

Java Programming 2011

Course Code: EBU4201

Mini Project

The Card Grid Game makes use of the first 6 cards (i.e. Ace to Six) of each suit from a standard pack of cards, i.e. a total of 24 cards. The rules of the game are described under the relevant tasks.

Task 1 [10 marks]

You are given two java files: `Card.java` and `DeckOfCards.java`. Running `DeckOfCards` will produce a GUI similar to Figure 1.

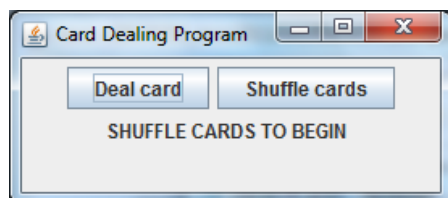


Figure 1

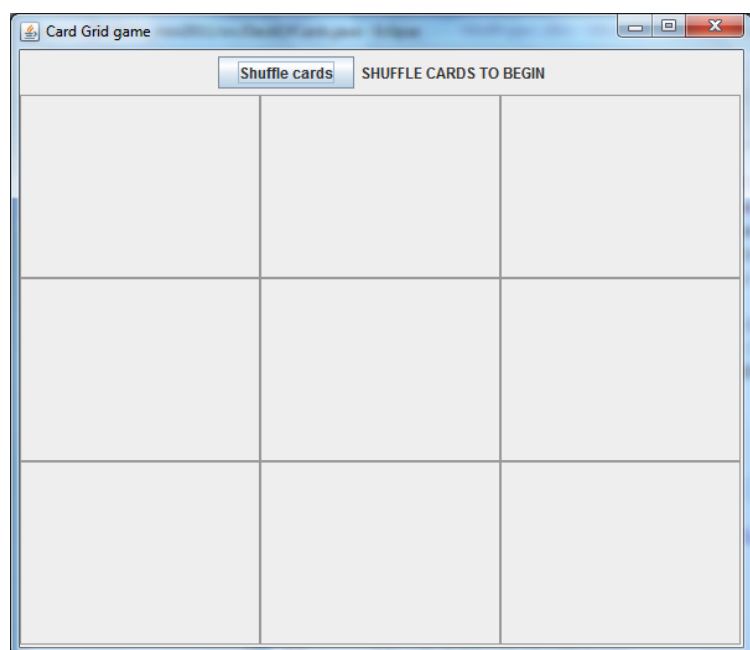


Figure 2

Modify the `DeckOfCards` class to produce a GUI similar to Figure 2, i.e.

1. Change the title to 'Card Grid game'.
2. Remove the 'Deal card' button.
3. Insert a grid of 3x3 buttons, initially disabled.
4. Set the label text to 'SHUFFLE CARDS TO BEGIN'.

Note 1: You are NOT allowed to modify the class `Card` for this part.

Note 2: All the necessary files should be placed in a directory called `Task1`.

Note 3: Your application must run as expected from the command line.

Task 2 [15 marks]

The goal of the Card Grid Game is to place each card in a suitable grid position such that the final score is maximised. The user can 'move' the dealt card to any of the available grid positions. Further modify the `DeckOfCards` class to include the following functionality.

Clicking the 'Shuffle Cards' button should:

1. Enable all 9 grid buttons.
2. Display a serial number on each grid button, i.e. 0,1..8.
3. Deal the first card and display its value in the 'status' label (this function is currently implemented for the 'Deal Card' button).
4. Disable the 'Shuffle Cards' button.

Clicking any grid button should:

1. Change the button text to the value of the card currently displayed in the 'status' label (this indicates the dealt card is 'moved' to the grid position concerned).
2. Disable the grid button.
3. Deal the next card and display its value in the 'status' label.
4. If this is the last grid button, re-enable the 'Shuffle Cards' button and set the 'status' label to 'SHUFFLE CARDS TO BEGIN'.

Figure 3 shows a sample screenshot where the user has placed 4 cards on the grid.

