defensive modifiers to at least 1 Elemental Damage type (Fire, Ice, Lightning), 1 other non-Physical damage type (Poison or Holy), and 1 random defensive modifier of any type. They have a chance to have additional bonus defense power or attack power of approximately their level. Armor defensive modifiers have $30 + (\text{level} * 3)$ modification value across both stats.

Accessory - Accessory - The Ranger Accessory is the Quiver. Quivers have an Elemental Damage type (Ice, Fire, Lightning) which adds 33% attack power based damage of that type to every Attack the Ranger does. This

damage is not adjusted by Awareness or any other focus consuming effects. This damage bonus does not apply to damage dealt by animal companions or traps. Quivers sometimes have additional bonuses to attack power or defense power equal to approximately half their level.

Architecture

ranger.py

Ranger class containing all the necessary Hero stats, active skills, passive skills, and equipment modifiers

```
class Ranger:
    Ranger stats structure
    Equipment Compatibility
    def __init__:
        Active skills dictionary
        Passive skills dictionary
        Equipment creation
        Passive skill flags
        Active skill flags
    def modify_damage:
        Calculates all of the damage variance, companion damage, trap
        damage and any additional passive modifiers
        Return - A list of tuples of all of the combat actions
    def attack:
        Execute Basic Attack
        Calls the modify_damage
        return CombatAction
    def focus:
        Function to modify damage when focus flag is ondef lucky_strike:
        If focus flag is on and special resource is not 0
        increase damage by 50%
        return damage
    def lucky_strike:
        After level 20, Ranger has a 50% chance to increase damage by 50%
        return damage
    def Awareness:
        Before level 10, awareness simply turns on the focus flag
        After level 10, awareness becomes improved awareness and
        can modify elemental defense, increase next damaging attack by 25%
        and heals for 10% of max hit point.
        return aura(elemental defense)
    def summon_wolf:
        Summons a wolf companion, calculates the damage and save to the companion
        dictionary.
```

```

        Implement elemental defense modifier
        return CombatAction
def take_aim:
    Call awareness method
def summon_bear:
    Summons a Bear companion, calculates the damage and save to the companion
    dictionary.
    Implement elemental defense modifier
    Implement defense power modifier
    return CombatAction
def steele_trap:
    Calculate initial steel trap damage and turn on the trap flag to
    do continuous damage every time ranger attacks
    return CombatAction
def summon_cat:
    Summons a Cat companion, calculates the damage and save to the companion
    dictionary.
    Implement elemental defense modifier
    Implement attack power modifier
    return CombatAction
def level_up:
    When character levels up and gains a new active kill or passive skill,
    print the newly gained skill and implement stat growth
def win_battle:
    After winning the battle, calculate the experience gained, gold gained
    and any implement passive skill effect that happens after defeating
    a monster

```

ranger_item_generator.py

Contains Ranger Equipment Class and creates weapon, armor, and accessory
for ranger to purchase from the shop menu

```

def generate_weapon:
    - Generates weapon for the Ranger class
    - If the weapon has prefix or suffix, calculate attack or defense modifiers
    and add to the weapon item stat
    return Weapon

def generate_armor:
    - Generates armor for the Ranger Class
    - If the Armor has Suffix and Prefix, calculate attack or defense modifiers
    and add to the armor item stat
    - Ranger class take less damage to elements and always has three elemental
    resists. All three elemental resist should add up toe 30 + (level * 3)
    return Armor

```

```
def generate_accessory:
    - Generate accessory for the Ranger Class
    - Accessory get at least one elemental damage between 'Ice', 'Fire'
      and 'Lighting'
    - If the accessory has prefix, calculate attack or defense modifier
      and add to the accessroy item stats
    - return Accessory
```

Ranger
<p> accessory accessory_cost accessory_sheet accessory_type damage_modifiers damage_types defense_modifiers hit_points item_compatibility : list max_special passive_skills : dict printer skills_dict : dict special special_resource stats_structure : dict </p>
<p> adjust_defensive_mod(modifiers, remove) adjust_offensive_mod(modifiers, remove) att_def_adjust(item) att_def_dif(new, old) attack() awareness() base_att_def_power() check_summon(companion) focus(damage) generate_accessory() generate_armor() generate_weapon() get_skills() get_skills_list() level_up(combat) lucky_strike(damage) modify_damage(damage) steel_trap() summon_attack_modifier(modifier) summon_bear() summon_cat() summon_clean_up() summon_wolf() take_aim() take_damage(damage, dmg_type, message) win_battle(combatant) </p>

