# The player's strategy that I implemented

I use Blackjack Strategy Chart found on the Internet to decide whether to double/split/hit or not.
Never surrender or buy insurance.
Bet 5 chips if the Player has enough chips or else bet 1 chip.
.toString() returns "Player name = PlayerB02902009, current chips = <chips>"

# The Design of All The Classes Related to The Casino

Only one class POOCasino is used.
Some utility functions to do calculation of card values.
One huge function playRound to handle each round of the game.
I choose this design because I think the game procedure is hard to find duplicate parts and make them individual functions, so I put them all in one functino and try to use comments to make it more easy to read...

# The Result of the Duel

with B02902099 葉政杰

Remaining chips: 4520.0, 470.0, 4992.5, 475.0
Remaining chips: 4897.5, 790.0, 4897.5, 820.0
Remaining chips: 4990.0, 1050.0, 4937.5, 765.0
Remaining chips: 4992.5, 1115.0, 4757.5, 965.0
Remaining chips: 4897.5, 945.0, 4800.0, 1785.0

1000 rounds, starting from 5000 chips, and test for 5 times.
My player always has more than 4500 chips left, but my classmate's player could only have around 1000 chips left.
He uses naive strategies like always double/hit, etc.
We can see that basic strategy can really keep costs low, but still cannot earn money in long term.

# Part That Worth Getting "Bonus" Points

I tried to make the output log more tidy and easy to search for certain round/player's log using the 'grep' command.
If there are increase or decrease of chips, they are showed at the tail of each line.
output log looks like the following

```
Round 98	Player2	bet 5 chips.
Round 98	Player2	has cards 11(face-up) and 9
Round 98	Dealer	has cards 4(face-up) and 10
Round 98	Player2	didn't surrender.
Round 98	Player2	hit 0 times and then stand.
Round 98	Dealer	hit 1 times and then busted.
Round 98	Dealer	has card 4
Round 98	Dealer	has card 10
Round 98	Dealer	has card 11
Round 98	Player2	result: dealer busted, got 1 bet chips  (+5 chips).
Round 98	Player2	has card 11
Round 98	Player2	has card 9
Remaining chips: 0.0, 72.5, 0.0, 0.0
Round 99	Player2	bet 5 chips.
Round 99	Player2	has cards 10(face-up) and 6
Round 99	Dealer	has cards 11(face-up) and 6
Round 99	Player2	didn't surrender.
Round 99	Player2	hit 1 times and then stand.
Round 99	Dealer	hit 1 times and then busted.
Round 99	Dealer	has card 11
Round 99	Dealer	has card 6
Round 99	Dealer	has card 11
Round 99	Player2	result: dealer busted, got 1 bet chips  (+5 chips).
Round 99	Player2	has card 10
Round 99	Player2	has card 6
Round 99	Player2	has card 5
Remaining chips: 0.0, 77.5, 0.0, 0.0
```

# Amendment of the spec.

If a player has less than 0 chips after making bet or making negative bet, then he is out of the game.

All players flip up the face-down card at the same time and they can see every other players' cards after then.
After flipping the cards up, dealer ask each player whether to split one-by-one.
After all the splitting is done, the dealer start to deal with each player one-by-one until he stands/busted.

Dealer flip up his face-down card after all the players stand/busted.

Chips goes to the casino immediately after a player surrenders.
Chips that is used to bet is deducted from chips the player owns, and will be returned to the player if he doesn’t lose it.

double down always make the bet double.
no need to pay one more insurance fee if split.

total_player: number of players that are not broke after last round