Report
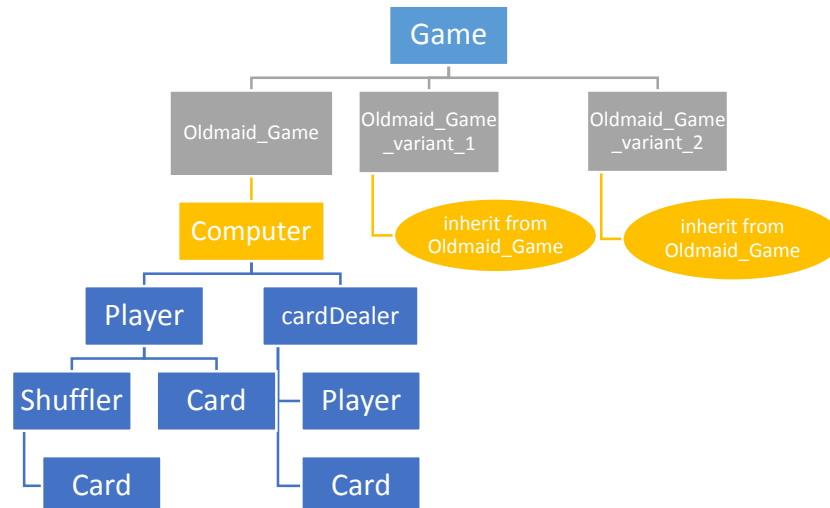
Name. 黃于瑄

School ID. B03901156

1. Design of class structures and their reasons

   Class structure :

※Class Card► define the type of cards

※Class Shuffler► execute the process of shuffling cards

※Class Player► include a player's basic information and relative function about presenting a player's hand cards

※Class cardDealer► include various functions playing important roles in dealing with the cards during the process of game

※Class Computer►generate a computer to run basic operations of the game

※Class Oldmaid_Game► run the original Oldmaid game

※Class Oldmaid_Game_variant_1► inherit from class Oldmaid_Game；run the first variant of the original game

※Class Oldmaid_Game_variant_2►inherit from class Oldmaid_Game；run the second variant of the original game

※Class Game►present the result of running Oldmaid Game, first Oldmaid game variant and second Oldmaid game variant

2. How a human player should play with your program for the two variants

※The first variant：

Instead of adding two joker cards to the deck just like the original Oldmaid card game, this time we add just one joker to the deck(in other words, there will be 53 cards in a deck in total). A player selects a card from another person and adds it to his or her hand. This player then sees if the selected card makes a pair with their original cards. If so, the pair is discarded face up as well. And then the player who just took a card then offers his or her hand to the person to their left and so on.

The objective of the game is to continue to take cards, discarding pairs, until all players except one have no cards. That one player will be left with the lone unmatchable card (the joker card); they are "stuck with the old maid" and lose.
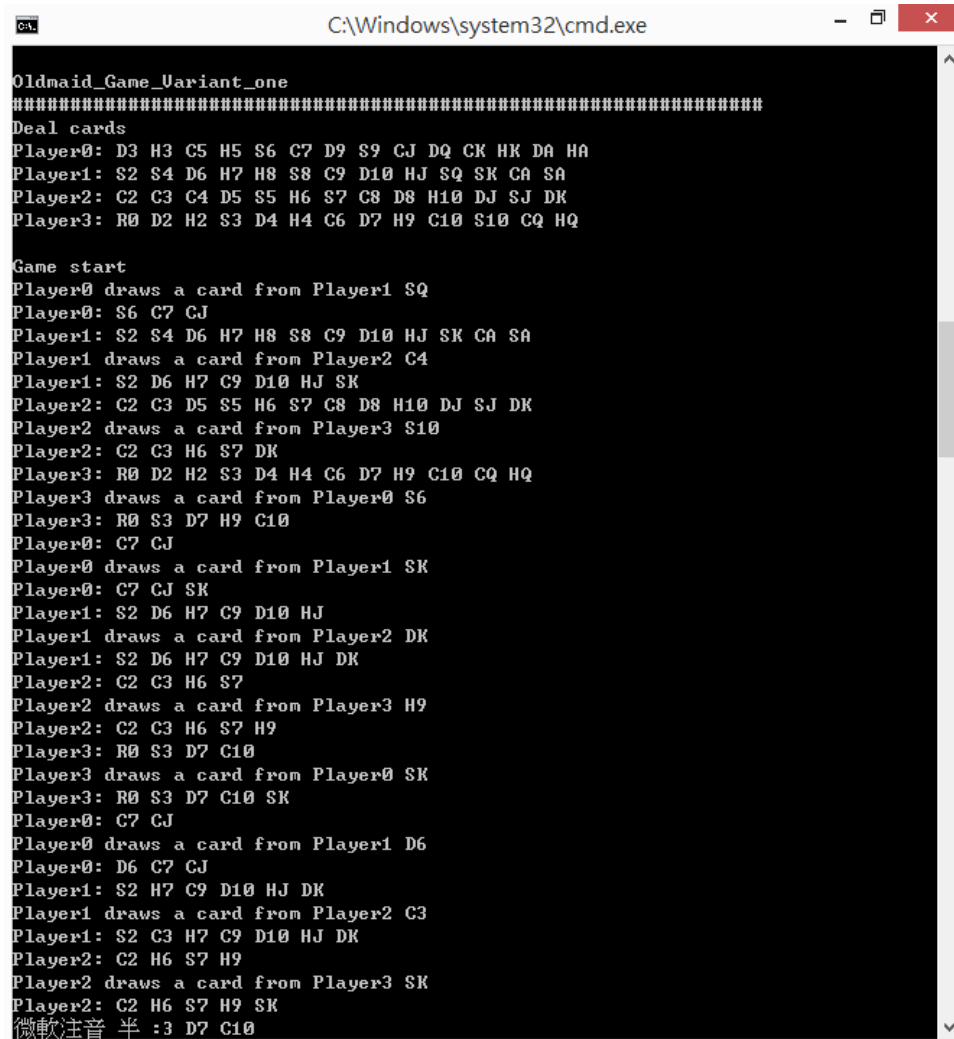
※The second variant：

