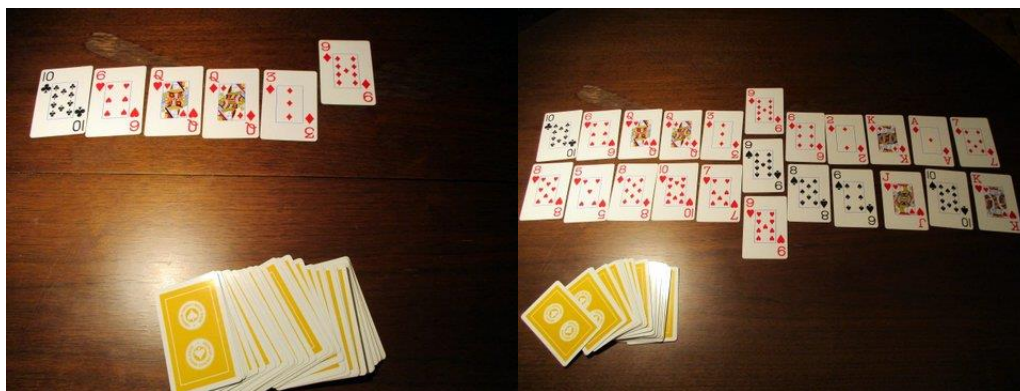


COMP-396 Android App development

GNS App (Grand Napoleon Solitaire) is a single player card game, which involves evaluation of options and forward planning. While the initial deal and layout of the tableau with a matrix of 52 cards is random, the play of the hand ranges from easy to impossible. The GNS App will shuffle a regular deck of cards and deal the tableau. The play will be on an Android tablet using a drag and drop interface. The development of GNS will be in Java and enforce the strict set of GNS rules and logic. Once developed it should be easy and fun to play by anyone comfortable with using a tablet.

High Level Design – Functionality and Example

1. There should be a splash page with the title, provenance, copyright, designers, and other information.
2. Simple introduction as discussed above. Recommend the tablet is placed in landscape mode. Offer a choice of levels (Easy, Medium, Hard) – in later versions.
3. **Tableau Layout.** All cards are laid out, face up, in a matrix of 5 rows and 11 columns.
4. **Foundation or Base cards.** Card 6 is the first base card and all four cards of the same rank from the 4 suits form the foundation. See the example that follow.



First 6 cards are dealt and the 6th one (9 Diamonds, by chance) is the first base card.

It is moved half a row up to help identify the foundation.

More cards are then dealt and the 9S (9 of Spades) and 9H (9 of Hearts) appear and are placed in column 6, alternating red and black suits.

Continue this process for the first 4 rows.

The fifth row below starts in column 2, and there is no card in row 5, column 6 (R5/C6). This is called the **cellar**. The photo below on the left shows a complete tableau of all 52 cards.

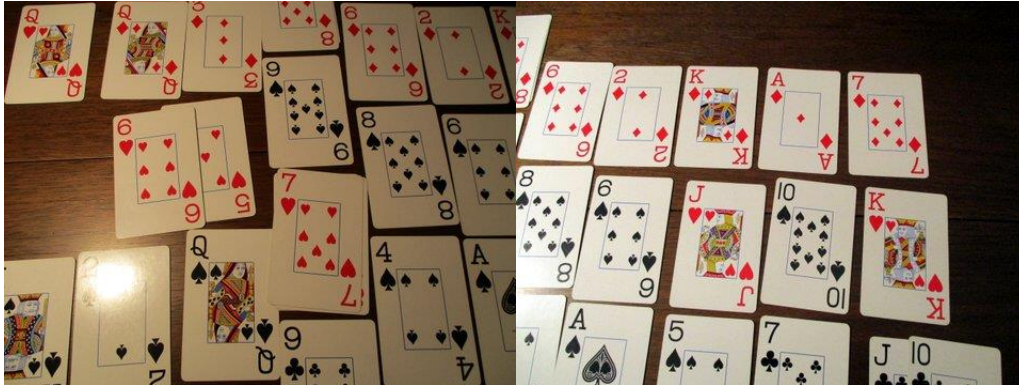
Play of the hand The first decision to be made is whether the build on the base cards will be ascending or descending. On RHS picture below the decision has been made to move 8H on the

Only cards on the **outside of a row** can be moved **onto the outside of rows 1 to 4** and only onto a card of **the same suit to form a sequence**.

