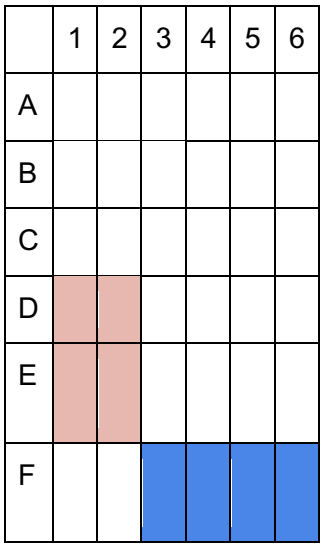
Battleship

Battleship is a war game played on ocean by two players. Each player gets the same number of battleships of a particular type placed on the battle area. Note: One player cannot see the other player's battleship locations.

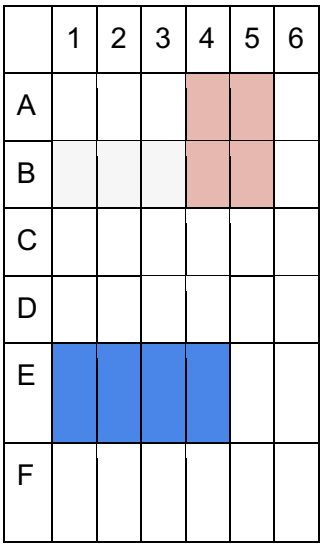
The player who destroys all the ships of the other player is the winner. If there is no winner, the players declare peace.

Eg. Let's consider each player gets 2 ships of size 2x2 and 1x4. First ship is placed between D1, D2, E1 and E2 cells and the second ship, between F3, F4, F5 and F6 cells. Similarly Player-2 can place his/her set of ships in different positions in his/her own battle area.

Player-1 battle Area



Player-2 battle Area



Both players will get a chance to launch missiles one by one. Eg. If Player-1 fires a missile into Player-2's battle area, targeting some location (eg. E1), and the missile hits, Player-2 needs to communicate to Player-1 that there was a hit.

In the example above, the missile hits the ship on E1. In this case, Player-1 gets another chance of firing as he successfully hit Player-2's ship. The game continues like this. If the missile misses, then Player-2 gets to fire. Players may have different number of missiles.

If a ship is hit in all the cells, then that ship is considered destroyed. Eg. if E1, E2, E3 and E4 from Player-2's battle area are hit by the Player-1, then that ship is considered destroyed. Note that only upon hitting a live cell, a player will get another chance. Ships are classified as type P or Q. Type P ships are weaker than type Q ships. Each cell of a Type-Q ship requires 2 accurate missile hits to be destroyed whereas Type-P ship cells will be destroyed only by 1 missile hit.

Input:

Inputs contain dimensions of the battle area (x & y for bottom right corner), battleship type, dimensions (Width X Height) & positions (x & y) for Player-1 and then for Player-2. Finally, Player-1's sequence of missile target cells (x & y) and Player-2's sequence.

Sample Input:
Enter area boundaries: 5 E
Type for battleship 1: Q
Dimension for battleship 1: 1 1
Location of battleship 1 for player A: A1
Location of battleship 1 for player B: B2
Type for battleship 2: P
Dimension for battleship 2: 2 1
Location of battleship 2 for player A: D4
Location of battleship 2 for player B: C3
Missile targets for player A: A1 B2 B2 B3
Missile targets for player B: A1 B2 B3 A1 D1 E1 D4 D4 D5 D5

Player-1 battle Area

	1	2	3	4	5
A	Q				
B					
C					
D				P	P
E					

Player-2 battle Area

	1	2	3	4	5
A					
B		Q			
C			P	P	
D					
E					

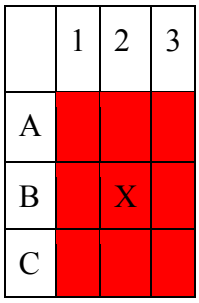
Sample Output:
Player-1 fires a missile with target A1 which missed
Player-2 fires a missile with target A1 which hit
Player-2 fires a missile with target B2 which missed
Player-1 fires a missile with target B2 which hit
Player-1 fires a missile with target B2 which hit
Player-1 fires a missile with target B3 which missed
Player-2 fires a missile with target B3 which missed
Player-1 has no more missiles left
Player-2 fires a missile with target A1 which hit
Player-2 fires a missile with target D1 which missed
Player-1 has no more missiles left
Player-2 fires a missile with target E1 which missed

Player-1 has no more missiles left
Player-2 fires a missile with target D4 which hit
Player-2 fires a missile with target D4 which missed
Player-1 no more missiles left
Player-2 fires a missile with target D5 which hit
Player-2 won the battle

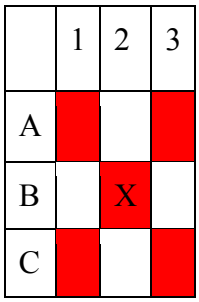
Constraints:
1 <= Width of Battle area (M') <= 9,
A <= Height of Battle area (N') <= Z
1 <= Number of battleships <= M' * N'
Type of ship = {'P', 'Q'}
1 <= Width of battleship <= M'
A <= Height of battleship <= N'
1 <= X coordinate of ship <= M'
A <= Y coordinate of ship <= N'

Problem extensions:

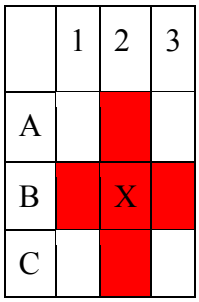
- Include the concept of different types of missiles. One type of missile can destroy more than one cell, let say missile of
    - Type -Alpha if targeted for cell B2 then it will destroy cells A1, A2, A3, B1, B2, B3, C1, C2, C3



    - Type-Beta if targeted for cell B2 then it will destroy cells A1, A3, B2, C1, C3



    - Type-Gamma if targeted for cell B2 then it will destroy cells A2, B1, B2, B3, C2



- Custom number of ships
- What will happen if ships start moving? How they can represent their data while it's moving?