Similar to the first variant, we adds a joker card to a regular deck and remove an eight card from it. Repeat the procedures of continuing to take cards, discarding pairs, until all players except one have no cards. That one player will be left with two cards (a joker+an eight card). That one player will be left with the lone two cards, called a turtle in Asia and lose.

3. How you tested the correctness of your program

Since the program is similar to hw1, the Oldmaid Game will be operated well. For the first and second variants program, I execute small parts of them separately by checking of some testing program, and after finishing the whole program, I execute the program and test it again.

4. The sample output from each variant of your program

Oldmaid_Game_Variant_one：


```
Oldmaid_Game_Variant_one
####################################################################
Deal cards
Player0: D3 H3 C5 H5 S6 C7 D9 S9 CJ DQ CK HK DA HA
Player1: S2 S4 D6 H7 H8 S8 C9 D10 HJ SQ SK CA SA
Player2: C2 C3 C4 D5 S5 H6 S7 C8 D8 H10 DJ SJ DK
Player3: R0 D2 H2 S3 D4 H4 C6 D7 H9 C10 S10 CQ HQ

Game start
Player0 draws a card from Player1 SQ
Player0: S6 C7 CJ
Player1: S2 S4 D6 H7 H8 S8 C9 D10 HJ SK CA SA
Player1 draws a card from Player2 C4
Player1: S2 D6 H7 C9 D10 HJ SK
Player2: C2 C3 D5 S5 H6 S7 C8 D8 H10 DJ SJ DK
Player2 draws a card from Player3 S10
Player2: C2 C3 H6 S7 DK
Player3: R0 D2 H2 S3 D4 H4 C6 D7 H9 C10 CQ HQ
Player3 draws a card from Player0 S6
Player3: R0 S3 D7 H9 C10
Player0: C7 CJ
Player0 draws a card from Player1 SK
Player0: C7 CJ SK
Player1: S2 D6 H7 C9 D10 HJ
Player1 draws a card from Player2 DK
Player1: S2 D6 H7 C9 D10 HJ DK
Player2: C2 C3 H6 S7
Player2 draws a card from Player3 H9
Player2: C2 C3 H6 S7 H9
Player3: R0 S3 D7 C10
Player3 draws a card from Player0 SK
Player3: R0 S3 D7 C10 SK
Player0: C7 CJ
Player0 draws a card from Player1 D6
Player0: D6 C7 CJ
Player1: S2 H7 C9 D10 HJ DK
Player1 draws a card from Player2 C3
Player1: S2 C3 H7 C9 D10 HJ DK
Player2: C2 H6 S7 H9
Player2 draws a card from Player3 SK
Player2: C2 H6 S7 H9 SK
微軟注音 半 :3 D7 C10
```

```
Player0:
Player0 wins
Basic game over
Continue
Player1 draws a card from Player2 H6
Player1: S2 C3 H6 HJ
Player2: C2 C10
Player2 draws a card from Player3 R0
Player2: R0 C2 C10
Player3: S3 D6 D10 CJ
Player3 draws a card from Player1 HJ
Player3: S3 D6 D10
Player1: S2 C3 H6
Player1 draws a card from Player2 C10
Player1: S2 C3 H6 C10
Player2: R0 C2
Player2 draws a card from Player3 D10
Player2: R0 C2 D10
Player3: S3 D6
Player3 draws a card from Player1 H6
Player3: S3
Player1: S2 C3 C10
Player1 draws a card from Player2 R0
Player1: R0 S2 C3 C10
Player2: C2 D10
Player2 draws a card from Player3 S3
Player2: C2 S3 D10
Player3:
Player3 wins
Player1 draws a card from Player2 D10
Player1: R0 S2 C3
Player2: C2 S3
Player2 draws a card from Player1 S2
Player2: S3
Player1: R0 C3
Player1 draws a card from Player2 S3
Player1: R0
Player2:
Player2 wins
Bonus game over
################################################################
微軟注音 半 :
```

