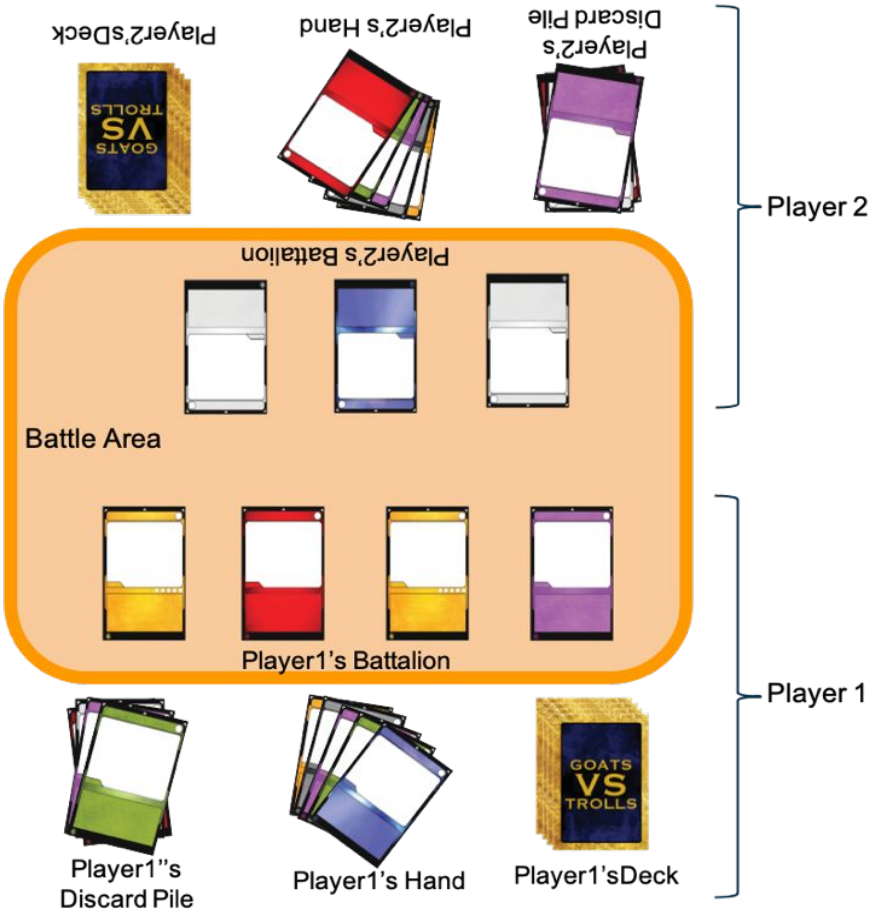
Problem Solving Session

- The remainder of today's class will comprise the ***problem solving session*** (***PSS***).
- Your instructor will divide you into ***teams of 3 or 4 students***.
- Each team will ***work together*** to solve the following problems over the course of ***20-30 minutes***.
  - You may work on paper, a white board, or digitally as determined by your instructor.
  - You will submit your solution by pushing it to GitHub before the end of class.
- Your instructor will go over the solution before the end of class.
- If there is any time remaining, you will begin work on your homework assignment.

Class participation is a significant part of your grade (20%). This includes in class activities and the problem solving session.

Your Course Assistants will grade your participation by verifying that you pushed your solutions before the end of the class period each day.



A Game of Goats vs. Trolls

Each player in the game starts with a deck of cards and a hand. In their turn, a player chooses cards from the hand and places them in the battalion. A player's attack power is computed at the end of the player's turn as the sum of the battalion's power. The damage of the player is deducted from cards in the opponent's battalion. If a card's health is reduced to 0, it is removed from the battalion and placed into the discard pile. Players take turns until one of them is defeated.

Problem 1

Perform a problem analysis using the following description for a player. Each player has the following attributes:

- A name.
- A score, which starts at 100. If the score is reduced to 0, the player loses.
- Resource points. These start at 0 but an additional resource point is added at the start of every turn, up to a maximum of 10. Players spend resource points to play cards against their opponent. Resource points are replenished at the start of each turn.
- A deck of GvT cards from which cards are drawn and placed into the hand.
- A hand of cards from which the player chooses cards to play. When the player is created, 5 cards are immediately drawn from the shuffled deck into the hand. An additional card is drawn at the start of each of the player's turns.
- Cards that are currently in play. These are referred to as the player's battalion.
- Cards that have been discarded (after being defeated in battle).

```
player
    name
    SCORE HP
    RP, 0-10
    deck
    hand
    cards in play
    graveyard


draw
place
rp increase
rp reset
score change
```

```
class Player:
    __slots__ =
["__name","__score","__maxrp","__rp",
"__deck","__hand","__battalion",
"__graveyard"]


    def __init__(self,name,deck)
    self.__name = name
    self.__score = 100
    self.__maxrp = 0
    self.__rp = self.__maxrp
    self.__deck = deck
    self.__hand = []
    self.__battalion = []
    self.__graveyard = []
```

Problem 2

- Begin implementing your **player class.**
- For now, just focus on the ***fields*** and the ***constructor***.
- Be sure to use proper encapsulation, and note that many of the fields do not need to be initialized using constructor parameters.

Problem 3

Add a function that returns a detailed string representation that matches the example below. The values for the deck and discarded cards are the numbers of cards in each.

```
Player: Buttercup
Score: 16
Resource Points: 5/10
Deck: 24
Discarded: 8
Battalion: [TT 01 06 01][TT 02 06
03][TR 05 06 07]
Hand: [TF 02 02 02][TT 03 07 01]
```

```
def __repr__(self):
    output = "Player: " + self.__name \
+   "\nScore: " + str(self.__score)
+   same for rest of them
```

```
def start_turn(self):
    if self.__maxrp < 10:
        self.__maxrp += 1
    self.__rp = self.__maxrp
    if len(self.__deck) > 0
        card = self.__deck.pop()
        self.__hand.append(card)
        self.__hand.sort()
```

Problem 4

Add a method named `start_turn` to the `Player` class which is used at the start of the player's turn:

- A resource point is added to the player's resource points at the start of their turn, up to a maximum of 10 points.
- Any resource points spent in the previous turn are also refunded.
- A card is drawn from the player's deck and placed into their hand.