

Project – 1

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1. Game for the Project:

The game we are going to build for Project 1 is **Nine Holes**. It is a two-player game, played with a standard deck of cards that are shuffled. The deck contains 52 cards, divided into four categories – spades, clubs, hearts and diamonds. Each category has thirteen cards starting from 2 to 10 and A, J, Q and K.

The game has nine rounds. Each round offers points to players, the player with best points claims the round – the acquired points for each round are saved. After nine rounds the player with highest cumulative points will be declared a winner, and if the points are tie the player to claim highest number of rounds is the winner.

2. Specifications/Rules for the game:

As explained above the game is played with a standard deck of cards. The following are the points associated with each card:

Card Value	Points
K	0
A	1
J, Q	10

For all other cards (2 to 10), points will be equal to the value on the card.

The game is played in nine rounds with each round following the below set of rules:

- The game is played with a standard deck of cards – with four categories and 52 cards as explained above.
- The cards should be shuffled properly before starting each round.
- Every player is given six cards on the start of a round – they are arranged in two rows and three columns.
- The cards in second column of each player should be displayed.
- The remaining 40 cards are kept aside, from which players can draw a card at a time.
- The drawn card can either be taken or put aside by the player – if the drawn card's value (2 to 10, A, J, Q, K) matches one of the cards in the displayed cards the player could take it and replace the card which is not a match in the displayed cards. The non-matching card must be put aside.
- The next player can either draw from the remaining pile or take the card most recently put aside. And he can perform the same act as explained in the above point.
- Once the displayed column has a match (as explained in the above two points) the user can move to the remaining two columns.
- After the above operations the user can only replace cards and display them (the cards can be drawn from the remaining cards or the cards kept aside).
- The above-mentioned process will continue till all the columns have a match.

- The player to finish first will give an opportunity to the other player to make his last move. If the other also finishes matching all the rows the round is a tie, which means both the players get zero points.
- If a player loses, the points associated with the unmatched cards are the points given to the winner. And the former is given zero points.
- Note: If all the remaining cards are used before the round has a winner, the points associated to the unmatched cards of the opponent will be the points given to the players and the round will be declared a tie.

After nine rounds are played with above rules, the player with highest cumulative points is the winner. If there is a tie on the points, the player to win highest number of rounds will be the winner.

3. Optional Game functionality that can be included:

If the game reaches to a situation where all the remaining cards are used and only the cards that are left aside are present, we are planning to declare the game as a tie and assign the points associated to the unmatched cards of the opponent to the players.

But, if time permits, we are planning to incorporate a functionality where all the cards kept aside will be taken, shuffled and put as remaining cards for the players to continue the game. But if the situation repeats (using up all the remaining cards) for a second time the round is a tie with each player getting zero points.

4. Challenges expected while building the game:

We are expecting the following challenges:

- To have synchronization of the game between the players is one of the challenges we are expecting to face.
- Handling drag and drop of cards properly is another challenge.
- Handle user operations only when a user can – like when player 1 is playing, player 2 should not be allowed to perform any operation.
- Graphically displaying the card flips would also be a challenge.
- Once all the remaining cards are used, we are planning to use the cards kept aside and shuffle them and allow for the game to be continued.
- Calculating and assigning scores to users after a round is complete.