Checkers Game

Abstract: In this paper I have deployed a game of checkers, in three modes i.e:
1. **Computer v/s Computer**
2. **Computer v/s Human**
3. **Human v/s Human**

I. INTRODUCTION

Board is as given :

b : Black piece
w: White piece
B: Black king
W: White king

Rules:
If a player quits then the opponent will automatically win.
Else if there are no pieces left / there are no legal moves left for a player, opponent wins.

1. Human v/s Human
Input Format :- [from row number][from coln number] [to row number][to coln number]
example: 3a 4b
Piece will move from 3a to 4b.
To quit '-1' is to be entered.

2. Human v/s Computer
Input Format :- [from row number][from coln number] [to row number][to coln number]
example: 3a 4b
Piece will move from 3a to 4b.
To quit '-1' is to be entered.
Black is Human, while white is computer.
Computer uses, minimax algorithm with pruning to decide and make moves.

3. Computer v/s Computer

Input Format :-
-1 : To quit
Any key : To continue.
Both agent's involved are computer only, and use a minimax algorithm for best results.

OUTPUTS:

1. COMPUTER V/S COMPUTER

Output:

2. COMPUTER V/S HUMAN

Output:

```
nehal-hp-notebook: ~/Desktop/AI_GAME PLAYING
Game Endedjayant@nehal-hp-notebook:~/Desktop/AI_GAME
jayant@nehal-hp-notebook:~/Desktop/AI_GAME PLAYING$ .
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 b   b   b   b     3
4   -   -   -   - 4
5 -   -   -   -     5
6   w   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 1 (black) chance, format:=  from:[row][coloum]
3a 4b
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   b   b     3
4   b   -   -   - 4
5 -   -   -   -     5
6   w   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Computer (white) chance, format:=  from:[row][coloum]
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   b   b     3
4   b   -   -   - 4
5 -   w   -   -     5
6   -   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 1 (black) chance, format:=  from:[row][coloum]
3e 4d
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   -   b     3
4   b   b   -   - 4
5 -   w   -   -     5
6   -   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h
```

```
To quit input '-1'
Computer (white) chance, format:=  from:[row][coloum]
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 w   b   -   b     3
4   -   b   -   - 4
5 -   -   -   -     5
6   -   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 1 (black) chance, format:=  from:[row][coloum]
-1
 Player1 QUITs, Computer WINS !!!!
Game Endedjayant@nehal-hp-notebook:~/Desktop/AI_GAME F
```

3. HUMAN V/S HUMAN

```
@nehal-hp-notebook: ~/Desktop/AI_GAME PLAYING
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 b   b   b   b     3
4   -   -   -   - 4
5 -   -   -   -     5
6   w   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 1 (black) chance, format:=  from:[row]
3a 4b
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   b   b     3
4   b   -   -   - 4
5 -   -   -   -     5
6   w   w   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 2 (white) chance, format:=  from:[row]
6d 5c
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   b   b     3
4   b   -   -   - 4
5 -   w   -   -     5
6   w   -   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 1 (black) chance, format:=  from:[row]
4b 6d
   a b c d e f g h
1 b   b   b   b     1
2   b   b   b   b 2
3 -   b   b   b     3
4   -   -   -   - 4
5 -   -   -   -     5
6   w   b   w   w 6
7 w   w   w   w     7
8   w   w   w   w 8
   a b c d e f g h

To quit input '-1'
Player 2 (white) chance, format:=  from:[row]
-1
 Player2 QUITs, Player1 WINS !!!!
```

This was the output of all the three parts.