The game terminates as follows:

- If at some stage no (red or blue) pieces at all are left on the board, then the game is *drawn*.
- If, when it is his/her turn, a player cannot move anywhere, then the game is declared a *stalemate* and is *drawn*.
- If one player has no pieces left on the board, then that player *loses* and the other player wins.
- If the game lasts for 250 moves without a winner, then it is declared an *exhausted draw*.

Part 1 – Getting to know the Game

Question 1

	1	2	3	4	5	6	7	8
1	b							r
2		r				b		r
3				b	b		r	b
4	b	b				r		
5			r				b	
6		b				r		
7	b		b		b	r	r	r
8			r				r	

Draw the board state after a turn of Conway's Crank, given the left board.

	1	2	3	4	5	6	7	8
1							r	
2					b	b		r
3	b	b	b		b			b
4		b	b	b	b	r		b
5	b		r			r	b	
6		b	b	b	r			r
7			b	b	b			r
8		b		b			r	r

Download the Prolog program `war_of_life.pl` from CATE.

This provides a set of predicates for playing the game:

Top Level Predicates in File

`start_config(-InitialBoardState)`
This returns an initial randomised board state with 12 pieces for each player on an 8x8 board.

`draw_board(+BoardState)`
Given a board state in the format described below, this predicate will present it on screen.

`next_generation(+BoardState, -NextGenerationBoardState)`
This performs a Conway Crank and produces the next generation board state.

`play(+Showboard, +FirstPlayerStrategy, +SecondPlayerStrategy, -NumberOfMoves, -WinningPlayer)`
This will play a game given the strategy of player 1 and the strategy of player 2. The `+Showboard` variable is either set to `verbose`, in which case it will print out the board states as the game progresses, or `quiet`, in which case it just returns an answer, namely the `NumberOfMoves` in the completed game and the colour of the `WinningPlayer`.

Board states are represented in the program as pairs of lists, where the first list contains the co-ordinates of all the alive blue pieces and the second list contains the co-ordinates of all the alive red pieces. For example, this is a simple board state with two alive blues and one alive red:

[[[3,4],[5,7]],[[8,8]]]