

Backend Exercise



Bingo is a game of chance for one player, which is played with numbered balls (from 1 to 60, inclusive) and at least one card.

The player decides how many cards he wants to play with, with each card having a cost equal to the bet amount set by the player (by default the bet amount is 1).

For example, if the player decides to play with 3 cards and place a bet of 5, the cost of the play will be $3 \times 5 = 15$.

The cards are made up of 15 cells (3 rows, 5 columns) with different numbers (also from 1 to 60).

The objective of the game is to mark the numbers on the card as the balls comes out and complete the entire card (called bingo).

In addition to bingo, which is the top prize, there are other prizes of lesser value where you are required to complete a certain pattern of cells on the card (e.g. the bottom line).

Examples of winning patterns:

```
Linha
-----
XXXXX
-----
```

```
Letra 'V'
X---X
-X-X-
--X--
```

```
Bingo
XXXXX
XXXXX
XXXXX
```

The amount the player wins depends not only on the amount associated with the prize but also on the amount wagered by the player.

For example, on a play with bet 2 and a prize of 20 pays the player $2 \times 20 = 40$.

Add comments to the code and complete the functions where you can find ">>> your code goes here <<<" to implement the bingo game described above.

Note:

The exercise assumes the use of Python 3.6 or higher.

To check your solution, if you use seed 0 for the random number generator, you should get a bingo on move number 11883 (use the main() function to test) with the following output:



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```
> python minibingo.py
Placing bet: 1
Balance change: 27225 -5 => 27220
Draw: [4, 7, 9, 10, 12, 13, 17, 18, 19, 20, 21, 24, 25, 27, 28, 31, 33, 35, 39, 40, 44, 46, 49, 52, 53, 54, 55, 56, 57, 59]
Checking card: [32, 33, 3, 38, 14, 49, 17, 20, 23, 55, 25, 26, 27, 31, 57]
Card hits: -X---XXX-XX-XXX
Checking prize: XXXXXXXXXXXXXXXX (value=2000)
Checking prize: X---XXXXXXX---X (value=200)
Checking prize: X---XX---XX---X (value=20)
Checking prize: --X---X-X-X---X (value=10)
Checking prize: -----XXXXX----- (value=10)
Checking prize: X---X-----X---X (value=5)
Checking card: [33, 35, 7, 40, 9, 39, 10, 46, 49, 17, 19, 52, 20, 55, 59]
Card hits: XXXXXXXXXXXXXXXX
Checking prize: XXXXXXXXXXXXXXXX (value=2000)
Prize won!
Checking prize: X---XXXXXXX---X (value=200)
Prize won!
Checking prize: X---XX---XX---X (value=20)
Prize won!
Checking prize: --X---X-X-X---X (value=10)
Prize won!
Checking prize: -----XXXXX----- (value=10)
Prize won!
Checking prize: X---X-----X---X (value=5)
Prize won!
Checking card: [36, 5, 7, 40, 41, 44, 14, 47, 23, 21, 22, 55, 58, 28, 31]
Card hits: --XX-X---X-X-XX
Checking prize: XXXXXXXXXXXXXXXX (value=2000)
Checking prize: X---XXXXXXX---X (value=200)
Checking prize: X---XX---XX---X (value=20)
Checking prize: --X---X-X-X---X (value=10)
Checking prize: -----XXXXX----- (value=10)
Checking prize: X---X-----X---X (value=5)
Checking card: [1, 34, 36, 4, 6, 43, 46, 47, 17, 52, 56, 26, 60, 29, 31]
Card hits: ---X-X-XXX---X
Checking prize: XXXXXXXXXXXXXXXX (value=2000)
Checking prize: X---XXXXXXX---X (value=200)
Checking prize: X---XX---XX---X (value=20)
Checking prize: --X---X-X-X---X (value=10)
Checking prize: -----XXXXX----- (value=10)
Checking prize: X---X-----X---X (value=5)
Checking card: [32, 1, 5, 37, 40, 41, 13, 46, 47, 16, 15, 53, 22, 21, 54]
Card hits: ---X-XX---X-XX
Checking prize: XXXXXXXXXXXXXXXX (value=2000)
Checking prize: X---XXXXXXX---X (value=200)
Checking prize: X---XX---XX---X (value=20)
Checking prize: --X---X-X-X---X (value=10)
Checking prize: -----XXXXX----- (value=10)
Checking prize: X---X-----X---X (value=5)
Awarding prizes:
Awarding winnings for XXXXXXXXXXXXXXXX (value=2000) with bet 1.
Balance change: 27220 +2000 => 29220
Awarding winnings for X---XXXXXXX---X (value=200) with bet 1.
Balance change: 29220 +200 => 29420
Awarding winnings for X---XX---XX---X (value=20) with bet 1.
Balance change: 29420 +20 => 29440
Awarding winnings for --X---X-X-X---X (value=10) with bet 1.
Balance change: 29440 +10 => 29450
Awarding winnings for -----XXXXX----- (value=10) with bet 1.
Balance change: 29450 +10 => 29460
Awarding winnings for X---X-----X---X (value=5) with bet 1.
Balance change: 29460 +5 => 29465
Balance after play: 29465
```