HACETTEPE UNIVERSITY
COMPUTER ENGINEERING DEPARTMENT
BBM203 SOFTWARE LABORATORY 1
ASSIGNMENT 1

Subject: Arrays
Deadline: 19.11.2020
Programming Language: C++

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Defining Problem

Subject of this assignment is usage of arrays as data structure effectively. In this experiment, we are expected to implement an application that is a Solitaire game played via file I/O.

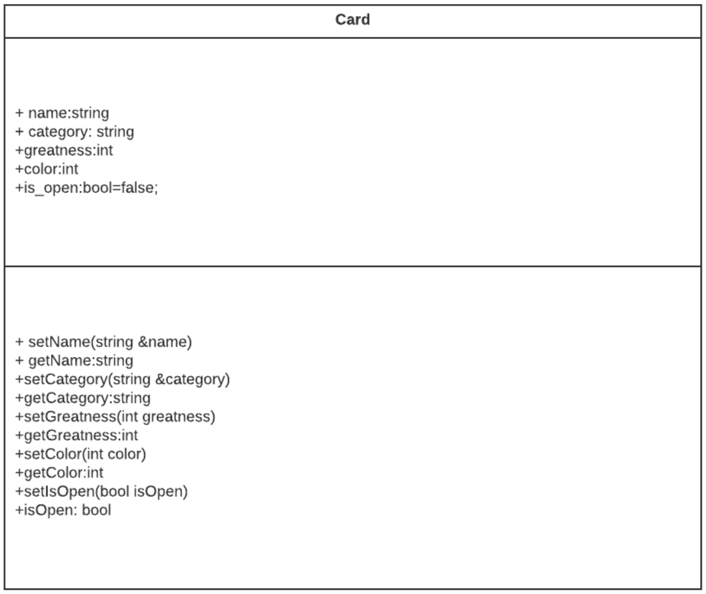
Explanation of My Approach

In this assignment, I learnt the Klondike Solitaire game rules with restrictions which are on assignment paper and piazza topic. Then I design a "Card" class store the name, category, greatness, color, is_open of card attributes. Then I crate static arrays and array indexes because of we are just allowed to use static data structures. For example when I move a card one pile to another, I decrease the first source pile index and increase the destination pile index. All the array methods and works were carried out in this way. We can summarize the program flow as follows:

- Definition of Card class, static arrays and indexes
- Creating output file with argv[3]
- Reading deck file with argv[1]
- Dealing cards to board with dealCards()
- Printing board with printBoard()
- Reading command file line by line and execute every line(with defined methods MoveFoundationPile(), MoveFoundationWaste(), MovePile(), openFromStock(), MoveWaste(), openPile()) with checking game finished or not.
- Return 0

Explanation of Class Diagram

- string name : name is holding the name of cards for example "d01,h13.."
- string category: category is holding the category of cards. The categories are "d,h,s,c" which are actually diamond, heart, spade, club respectively.
- Int greatness: Greatness is holding the greatness of card in range of 1-13.
- Int color: color is holding 1 and 0 for read and black respectively.
- is_open = false: default value is false for card is open or not. False mean's card wasn't opened.



Card

+ name:string
+ category: string
+greatness:int
+color:int
+is_open:bool=false;

+ setName(string &name)
+ getName:string
+setCategory(string &category)
+getCategory:string
+setGreatness(int greatness)
+getGreatness:int
+setColor(int color)
+getColor:int
+setIsOpen(bool isOpen)
+isOpen: bool

Explanation of Arrays

- Card deck[52] : It's the base array. It is equals to stock in game. When program reading the deck file every line in deck file were generating card object in deck array.

- Card pile[7][19]: It's my 2 dimension pile array. I defined every pile array length 19 because I totally can count 7 card on the start of game. If the top card greatness is 13, I can add 12 card more. It mean's the max limit of length a pile is 19.

- Card foundation[4][13]: It's the foundation are in the game. foundation[0] to foundation[3] equals to heart, diamond, spade, club area respectively.

- Card waste[24]: It's the waste array. After dealing cards on deck array 24 card were left. It means waste array max length can be 24.

- Int pile_indexes[7]={0,1,2,3,4,5,6}: It's the indexes of piles. For example if I execute movePile(3,0,0). It means move card on pile 3 to pile 0. After the execution pile 3 index will decreased and pile 0 index will increased.

- Int foundation_indexes[4]={0,0,0,0}: It has same logic like pile_indexes.