SRH HOCHSCHULE HEIDELBERG
Intelligence in Learning

Big Data Programming: REPORT
Assignment 2

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1. Summary

This Coding Challenge has been done in python programming language. Only inbuilt library has been used. The algorithm for both the exercise is explained in below section.

Tools: PyCharm Editor, Git

2. Exercise 1: Card Game in Python

Approach: First I understood about the game like roles, card with characteristics and Spells. Basically, I start with writing code and keep modifying as per requirement.

I divided the task into few steps:

Created two python files to separate game logic (Game) and basic function (Helper file)

- First Created Players profile with properties
    - Name
    - Hand deck with list and all basic card function
    - God spell with value 1
    - Resurrect Spell with value 1
- Created Card profile
    - Name
    - Strength
    - Skill
    - Size
- Game class
    - Players Instance
    - 2 separate decks (Original and Outdated)

Pseudo-Code:

1. Selection of player

```
player_1_dice = random.randint(1, 6)
Player1 = Random_number(1,6)
Player 2 = Random_number(1,6)
If (Player1 > player2)
Then Player1 will start otherwise player 2
```

2. Creation of Central deck

   Using Card profile (Class)
   Create list with all the cards

```
  self.deck.push(Card('Iron Man', 30, 45, 35))
```

   Using Random library shuffle the deck

```
  self.deck.shuffle_collection()
```

   Create the hand deck for two players with equal cards

3. Playing the game

   Display (current card)
   Input (Which strength use to fight with opponent)
   Compare (Strength)
   Based on weight assign the score to players who won the round

   If God card:

   Check whether player already used it or not

   If not, then

```
  op_index = input('Please mention which card opponent should play ?')
  index = input('Please mention which card you want to play ?')
```

   Based on the selection

   Use that card to fight the opponent

   If Resurrect Card:

   Check whether player already used it or not

   If not, then

   Select random card from Outdated/Discarded Deck

```
  player_resurrect = random.randint(1, self.discard.size()-1)
```

   select the card and add it to current deck

```
        card = self.discard.pop(player_resurrect)
        self.player_1.hand.push(card)
```

