



Xi'an Jiaotong-Liverpool University

西交利物浦大學

Department of Electrical and Electronic Engineering

EEE102 C++ Programming and Software Engineering

Assignment5 File Operation¹
SDP Report

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I certify that I have read and understood the University's *Policy for dealing with Plagiarism, Collusion and the Fabrication of Data* With reference to this policy, I certify that:

- My work does not contain any instances of plagiarism and/or collusion.
- My work does not contain any fabricated data.

By handing in my assignment for marking, I formally declare that all the above information is true to the best of my knowledge and belief.

Signature: Zheng Sun

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1. Problem Statement:

This task aims to implement concepts of File Operation and to reinforce the understanding of OOP by the simulation of relationships between entities in the real world BLACK JACK gambling game to develop programming and modelling skills. Overall, the object of the assignment is clear and lucid.

a) Practice the concept of OOP to design 3 types of entities (classes of different Attributes): Cards, Accounts and Player which hold runtime data from real life gambling game Black Jack. Algorithms is designed within the class behaviour which also modelled from the rules given

b) Design a Database management system using **STL vector<Account>** as data structure to interface the file input and output.

c) Methods such as **controlPannel(): void** to interface the DBMS ↑ and runtime gaming methods **oneTurnBlackJack(Account& x): Account** also needs to be designed to play the game.

2. Analysis:

a) Inputs:

1. String type as Account's info. → std::getline(cin, str)
2. Int type as bet and command selection → int intParser() by@myself
3. Char type when exiting the game → char charParser() by@myself
4. Read Accounts' info from program into file using **ifstream** class.

b) Output:

1. Interactive instructions prompting user to signInAccount, createAccont, give commands (hit, stand, increase bet, etc.).
2. Informative notice show: current statuses of the player and dealer to help make decision, results of each hit turn, and Account information.
3. Write Accounts' info from file into program using **ofstream** class.

3. Design

a) Class Design: 1.CRC cards and 2.hierarchical UML class graph

1. CRC cards of classes

Class: Account	
Responsibility: Hold runtime information of a game account. Serves to be read from and write into files as basic element. Provide methods for <u>Player</u> to utilize and set/change data hold by account.	Collaborators: Player

