

Task 1

Save your work as TASK1_<name>.ipynb

In this task, you are going to make a mini-version of the game called Hearts for 4 players. Hearts is a trick-taking card game where players try to avoid taking the Hearts and Queen of Spades.

Task 1.1

Each card is assigned a suit (Clubs, Spades, Diamonds or Hearts in ascending order) and a value (its numeric value from 2 to 10, followed by J, Q, K, A in ascending order). Write a function `generate_cards()` that:

- Generates 52 cards with a unique suit and value
- Shuffles the cards
- Distributes the cards accordingly (1st card to 1st player, 2nd card to 2nd player, ..., 5th card back to 1st player, ...)
- Returns a list containing the cards for each player

[4]

Task 1.2

Write a function `sort_cards(hand)`, taking in a player's hand of cards, to sort the cards held by a player based on the suit order and value order in ascending order. Suits are checked first before the value.

[6]

Task 1.3

In Hearts, a card can only be played if it is the same as the starting suit if a player has at least 1 card with the starting suit, which is the suit of the first card being played in the center. Write a function `validate_turn(starting_suit, hand)`, taking in a player's hand of cards and the starting suit, asking the player for the index (starting from 0 with leftmost card and increasing by 1 with each subsequent card) to indicate which card to throw. If the card is invalid, return -1, else return the index.

[3]

Task 1.4

The player with the card with the highest value where the suit is the same as the starting suit will get the penalty after all 4 players have thrown their cards. To identify which player it is, write a function `get_maximum(starting_suit, cards_played)` that takes in the starting suit and cards thrown by 4 players, and returns the number of the player who will get the penalty.

[3]

Task 1.5

Write a function `game_over(player1, player2, player3, player4)` that takes in the number of points for each player, and ends the game when at least one of the players exceeds 100 points.

[2]

Task 1.6

Using the functions from Tasks 1.1 to 1.5, write program code such that the game can be run.

The game will run a round until at least 1 player exceeds 100 penalty points. The penalties given to the player with the card with the maximum value and the same suit as the starting suit is 1 for each card with the suit Hearts, and 13 for the Queen of Spades (suit is Spades, value is Q). If a player accumulates 26 points in a single round, he can shoot the moon and receive 0 points while all other players receive 26 points instead. [8]