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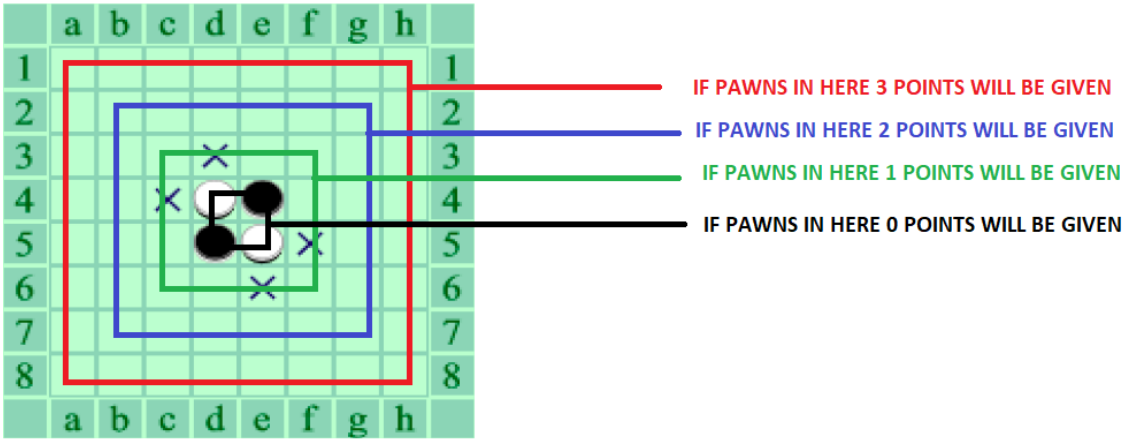
Description Structure Of Game

We wrote an Othello game. In our game, there are three options.

The first option is Human-Computer Play. When human and computer play, the black one is human, and the white one is a computer. The computer uses a heuristic that counts white pawns on the board. The algorithm of the game controls whether the user can play that move or not. The computer looks at all possibilities of moves, calculates their heuristic value, and generates a minimax tree. In the tree, it generates the next three moves and their possibilities with their heuristic and doing alpha-beta pruning. When no move can be played, the game is over. The algorithm counts white and black pawns, deciding who wins the game.

The second option is Computer-Computer play. One of the computers is white pawns, and it uses a heuristic that is the same as the section1's heuristic. The computer that plays Black uses a heuristic that plays on the board to give more points to the pawns closer to the edges. It provides fewer points to the remaining pawns. We know in the Othello game that it becomes difficult for the other player to make a move in that corner after grabbing the corners.