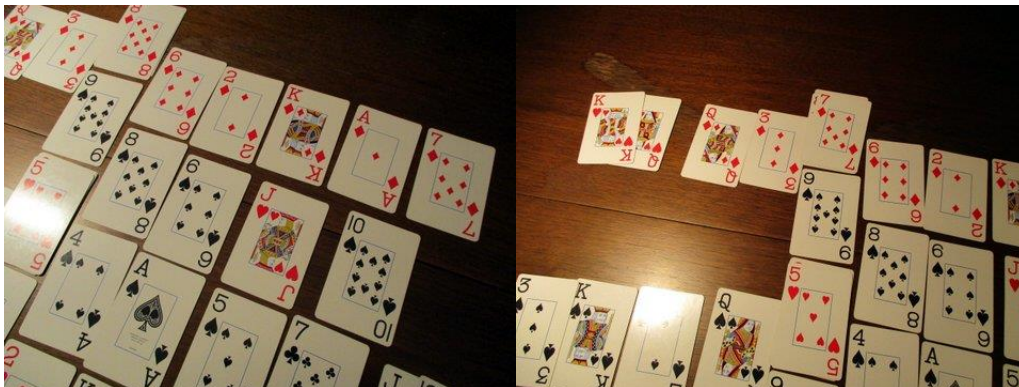
[illegible]

GNS App

get the **H6 on the outside**. Now H6 and then H5 can be stacked on the Heart pile – this keeps our free row clear. On the top RHS the 7D can be stacked. We now focus on the Diamonds King (K) and Queen (Q).



First we move KH onto the QH and move this sequence of two into the blank row. This could be done by moving the KH into the empty row directly and then add the QH.



The S10 is moved onto the S Jack, and the Hearts Jack, Queen and King made into a 3 card sequence. **We also plan to play a set of moves, which will keep the empty row clear.**

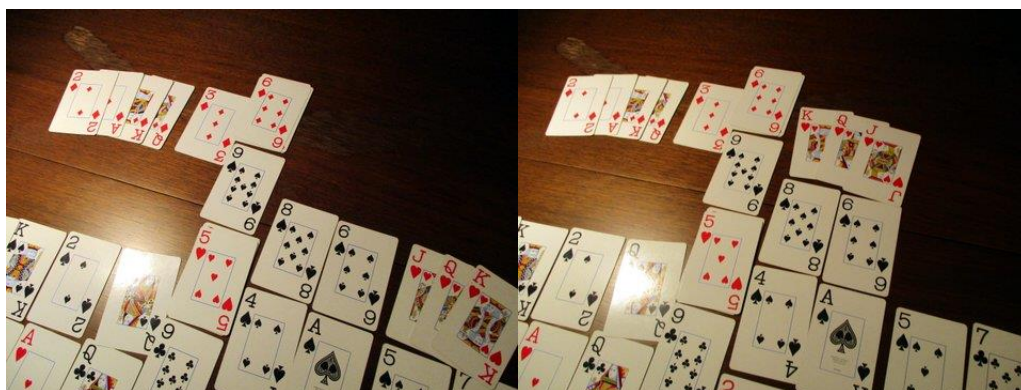


Now we are ready to rearrange the Diamonds into a 4 card sequence.

