**BattleShip Game**

Battleship game is a war game played on ocean by two players. Each player own his battle area and they will get equal number of ships with different sizes. Each player places his ships in his battle area at different positions. Player can not see the ships of other player’s battle area.

In this example, Let’s consider each player gets 3 ships of size 1x3, 2x2 and 1x4.

**Player1 battle Area**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 |
| A |  |  |  |  |  |  |
| B |  |  |  |  |  |  |
| C |  |  |  |  |  |  |
| D |  |  |  |  |  |  |
| E |  |  |  |  |  |  |
| F |  |  |  |  |  |  |

player1 randomly places 3 ships in different positions in his battle area. First ship is spanned in B1, B2 and B3 positions. Next ship is spanned in D1, D2, E1 and E2. Last ship is spanned from F3, F4, F5 and F6.

**Player2 battle Area**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  | 1 | 2 | 3 | 4 | 5 | 6 |
| A |  |  |  |  |  |  |
| B |  |  |  |  |  |  |
| C |  |  |  |  |  |  |
| D |  |  |  |  |  |  |
| E |  |  |  |  |  |  |
| F |  |  |  |  |  |  |

Similarly Player2 can place the same set of ships in different positions in his battle area.

Both the players will get the chance one by one. Player1 fires missile in player2 battle area by calling some position(example A1) on the player2 battle area. If the missile hits the player2 ship, player2 should communicate to the player1 whether it hits the ship or not. In the example above, the missile hits the ship on A1. In this case, player1 gets one more chance of firing as he successfully fired the missile. The same process will get repeated. If the missile landed in empty place, then player2 gets the chance of firing.

If ship is hit in all the positions then that ship is considered as destroyed. if A1, A2, A3 and A4 from player2 battle area is hit by the player1, then that ship is considered as destroyed.

The player who destroys all the ships of other player is winner of the game.

For the sake of simplicity of the problem let’s place the ships at random positions instead of player manually placing the ships.

Example Input:

i/p: Enter size of the battle area MxN?

i/p: 5 5

i/p: Enter number of ships and their size in AxB

i/p: 3

i/p: 1 3

i/p: 2 2

i/p: 1 4

i/p: Player1 - fire the missile

i/p: A1

o/p: hits

i/p: Player1 - fire the missile

i/p: B1

i/p: Player2 - fire the missile

i/p: E1

o/p: hits

i/p: Player2 - fire the missile

i/p: E2

o/p: hits

i/p: Player2 - fire the missile

i/p: E3

i/p: Player1 - fire the missile

i/p: A5

i/p: Player2 - fire the missile

i/p: F1

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o/p player1 wins the game.

Refactoring Tasks:

* Include the concept of different types of missiles. One type of missile can destroy more than one cell.
* Include the concept of different types of ships. Some of the ships, requires two hits for considering the cell as dead.
* What happens if ships start moving? How they can represent their data while ships moving?