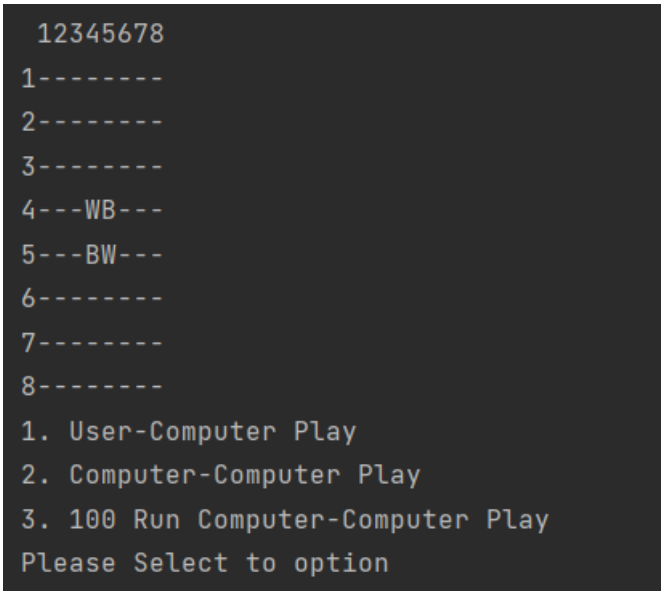
ILLUSTRATION OF THE SECOND HEURISTIC



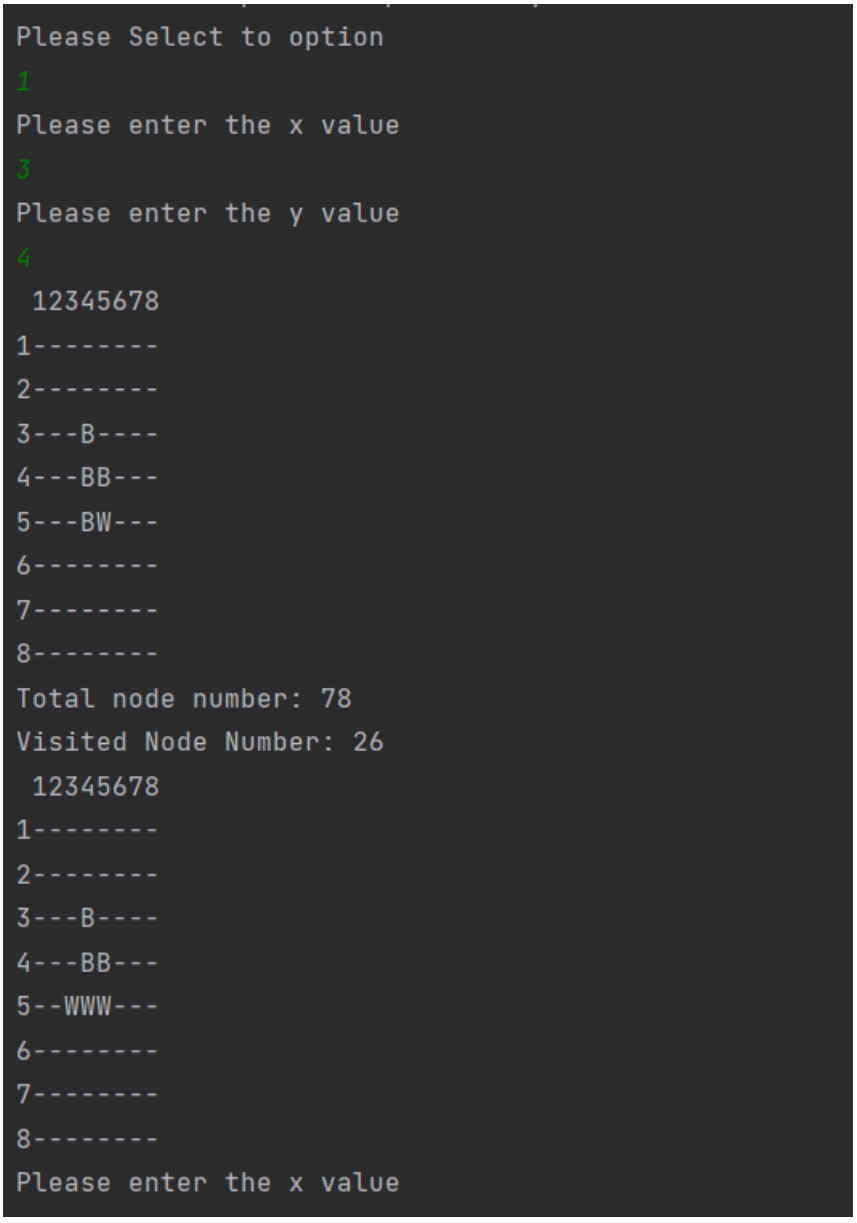
The two computers use a minimax tree with an alpha-beta pruning structure similar to the text described in option 1.

The third option is 100 run with Computer-Computer play. It is the same as the second option, but it will run 100 times.

