

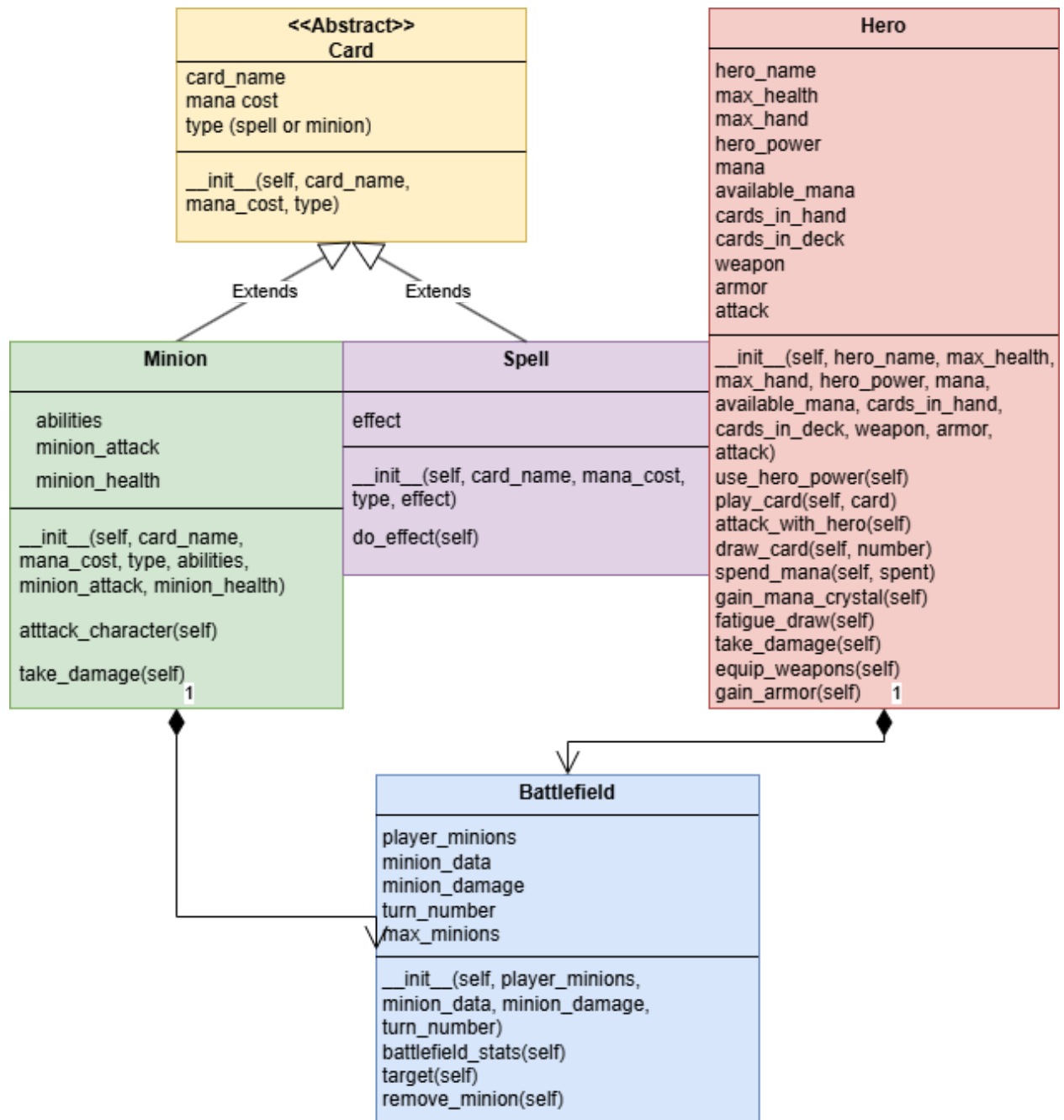
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CS 1410

### Final Project Idea

For my final project idea I am wanting to program a few cards from the game "Hearthstone" I am wanting to make a terminal based UI at the minimum to keep track of game plays and players health, mana, hero powers, cards in hand, and cards in play. There will also be an opponent controlled by a computer program. Essentially the brain of this computer is "If I can take an action in game, take that action" this will follow a hierarchy of prioritized actions in game.

The main structure of the heroes and cards will be kept track of using class modules. This will include using an abstract class for cards and for heroes that I can basically implement the abilities onto. Cards for this game will be kept simple so maybe one keyword on them. If possible I would like to make a GUI for this, however time may not permit it. The terminal should report what the board state looks like after every play made.