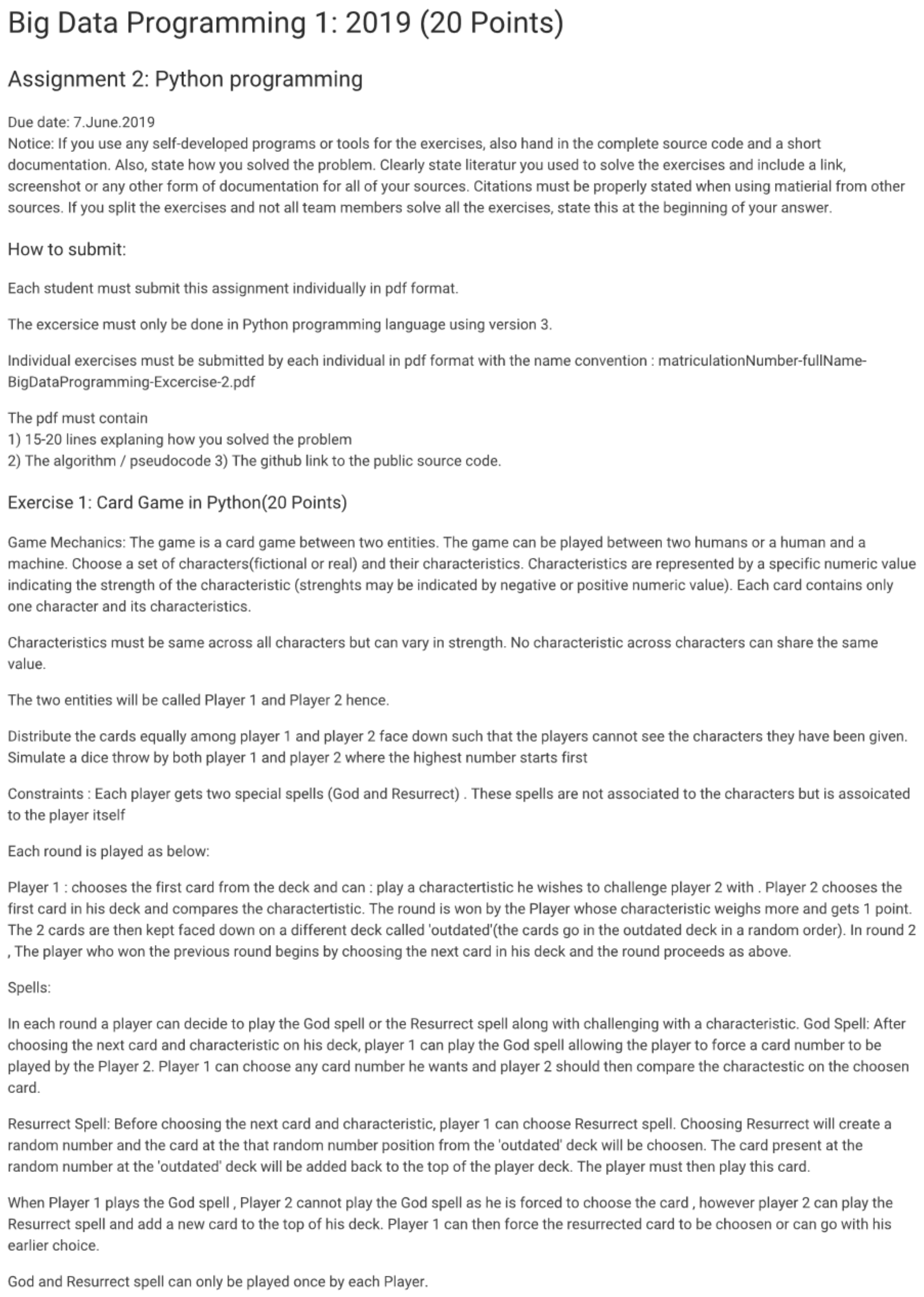
Solution: GitHub link

3. Bibliography

1. List Methods Operation
   From https://docs.python.org/3/tutorial/datastructures.html?highlight=list%20pop#more-on-lists
2. Basic information
   From https://github.com/harshgangwar/Card-War-Game-Python
3. Marvel Character information
   From https://quantixed.org/2016/04/26/weak-superhero-how-to-win-and-lose-at-marvel-top-trumps/
4. Random number generator From https://docs.python.org/3/library/random.html

4. Problem Statement

The Game will be win by the player with maximum points, game will end if one/both players have been played.



Big Data Programming 1: 2019 (20 Points)

Assignment 2: Python programming

Due date: 7.June.2019
Notice: If you use any self-developed programs or tools for the exercises, also hand in the complete source code and a short documentation. Also, state how you solved the problem. Clearly state literatur you used to solve the exercises and include a link, screenshot or any other form of documentation for all of your sources. Citations must be properly stated when using matierial from other sources. If you split the exercises and not all team members solve all the exercises, state this at the beginning of your answer.

How to submit:

Each student must submit this assignment individually in pdf format.

The excersice must only be done in Python programming language using version 3.

Individual exercises must be submitted by each individual in pdf format with the name convention : matriculationNumber-fullName-BigDataProgramming-Excercise-2.pdf

The pdf must contain
1) 15-20 lines explaning how you solved the problem
2) The algorithm / pseudocode 3) The github link to the public source code.

Exercise 1: Card Game in Python(20 Points)

Game Mechanics: The game is a card game between two entities. The game can be played between two humans or a human and a machine. Choose a set of characters(fictional or real) and their characteristics. Characteristics are represented by a specific numeric value indicating the strength of the characteristic (strenghts may be indicated by negative or positive numeric value). Each card contains only one character and its characteristics.

Characteristics must be same across all characters but can vary in strength. No characteristic across characters can share the same value.

The two entities will be called Player 1 and Player 2 hence.

Distribute the cards equally among player 1 and player 2 face down such that the players cannot see the characters they have been given. Simulate a dice throw by both player 1 and player 2 where the highest number starts first

Constraints : Each player gets two special spells (God and Resurrect) . These spells are not associated to the characters but is assoicated to the player itself

Each round is played as below:

Player 1 : chooses the first card from the deck and can : play a charactertistic he wishes to challenge player 2 with . Player 2 chooses the first card in his deck and compares the charactertistic. The round is won by the Player whose characteristic weighs more and gets 1 point. The 2 cards are then kept faced down on a different deck called 'outdated'(the cards go in the outdated deck in a random order). In round 2 , The player who won the previous round begins by choosing the next card in his deck and the round proceeds as above.

Spells:

In each round a player can decide to play the God spell or the Resurrect spell along with challenging with a characteristic. God Spell: After choosing the next card and characteristic on his deck, player 1 can play the God spell allowing the player to force a card number to be played by the Player 2. Player 1 can choose any card number he wants and player 2 should then compare the charactestic on the choosen card.

Resurrect Spell: Before choosing the next card and characteristic, player 1 can choose Resurrect spell. Choosing Resurrect will create a random number and the card at the that random number position from the 'outdated' deck will be choosen. The card present at the random number at the 'outdated' deck will be added back to the top of the player deck. The player must then play this card.

When Player 1 plays the God spell , Player 2 cannot play the God spell as he is forced to choose the card , however player 2 can play the Resurrect spell and add a new card to the top of his deck. Player 1 can then force the resurrected card to be choosen or can go with his earlier choice.

God and Resurrect spell can only be played once by each Player.