Oldmaid_Game_Variant_two：

```
C:\Windows\system32\cmd.exe                                    _  □  ×

Oldmaid_Game_Variant_two
###################################################################
Deal cards
Player0: H2 H3 H4 D5 H5 H6 H7 S7 C8 D8 D9 SJ HA
Player1: C2 S2 D3 D4 C7 D7 H8 DJ HJ DQ SQ HK SK
Player2: R0 C5 S5 C6 D6 H9 S9 D10 CQ HQ DK CA DA
Player3: D2 C3 S3 C4 S4 S6 C9 C10 H10 S10 CJ CK SA

Game start
Player0 draws a card from Player1 H8
Player0: H2 H3 H4 H6 H8 D9 SJ HA
Player1: C2 S2 D3 D4 C7 D7 DJ HJ DQ SQ HK SK
Player1 draws a card from Player2 CQ
Player1: D3 D4 SQ
Player2: R0 C5 S5 C6 D6 H9 S9 D10 HQ DK CA DA
Player2 draws a card from Player3 S4
Player2: R0 S4 D10 HQ DK
Player3: D2 C3 S3 C4 S6 C9 C10 H10 S10 CJ CK SA
Player3 draws a card from Player0 H8
Player3: D2 C4 S6 H8 C9 S10 CJ CK SA
Player0: H2 H3 H4 H6 D9 SJ HA
Player0 draws a card from Player1 SQ
Player0: H2 H3 H4 H6 D9 SJ SQ HA
Player1: D3 D4
Player1 draws a card from Player2 S4
Player1: D3
Player2: R0 D10 HQ DK
Player2 draws a card from Player3 CJ
Player2: R0 D10 CJ HQ DK
Player3: D2 C4 S6 H8 C9 S10 CK SA
Player3 draws a card from Player0 HA
Player3: D2 C4 S6 H8 C9 S10 CK
Player0: H2 H3 H4 H6 D9 SJ SQ
Player0 draws a card from Player1 D3
Player0: H2 H4 H6 D9 SJ SQ
Player1:
Player1 wins
Basic game over
Continue
Player0 draws a card from Player2 HQ
Player0: H2 H4 H6 D9 SJ
微軟注音 半 :10 CJ DK
```

```
Player0: H6 D9
Player0 draws a card from Player2 C4
Player0: C4 H6 D9
Player2: R0 D10
Player2 draws a card from Player3 H8
Player2: R0 H8 D10
Player3: H4 S6 C9 S10
Player3 draws a card from Player0 C4
Player3: S6 C9 S10
Player0: H6 D9
Player0 draws a card from Player2 H8
Player0: H6 H8 D9
Player2: R0 D10
Player2 draws a card from Player3 C9
Player2: R0 C9 D10
Player3: S6 S10
Player3 draws a card from Player0 D9
Player3: S6 D9 S10
Player0: H6 H8
Player0 draws a card from Player2 D10
Player0: H6 H8 D10
Player2: R0 C9
Player2 draws a card from Player3 S6
Player2: R0 S6 C9
Player3: D9 S10
Player3 draws a card from Player0 D10
Player3: D9
Player0: H6 H8
Player0 draws a card from Player2 S6
Player0: H8
Player2: R0 C9
Player2 draws a card from Player3 D9
Player2: R0
Player3:
Player3 wins
Player0 draws a card from Player2 R0
Player0: R0 H8
Player2:
Player2 wins
Bonus game over
#################################################################

微軟注音 半 :
```