

CSE 102 Assignment V

In this code, we create a simple battleship game. The code has some parts.

First part is generating board part. In this part I created two board array. One of it created to print on console. Other one is created to store ships place correctly.

The next part is creating ships randomly. I used three function to do that. One of them is 'isValidShipPlace()' function. This function checks if we create ships in this place, the other parts of ships will be out of bound or maybe there were already have ship. If this function return 0 that means you cant generate a ship in this place use random function again and generate new place. The other function is 'generateShips()' function. This function generates places of ships that in which row and column. Also generate that ship will be vertical or horizontal via using `rand() % 2`. The last function is 'shipsPlaces()'. In this function we open ships.txt file and call `generateships()` function four times with determinaning size of ships like that `generateShips(4, file, board)`.

The next part is taking input from user as row and col. According to users input code checks can user hit or miss to ship. If inputs are wrong the program also check it.

The other part is checking that does the ship sank. While doing that firstly generate `sank_status` at the start of code as `[0, 0, 0, 0]`, then call `isShipSank()` function. In this function we take places of the ships from ships.txt according to size of ships. Then checking printing board and board arrays is ship hit. If yes, hit count increases by 1 and if hit count equals to size of ship that mean has the ship sank. `sank_status` of ship changes with 1 and print console the information about is ship sank.

And the last part of the game is `game_over` part. In this part code checks that are all ships sank. If yes ask to user play again or not. If user wants to play again generate board and ships again and start game. If user does not want to play again leave from game.

In this code the most difficult part is that if user wants to quit game press X part for me. Because we take inputs as integer and I cant check user press X or something that except integers. Every time `scanf` returns 0. So I used extra one checking mechanism. I did not want to use `fgets` or something else because of I dont know is it permitted or not.

- **Start part of the game.**

```
goksu@goksu:~/Desktop/CSE-102/Assignment5$ ./as5

Welcome to Battleship Game!

  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  -  -  -  -  -  -  -
8  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit): 8 0
MISS!
  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  -  -  -  -  -  -  -
8  0  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit): 7 4
HIT!
  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  X  -  -  -  -  -  -
8  0  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit):
```

- **Error outputs.**

```
goksu@goksu:~/Desktop/CSE-102/Assignment5

Welcome to Battleship Game!

  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  -  -  -  -  -  -  -
8  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit): 5 5
MISS!
  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  0  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  -  -  -  -  -  -  -
8  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit): 5 5
There is a location that you've already hit
Enter coordinates (X to quit): 15 5
Invalid coordinates! Please enter values between 0 and 9

  0  1  2  3  4  5  6  7  8  9
0  -  -  -  -  -  -  -  -  -  -
1  -  -  -  -  -  -  -  -  -  -
2  -  -  -  -  -  -  -  -  -  -
3  -  -  -  -  -  -  -  -  -  -
4  -  -  -  -  -  -  -  -  -  -
5  -  -  -  -  0  -  -  -  -  -  -
6  -  -  -  -  -  -  -  -  -  -
7  -  -  -  -  -  -  -  -  -  -
8  -  -  -  -  -  -  -  -  -  -
9  -  -  -  -  -  -  -  -  -  -
Enter coordinates (X to quit): 4 5
HIT!
```

- **Sank ship and ships.txt part.**

```
goku@goku: ~/Desktop/CSE-102/Assignment5
9 - - - - -
Enter coordinates (X to quit): 2 3
HIT!
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - X X - - - - -
3 - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 - - - - -
8 - - - - -
9 - - - - -
Enter coordinates (X to quit): 2 4
HIT!
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - X X X - - - -
3 - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 - - - - -
8 - - - - -
9 - - - - -
Enter coordinates (X to quit): 2 5
HIT!
Congratulations! You sank a 4-Cell Ship

  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - X X X X - - -
3 - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 - - - - -
8 - - - - -
9 - - - - -
Enter coordinates (X to quit):
```

```
ships.txt
Ln 1, Col 1
assignment4.c | Assignment5.c | battleship_log.txt
1 2 2 4
2 2 3 4
3 2 4 4
4 2 5 4
5 1 1 3
6 2 1 3
7 3 1 3
8 7 0 3
9 8 0 3
10 9 0 3
11 7 4 2
12 8 4 2
```

- End part of the game.

```
goku@goku: ~/Desktop/CSE-102/Assignment5
8 X - - - - -
9 X - - - - -
Enter coordinates (X to quit): 7 4
HIT!
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - - -
9 X - - - - -
Enter coordinates (X to quit): 8 4
HIT!
Congratulations! You sank a 2-Cell Ship

  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
All ships are sunk! Total shots: 12
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
Press 'N' to play again or 'X' to exit:
```

- Battleship log.txt

```
goku@goku: ~/Desktop/CSE-102/Assignments5
8 X - - - - -
9 X - - - - -
Enter coordinates (X to quit): 7 4
HIT!
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - - -
9 X - - - - -
Enter coordinates (X to quit): 8 4
HIT!
Congratulations! You sank a 2-Cell Ship

  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
All ships are sunk! Total shots: 12
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
Press 'N' to play again or 'X' to exit:
```

- **Play again.**

```
goku@goku: ~/Desktop/CSE-102/Assignments5
HIT!
Congratulations! You sank a 2-Cell Ship

  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
All ships are sunk! Total shots: 12
  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - X - - - - -
2 - X X X X - - -
3 - X - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 X - - - X - - -
8 X - - - X - - -
9 X - - - - -
Press 'N' to play again or 'X' to exit:N

Welcome to Battleship Game!

  0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 - - - - -
8 - - - - -
9 - - - - -
Enter coordinates (X to quit):
```

- **Press X to quit**

```
goku@goku: ~/Desktop/CSE-102/Assignment5
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - - X X 0 - -
6 - - - - - X - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
Enter coordinates (X to quit): 5 4
HIT!
 0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - - X X X 0 - -
6 - - - - - X - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
Enter coordinates (X to quit): 5 3
HIT!
Congratulations! You sank a 3-Cell Ship

 0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - X X X X 0 - -
6 - - - - - X - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
Enter coordinates (X to quit): X
Did you try to quit? Press 'X' to quit. If you press something else the game will start again.
X
goku@goku: ~/Desktop/CSE-102/Assignment5$
```

```
goku@goku: ~/Desktop/CSE-102/Assignment5
 0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - X X X X 0 - -
6 - - - - - 0 - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
Enter coordinates (X to quit): 6 6
MISS!
 0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - X X X X 0 - -
6 - - - - - 0 - - -
7 - - - - - - - - -
8 - - - - - - - - -
9 - - - - - - - - -
Enter coordinates (X to quit): x
Did you try to quit? Press 'X' to quit. If you press something else the game will start again.
A

Welcome to Battleship Game!

 0 1 2 3 4 5 6 7 8 9
0 - - - - -
1 - - - - -
2 - - - - -
3 - - - - -
4 - - - - -
5 - - - - -
6 - - - - -
7 - - - - -
8 - - - - -
9 - - - - -
Enter coordinates (X to quit):
```