

FOOP HW4

B01902102 葉子瑄

1) the player's strategy that you implemented

The basic strategy is referred to the picture on the right. Following is a little different.

- Surrender:** 30 percent chance to surrender when the open card's value is between 5-7. Because the strategy of the picture is decided on two card open and I want to close it, and ten have 30 percent chance appear.
- Insurance:** Unless the player is sure that get blackjack's probability is more than 2, so basically the player won't buy insurance.
- Bet:** Base on Martingale system. The unit of Bet 1 percent of number of chip. If Bet is smaller than 1, then increase to 1; When losing the game, double the bet. When wining the game back to unit bet. (1 unit is $nChip \sim / 100$)

2) the design of all the classes related to the casino, and the reason that you chose this design

- POOCasino:** run the blackjack game. To handle the arguments passed by user.
- Blackjack:** to demonstrate the game, and print game message in order to make code readable.
- Dealer:** handle the hand and action of dealer in order to make blackjack lighter.
- Deck:** use to shuffle and assign card. The reason is same as Dealer.
- PlayerAgent:** use to store player's status, and help blackjack pass the parameter that is belong to the player.

The reason is that I can control player more easily and imaginable.

3) the result of the duel between you and your classmate (her/his name and school ID), and any experience that you two learned during the duel

- 李佳柔 b01902058 (nRound = 100, nChip = 10000)

STRATEGY CHART

	2	3	4	5	6	7	8	9	T	A
5-8	H	H	H	H	H	H	H	H	H	H
9	H	D	D	D	D	H	H	H	H	H
10	D	D	D	D	D	D	D	D	H	H
11	D	D	D	D	D	D	D	D	D	D
12	H	H	S	S	S	H	H	H	H	H
14-13	S	S	S	S	S	H	H	H	H	H
15	S	S	S	S	S	H	H	X	X	X
16	S	S	S	S	S	H	H	X	X	X
17	S	S	S	S	S	S	S	S	S	U
18	S	S	S	S	S	S	S	S	S	S
A2,A3	H	H	D	D	H	H	H	H	H	H
A4,A5	H	H	D	D	H	H	H	H	H	H
A6	H	D	D	D	H	H	H	H	H	H
A7	S	D	D	D	S	S	H	H	H	H
A8	S	S	S	S	S	S	S	S	S	S
22,33	P	P	P	P	P	H	H	H	H	H
44	H	H	P	P	H	H	H	H	H	H
55	D	D	D	D	D	D	D	D	H	H
66	P	P	P	P	P	H	H	H	H	H
77	P	P	P	P	P	H	H	H	H	H
88	P	P	P	P	P	P	P	P	P	Q
99	P	P	P	P	P	S	P	P	S	S
TT	S	S	S	S	S	S	S	S	S	S
AA	P	P	P	P	P	P	P	P	P	P

S	Stand
D	Double/Stand
H	Hit
D	Double/Hit
P	Split
X	Surrender/Hit
U	Surrender/Stand
Q	Surrender/Split

B019021023 bets 800.
 3 table:
 B019020580Hand:[C8] 8
 B019020581Hand:[C4] 4
 B019021022Hand:[S3] 3
 B019021023Hand:[C5] 5
 Dealer Hand:[CA] 11
 ----start----
 Dealer'open is A.'
 B019020580 buys insurance.
 B019020580 lose 307.0.
 B019020580 5840.0 chips
 B019020581 buys insurance.
 B019020581 lose 135.5.
 B019020581 2582.5 chips
 B019021022 buys insurance.
 B019021022 lose 400.0.
 B019021022 15750.0 chips
 B019020580's turn:
 Hand:[C8 H3] 11
 hit.
 Hand:[C8 H3 S4] 15
 hit.
 Hand:[C8 H3 S4 C2] 17
 stand.
 B019020581's turn:
 Hand:[C4 S7] 11
 hit.
 Hand:[C4 S7 H2] 13
 hit.
 Hand:[C4 S7 H2 DK] 23
 Bust!
 B019021022's turn:
 Hand:[S3 H9] 12
 hit.
 Hand:[S3 H9 S5] 17
 stand.
 B019021023's turn:
 Hand:[C5 S6] 11
 double down.
 dealer's turn.
 Dealer Hand:[CA CT] 21
 B019020580 lose 614.0.
 B019020580 5226.0 chips
 B019020581 lose 271.0.
 B019020581 2311.5 chips
 B019021022 lose 800.0.
 B019021022 14950.0 chips
 B019021023 lose 1600.0.
 B019021023 12500.0 chips

2 table:
 B019020580Hand:[C5] 5
 B019020581Hand:[CJ] 10
 B019021022Hand:[C3] 3
 B019021023Hand:[SJ] 10
 Dealer Hand:[HA] 11
 ----start----
 Dealer'open is A.'
 B019020581 buys insurance.
 B019020581 lose 115.5.
 B019020581 2196.0 chips
 Dealer get blackjack.
 B019020580 lose 522.0.
 B019020580 4704.0 chips
 B019020581 lose 231.0.
 B019020581 1965.0 chips
 B019020581 earn 231.0.
 B019020581 2196.0 chips
 B019021022 lose 1600.0.
 B019021022 13350.0 chips
 B019021023 lose 1600.0.
 B019021023 10900.0 chips
 B019020580 bets 470.
 B019020581 bets 219.
 B019021022 bets 3200.
 B019021023 bets 3200.