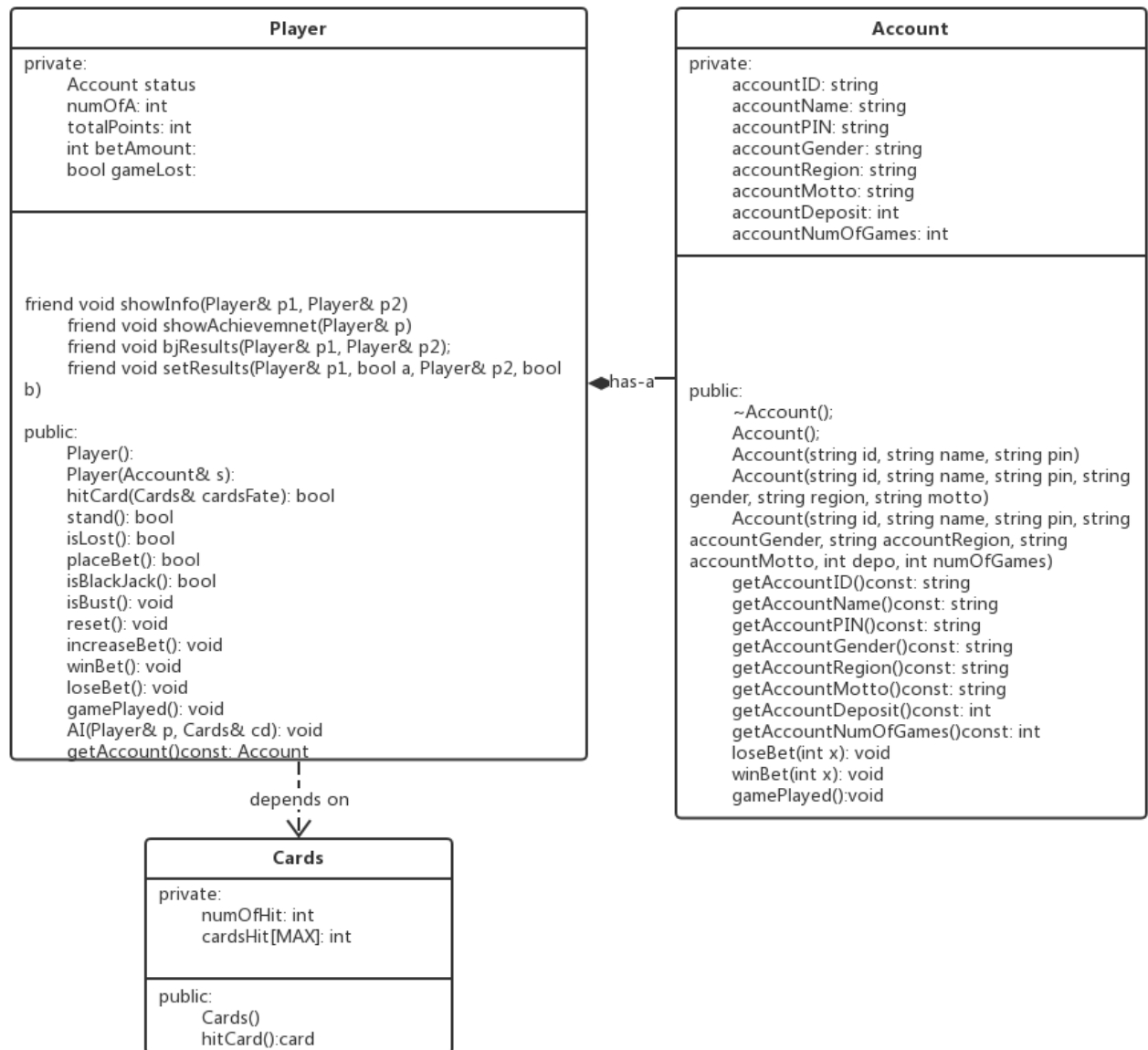
Class: Cards	
Responsibility: Simulate/model a pack of <u>shuffled</u> cards in real life. <u>Card of one pack</u> can be drawn randomly for game. One of the pack of cards can be hit by Player to play Black Jack.	Collaborators: Player

Class: Player	
Responsibility:	Collaborators:

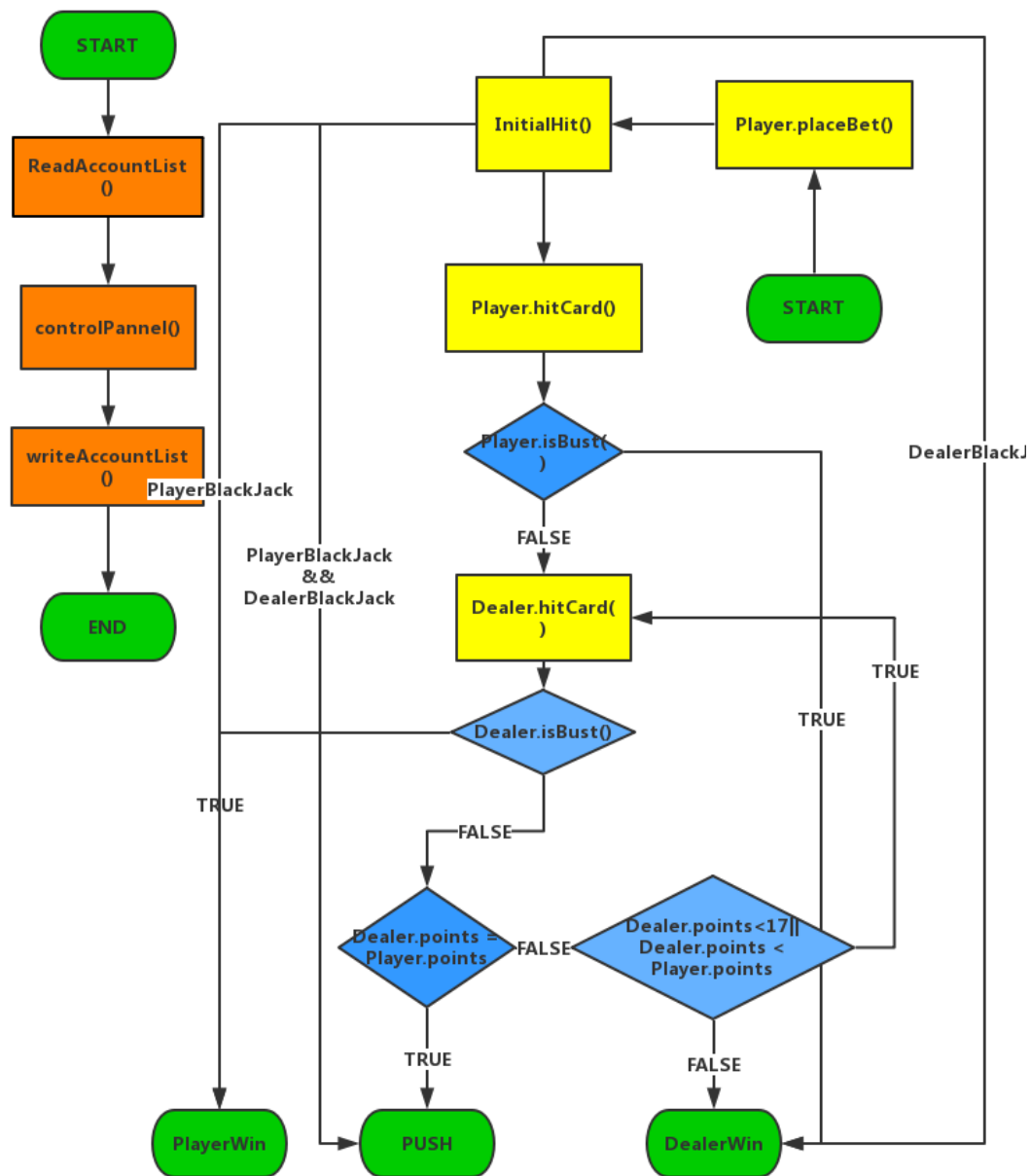
A Player holds runtime information of a single turn of Black Jack and takes part in the games until exit.
 A Player owns an Account and can play Black Jack using a pack of Cards.

Account
Cards

2.UML class graph



b) main() function design



4. Implementation:

EEE102_Assessment5\Account.h
 EEE102_Assessment5\Cards.h
 EEE102_Assessment5\Player.h
 EEE102_Assessment5\Account.cpp
 EEE102_Assessment5\Cards.cpp
 EEE102_Assessment5\Player.cpp
 EEE102_Assessment5\main.cpp
 EEE102_Assessment5\blackJack.dat

5. Testing

a) Ordinary Testing

I) Register New Account & show Achievement List

```
C:\WINDOWS\system32\cmd.exe
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
2
Enter account ID: Hugar
5Enter the ACCOUNT name : Hugar
Enter the account's PIN: Hugar
Enter the account's Gender: Hugar
Enter the account's Region: Hugar
Enter the account's Motto: Hugar
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
3
#####
# Playerqwertqwertqwertqwert  Name      k #
# Gender      k | Region      k #
# Wealth    100 | NumberOfGames 0 #
# Motto      k #
#####
B#####
E#####
# Player  sycdl234  Name      Yang #
# Gender   1 | Region      1 #
# Wealth   41 | NumberOfGames 3 #
# Motto    1 #
#####
ar#####
a# Player      Hugar  Name      Hugar #
# Gender  Hugar | Region      Hugar #
# Wealth   100 | NumberOfGames 0 #
# Motto    Hugar #
#####
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
```