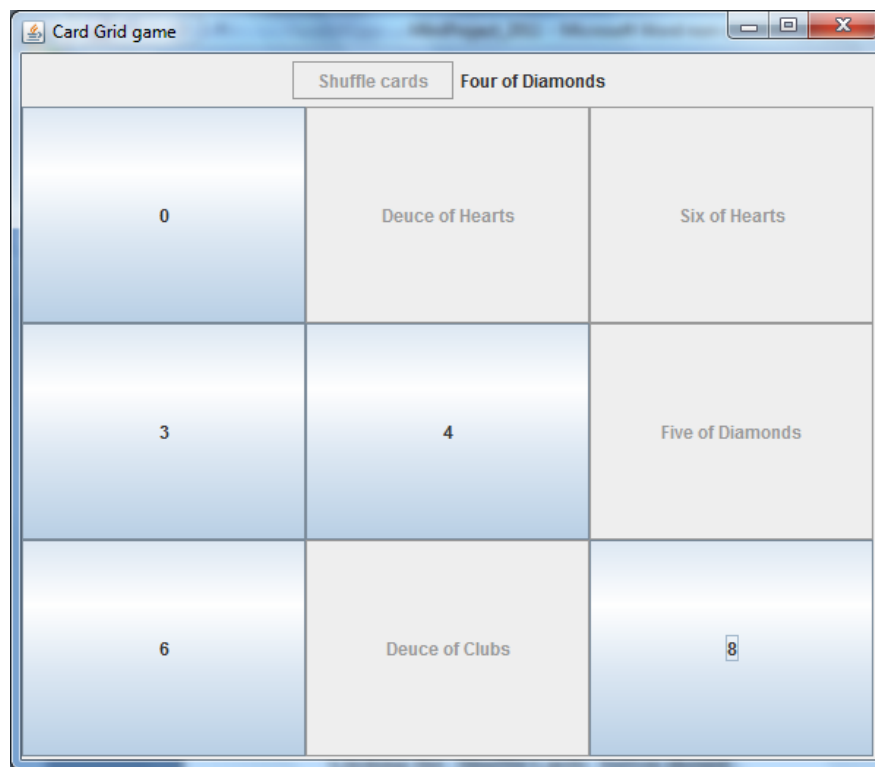


Figure 3

Note 1: You are NOT allowed to modify the class `Card` for this part.

Note 2: All the necessary files (including any reused ones from Task 1) should be placed in a directory called `Task2`.

Task 3 [15 marks]

The scoring is done as follows. Each row and column of 3 cards is considered a 'hand'. Each hand may achieve a score under the three categories described below.

Category 1: Ace Flush (1000 points): Three cards of the same suit including at least one Ace, e.g. ♣A-♣2-♣5 or ♦6-♦A-♦4.

Category 2: Flush (500 points): Any three cards of the same suit, e.g. ♠3-♠2-♠5 or ♦2-♦4-♦6

Category 3: Pair (100 points): A hand with two cards of equal face value and any other card, e.g. 6-6-4 or 5-5-A.

Add code such that clicking on the last grid button would initiate the calculating of scores. Then display the following in a pop-up message box:

1. Total score
2. No. of hands achieved under each category.

Once the user clicks OK on the message box, it should be possible to shuffle cards and begin a new game.

Hint: You may need to add code to the class Card.

Note: All the necessary files (including any reused ones from Tasks 1 & 2) should be placed in a directory called Task3.

Documentation [10 marks]

You must include:

- a. Generated Javadocs
- b. Internal comments in your code.
- c. User Manual. This should be no more than 2 pages and include how to run the program (both how to start and how to use it).

Note: All documentation files should be placed in a directory called Documentation.

Extra credit [5 marks]

Extra marks from this section can be used to top up your final grade for this project. Maximum mark is still 50.

Add a 'Skip (once)' button which allows the user to skip a dealt card, i.e. the user does not have to place this card anywhere on the grid. The 'Skip (once)' button should initially be disabled, and enabled once the cards are shuffled to begin a new game. Clicking on the 'Skip (once)' button should:

1. Deal the next card and display its value in the 'status' label.
2. Disable the 'Skip (once)' button (i.e. this function is available for one time use).

The rest of the application must still function as before.

Note: All the necessary files (including any reused ones from Task 1-3) should be placed in a directory called ExtraCredit.