B019020580 bets 300.
 B019020581 bets 198.
 22 table:
 B019020580Hand:[S4] 4
 B019020581Hand:[SA] 11
 Dealer Hand:[H6] 6
 ----start----
 B019020580's turn:
 Hand:[S4 H4] 8
 B019020580 splited.
 Hand:[S4 C5] 9
 Hand:[H4 C8] 9
 double down.
 stand.
 B019020581's turn:
 Hand:[SA H8] 19
 stand.
 dealer's turn.
 Dealer Hand:[H6 SK] 16
 B019020580 lose 600.0.
 B019020580 2409.0 chips
 B019020580 lose 300.0.
 B019020580 2109.0 chips
 B019020581 earn 198.0.
 B019020581 2180.0 chips

B019020580 bets 470.
 B019020581 bets 219.
 B019021022 bets 3200.
 B019021023 bets 3200.
 1 table:
 B019020580Hand:[C4] 4
 B019020581Hand:[D9] 9
 B019021022Hand:[HQ] 10
 B019021023Hand:[HK] 10
 Dealer Hand:[DQ] 10
 ----start----
 B019020580 surrenders.
 B019020580's turn:
 B019020581's turn:
 Hand:[D9 CQ] 19
 stand.
 B019021022's turn:
 Hand:[HQ H7] 17
 stand.
 B019021023's turn:
 Hand:[HK D6] 16
 hit.
 Hand:[HK D6 D7] 23
 Bust!
 dealer's turn.
 Dealer Hand:[DQ D2 SK] 22
 B019020580 lose 235.0.
 B019020580 4469.0 chips
 B019020581 earn 219.0.
 B019020581 2415.0 chips
 B019021022 earn 3200.0.
 B019021022 16550.0 chips
 B019021023 lose 3200.0.
 B019021023 7700.0 chips

- b. Actually, I have play with other 3 classmates, and I learn that there is no outstanding strategy. 李佳柔 and I broken most frequency because we are gambler. One of my class mate always bet about 3000 and never stay in the end. The other two seldom win a lot, but very often stay long time.
- 4) any part that you implemented that is worth getting “bonus” points
- a. I have done 4 kinds of betting system. Because my roommate tried 3 kinds of game strategy, and the results are not quite different. I used Martingale system for my main player. Then, I try another negative progress system (_4), but just increase 1 time of unit bet when losing the game, and decrease 1 time when winning the game. The third system I used is Oscars Grind System, which is positive progress system (_2) and well recommend to use to avoid lose too much. The last one is bet a unit every time (_3). Following is results.
 - i. 100 rounds: The results are similar and is near the number of chip I give at begin.
 - ii. 500 rounds: Most of time, there is only the last one survive. Sometimes, the other will earn about 4 times of money.
 - iii. 1000 rounds: Most of time, there is only the last one survive. Surprisingly,

B01902102_32 bets 100.	dealer's turn.
775 table:	Dealer Hand:[HA S7] 18
B01902102_32Hand:[C8] 8	B01902102_32 lose 100.0.
Dealer Hand:[CJ] 10	B01902102_32 7550.0 chips
----start----	
B01902102_32's turn:	dealer's turn.
Hand:[C8 CQ] 18	Dealer Hand:[C4 HQ S4] 18
stand.	B019021020 draw.
dealer's turn.	B019021020 72150.0 chips
Dealer Hand:[CJ C5 SK] 25	B01902102_32 lose 100.0.
B01902102_32 earn 100.0.	B01902102_32 7700.0 chips
B01902102_32 10000.0 chips	

the main one will earn above 8 times

once in several test with being broken in the other time.

- iv. 10000 rounds: All users get broken. But, the last one can play thousands of round more than the others.

Thus, don't gamble. The casino always takes your money because it has inexhaustible money. If you desire to play it, don't increase your wager.

↑ Right two picture is the status after 1000 round, the left is when there is remain the last one (775 table = 225 round)

- b. I use assert to make sure my program run well in each round.
- c. Decrease every player 1 chip to make sure they have enough money to bet, And then add back who have enough money.