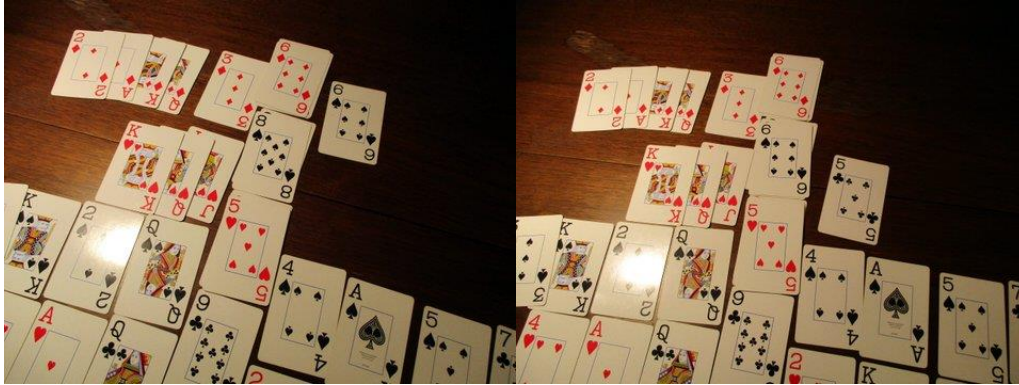


When we move 2D, we can then pile up the 6D. This gives us 2 free rows. We are in an excellent position and should be able to solve this puzzle quickly.

Next work on getting the 8S out.



The S7 is stacked and then S6.



Next we clean up the Diamonds, and get them into a 5 card sequence.



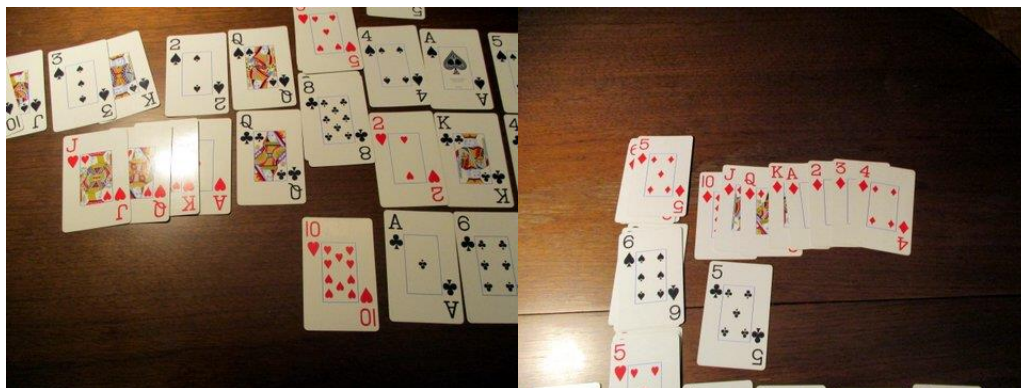
The Diamonds are combined into a 7 card sequence. Adding 4D – makes an 8 card set.



Moving the 4D “opens the cellar door” and lets us move H10 out of the cellar.

Note – we can take cards from the outside of row 5, but we not allowed to build a sequence on either side of row 5. The target is to also clear one side of row 5, then the single card in the cellar can be moved out. The cellar can then be reused for a single card (not a sequence).

The 8 card set of Diamonds are now stacked up.



All the Diamonds are in their stack. There are no more Diamonds left in play.



More Spades and Hearts are stacked out. Now working on the Clubs.



The Hearts need to be reversed, then they can be stacked out. Spades are next.



Once the last Spades are aligned and stacked the game is complete - with four neat piles of all the cards in the same suit in order.



It worked this time. But, it only works out for about 50% of random deals!

Time to start a new game.

Future Features

1. Should grade deals into different levels (like Sudoku – Easy to Very Difficult) and present Easy ones for beginners.
2. There also could be a tutorial like this document, but on the tablet with drag and drop features demonstrated.
3. There should be an UNDO button for one or more steps.
4. There should be a SAVE button to save a shuffle/tableau at the start or during a play of the hand – for later restart. This would be a good teaching aid – with a set of examples. This would help set up the tutorial.
5. There should be a HINT button for the best recommended next move.
6. There could be a scoring aid to count the steps and also time the play of the hand.
7. There could be a score table with the name, score, time and a chance to see/replay a hand.