## UML Documentation:



## UML Explanations:

### Methods:

#### Player

`__init__(self, name, max_health, max_hand_size, hero_power, mana, available_mana, cards_in_hand, cards_in_deck, weapon, armor, attack)`

initializes object

`use_hero_power(self)`

sets hero power to False, and uses targets or executes hero power ability

`play_card(self, card)`

takes the mana cost of card and minuses from the available mana pool, does the effect of the card whether it be a minion on the battlefield or the effect of a spell

`attack_with_hero(self)`

attacks a target with the hero. This only executes if there is a weapon attached to the hero or the hero has attack. The hero can attack only once a turn.

`draw_card(self, number = 1)`

the player draws a number of cards from the deck. The default is 1. If the player is at the max hand size burn the card (remove it from deck but dont add it to hand). If the player has no cards in deck execute the fatigue method.

`spend_mana(self, spent = 0)`

Minus or gain mana crystals from the available mana, the default is 0

`gain_mana_crystal(self)`

Add a mana crystal to the players available mana. This mana pool will permanently increase by 1 each turn

`fatigue_draw(self)`

Draw a fatigue card, do this only when a players deck is empty. It will deal an increasing amount of damage to the player by +1 per fatigue card drawn.

`take_damage(self, amount)`

Minus or gain health based on the amount of damage taken or healed. Healed points will always affect base health, damage points will prioritize armor first.

`equip_weapon(self)`

equip a weapon to the hero. This will give the hero attack points.

`gain_armor(self)`

Adds armor over the amount of health a hero has.

`Card(ABC)`

`@abstractmethod`

`__init__(self, card_name, mana_cost, type)`

initializes an abstract method that spells and minions will use.

`Minion(Card)`

`__init__(self, card_name, mana_cost, type, abilities, attack, health)`

initializes the object

`attack_character(self)`

attack a character on the battlefield. This can be other minions or the opposing hero

`take_damage(self)`

The minion takes damage equal to the attack of what is attacking it or what it is attacking (other than heroes) if the minion dies remove it from the battlefield

`use_abilities(self)`

uses a minions ability based upon what the ability is. Will depend on if it triggers on damage, on death, on battlecry, or on opponents attack

Spell(Card)

\_\_init\_\_(self, card\_name, mana\_cost, type, effect)

initializes the spell object

do\_effect(self)

carries out the spell effect. Modifying values as it needs.

Battlefield(Hero, Minion)

\_\_init\_\_(self, hero\_name, max\_health, max\_hand\_size, hero\_power, mana, available\_mana, cards\_in\_hand, cards\_in\_deck, weapon, armor, hero\_attack, card\_name, mana\_cost, type, abilities, minion\_attack, minion\_health, max\_minions)

initializes battlefield object

battlefield\_stats(self)

returns the stats of the battlefield for testing purposes

target(self)

returns a target on the battlefield of a named object, either a hero or

minion

remove\_minion(self)

removes a minion from the list of the battlefield

collections using:

list for hand contents: lists are ordered and easily mutable so you can remove and add cards to hand.

list for battlefield contents: lists are ordered and easily mutable so you can remove and add minions to or from the battlefield.

list for cards in deck: lists are ordered and easily mutable so you can add or remove cards from deck.

dictionary for cards: a dictionary for a card allows you to have a card with a key value pair that aligns with the values for a card.

dictionary for heroes: a dictionary allows you to point to a key and determine what value is there easily.

Menu:

Opponent goes first!

Opponents turn!

Current Battlefield:

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 3 Cards

Opponent Ends Turn!

Your turn!

Current Battlefield:

Opponents Minions:

Your Minions:

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 3 Cards

Your Health: 30

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Argent Squire - Minion - 1

Divine Shield

Attack: 1 Health: 1

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 health: 3

Fireball - Spell - 4

Deal 6 Damage to Any Target

Available Mana: 1

What would you like to do?

1. Play a card

2. Attack with Minions

3. Attack with Hero
4. Hero Power
5. End Turn

(Option 1. Play a card):

Which card would you like to play?

1. The Coin 0
2. Argent Squire 1
3. Loot Hoarder 2
4. Spellbreaker 3
5. Fireball 4

(if the chosen option cannot be played)

Sorry you do not have enough mana

(if the chosen option can be played)

You play Argent Squire!

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 3 Cards

Your Health: 30

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 Health: 3

Fireball - Spell - 4

Deal 6 Damage to Any Target

Available Mana: 0

What would you like to do?

1. Play a card
2. Attack with Minions
3. Attack with Hero
4. Hero Power
5. End Turn

(Option 5. End Turn)

Opponents turn!