II) Log in and Play

```

0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
1
Please Enter your account ID:
sycd1234
Please Enter your account PIN
sycd
Looking for Account...
Log in successfully. Game Starts!
#####
# Player  sycd1234  Name      Yang # Dealer  007  Name      James #
# Gender   1      | Region   1 # Gender  Male | Region   Las Vegas #
# Wealth   41     | NumberOfGames 3 # Wealth 999999 | NumberOfGames 999999 #
# Motto     1     | # Motto     YourMoneyIsMine #
#####

You have 41 Please place your bet: 20
Game starts!
Here are the dealer's initial cards:
    diamond  2  2 total points =    2
    XXXXXXXX XX XX total points =   XX
Here are your intial two cards:
    diamond  4  4 total points =    4
    diamond  7  7 total points =   11
Please give command: 1 Hit, 2 Stand, 3 Increasebet
1
    heart   4  4 total points =   15
Please give command: 1 Hit, 2 Stand, 3 Increasebet
1
    spade   2  2 total points =   17
Please give command: 1 Hit, 2 Stand, 3 Increasebet
2
Dealer's Turn
Dealer's second card:
    heart   5  5 total points =    7
    club   10 10 total points =   17
PUSH
#####
# Player  sycd1234  Name      Yang # Dealer  007  Name      James #
# Gender   1      | Region   1 # Gender  Male | Region   Las Vegas #
# Wealth   41     | NumberOfGames 4 # Wealth 999999 | NumberOfGames 999999 #
# Motto     1     | # Motto     YourMoneyIsMine #
#####
Play for another time?(Y/N): n
Looking for Account...
Cannot find account. Wrong ID or PIN Entered
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
0
Done.
请按任意键继续 . . .

```

III) ReOpen && Show Achievement List:

```

0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
3
#####
# Playerqwertqwertqwertqwert  Name      k #
# Gender      k | Region      k #
# Wealth    100 | NumberOfGames  0 #
# Motto                                     k #
#####
#####
# Player  sycd1234  Name      Yang #
# Gender    1 | Region      1 #
# Wealth    41 | NumberOfGames  4 #
# Motto                                     1 #
#####
#####
# Player      Hugar  Name      Hugar #
# Gender  Hugar | Region      Hugar #
# Wealth    100 | NumberOfGames  0 #
# Motto                                     Hugar #
#####
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList

```

b) Erroneous Input

```
C:\WINDOWS\system32\cmd.exe
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
888
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
-2
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
kkk
Please enter an integer: 1
Please Enter your account ID:
gggggggggggg
Please Enter your account PIN
sdasdasd
Looking for Account...
Looking for Account...
Looking for Account...
Cannot find account. Wrong ID or PIN Entered
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
2
Enter account ID: yyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyyy
55Sorry, ID length cannot exceed 20 charactersEnter account ID: sz920105
8Enter the ACCOUNT name : Zheng
Enter the account's PIN: 970105
Enter the account's Gender: MALE
Enter the account's Region: XI AN JIAO TONG LIVERPOOL UNVERISITY
Sorry, ID length cannot exceed 12 charactersEnter the account's Region: XI AN
Enter the account's Motto: Winter is Coming
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
3
#####
# Playerqwertqwertqwertqwert Name k #
# Gender k | Region k #
# Wealth 100 | NumberOfGames 0 #
# Motto k #
#####
# Player syed1234 Name Yang #
# Gender 1 | Region 1 #
# Wealth 41 | NumberOfGames 4 #
# Motto 1 #
#####
# Player Hugar Name Hugar #
# Gender Hugar | Region Hugar #
# Wealth 100 | NumberOfGames 0 #
# Motto Hugar #
#####
# Player sz920105 Name Zheng #
# Gender MALE | Region XI AN #
# Wealth 100 | NumberOfGames 0 #
# Motto Winter is Coming #
#####
0 = exit, 1 = LogIn, 2=CreateNewAccount, 3=AchievementList
```