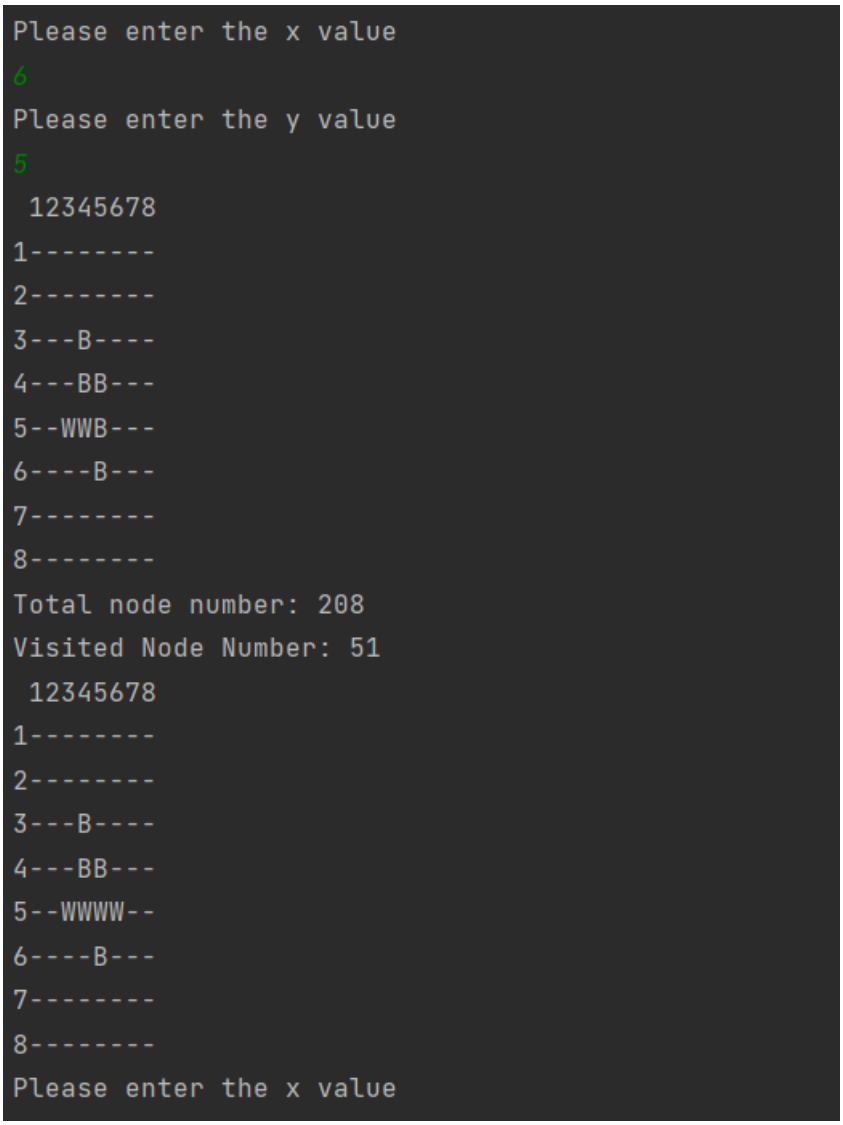
Opening Screen



Option 1 Illustration



After Selecting option 1 that is human-computer play. The human enter x and y values for playing. After user play. The computer that uses white pawns select best move according the heuristic. Then, it play. The game also printed Total of the nodes in minmax three and how many node visited. After that the human enters x,y value again.



After human plays, the computer do same operation. We printed visited node number and total node number again.

```
Please enter the x value
6
Please enter the y value
4
 12345678
1--------
2--------
3---B----
4---BB---
5--WBWW--
6---BB---
7--------
8--------
Total node number: 430
Visited Node Number: 105
 12345678
1--------
2--------
3---B----
4---BB---
5--WBWW--
6---WW---
7----W---
8--------
Please enter the x value
```

You can se visited node number and total node number changes all the time.

```
Please enter the x value
1
Please enter the y value
1
Wrong input
 12345678
1--------
2--------
3---B----
4---BB---
5--WBWW--
6---WW---
7----W---
8--------
```

If user enter wrong input. Game said that and It ask input again.

The game continue like this. At the end of the game we printed winner.

Option 2 Illustration

We export the terminal when we run option two as a pdf. Because it is too big for putting screen shot in here. It names computer-computer-run.pdf.

computer-computer-run.pdf

Option 3 Illustration

We export the terminal when we run option tree as a pdf. Because it is too big for putting screen shot in here. It names" 100-run-computer-computer.pdf."

100-run-computer-computer.pdf

White Pawn Computer	Black Pawn Computer					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					
34	30					

It is same as for 100 of the run.