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 Cards

Opponent plays Loot Hoarder!

Current Battlefield:

Opponents Minions:

Loot Hoarder

Deathrattle: Draw a Card

Attack: 2 Health: 1

Your Minions

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 3 Cards

Opponent ends turn!

Your turn!

Current Battlefield:

Opponents Minions:

Loot Hoarder

Deathrattle: Draw a Card

Attack: 2 Health: 1

Your Minions:

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 3 Cards

Your Health: 30

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 Health: 3

Fireball - Spell - 4

Deal 6 Damage to Any Target

Wisp - Minion - 0

Attack: 1 Health: 1

Available Mana: 2



What would you like to do?

1. Play a card
2. Attack with Minion
3. Attack with Hero
4. Hero Power
5. End Turn

(Option 2. Attack with Minion)

What would you like to attack with?

1. Argent Squire

(Option 1. Argent Squire)

What would you like to attack of your opponents?

1. Loot Hoarder
2. Opponent

(Option 1. Loot Hoarder)

Loot Hoarder dies!

Argent Squire loses divine shield!

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Attack: 1 Health: 1

Opponents Health: 30

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 cards

Your Health: 30

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 Health: 3

Fireball - Spell - 4  
Deal 6 Damage to Any Target

Wisp - Minion - 0  
Attack: 1 Health: 1

Available Mana: 2

What would you like to do?

1. Play a card
2. Attack with Minion
3. Attack with Hero
4. Hero Power
5. End Turn

(Option 4. Hero Power)

What would you like to target?

1. Yourself
2. Argent Squire
3. Opponent

(Option 3. Opponent)

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Attack: 1 Health: 1

Opponents Health: 29

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 cards

Your Health: 30

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3  
Battlecry: Silence a Minion  
Attack: 4 Health: 3

Fireball - Spell - 4  
Deal 6 Damage to Any Target

Wisp - Minion - 0  
Attack: 1 Health: 1

Available Mana: 0

What would you like to do?

1. Play a card
2. Attack with Minion
3. Attack with Hero
4. Hero Power
5. End Turn

(Option 5. End Turn)

Opponents turn!

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 29

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 5 Cards

Opponent plays Weapons Project!

Current Battlefield:

Opponents Minions:

Your Minions:

Argent Squire

Divine Shield

Attack: 1 Health: 1

Opponents Health: 29 + 3 Armor

Opponents Weapon: 2/3 Axe

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 Cards

Opponent attacks Argent Squire!

Current Battlefield:

Opponents Minions:

Your Minions:

Opponents Health: 29 + 2 Armor

Opponents Weapon: 2/2 Axe

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 Cards

Opponent Ends Turn!

Your Turn!

Current Battlefield:

Opponents Minions:

Your Minions:

Opponents Health: 29 + 2 Armor

Opponents Weapon: 2/2 Axe

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 cards

Your Health: 30 + 3 Armor

Your Weapon: 2/3 Axe

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 Health: 3

Fireball - Spell - 4

Deal 6 Damage to Any Target

Wisp - Minion - 0

Attack: 1 Health: 1

Ancient Watcher - Minion - 2

Can't Attack

Attack: 4 Health: 5

Available Mana: 4

What would you like to do?

1. Play a card
2. Attack with Minion
3. Attack with Hero
4. Hero Power
5. End Turn

(Option 3. Attack with Hero)

What target do you want to attack?

1. Opponent

(Option 1. Opponent)

You attack Opponent!

Current Battlefield:

Opponents Minions:

Your Minions:

Opponents Health: 29

Opponents Weapon: 2/2 Axe

Opponents Hero Power: Gain 2 Armor - 2

Opponents Hand: 4 cards

Your Health: 30 + 3 Armor

Your Weapon: 2/2 Axe

Your Hero Power: Deal 1 Damage to any target - 2

Your Hand:

The Coin - Spell - 0

Add 1 Mana This Turn

Loot Hoarder - Minion - 2

Deathrattle: Draw a Card

Attack: 2 Health: 1

Spellbreaker - Minion - 3

Battlecry: Silence a Minion

Attack: 4 Health: 3

Fireball - Spell - 4

Deal 6 Damage to Any Target

Wisp - Minion - 0

Attack: 1 Health: 1

Ancient Watcher - Minion - 2

Can't Attack

Attack: 4 Health: 5

Available Mana: 4

What would you like to do?

1. Play a card
2. Attack with Minion
3. Attack with Hero
4. Hero Power
5. End Turn