Supplementary: Graphical basis for Connect 4 determination

The boards below use coordinates in row, column.

For each of the following analyses, only the line corresponding to moveRow and moveColumn is considered to determine if four same-player adjacent moves are connected.

Row analysis

1, 1	1, 2	1, 3	1, 4	1, 5	1, 6	1, 7
2, 1	2, 2	2, 3	2, 4	2, 5	2, 6	2, 7
3, 1	3, 2	3, 3	3, 4	3, 5	3, 6	3, 7
4, 1	4, 2	4, 3	4, 4	4, 5	4, 6	4, 7
5, 1	5, 2	5, 3	5, 4	5, 5	5, 6	5, 7
6, 1	6, 2	6, 3	6, 4	6, 5	6, 6	6, 7

- A row is iterated through by its column elements.

Column analysis

1, 1	1, 2	1, 3	1, 4	1, 5	1, 6	1, 7
2, 1	2, 2	2, 3	2, 4	2, 5	2, 6	2, 7
3, 1	3, 2	3, 3	3, 4	3, 5	3, 6	3, 7
4, 1	4, 2	4, 3	4, 4	4, 5	4, 6	4, 7
5, 1	5, 2	5, 3	5, 4	5, 5	5, 6	5, 7
6, 1	6, 2	6, 3	6, 4	6, 5	6, 6	6, 7

- A column is iterated through by its row elements.

Diagonal analysis 1: left to right \

1, 1	1, 2	1, 3	1, 4	1, 5	1, 6	1, 7
2, 1	2, 2	2, 3	2, 4	2, 5	2, 6	2, 7
3, 1	3, 2	3, 3	3, 4	3, 5	3, 6	3, 7
4, 1	4, 2	4, 3	4, 4	4, 5	4, 6	4, 7
5, 1	5, 2	5, 3	5, 4	5, 5	5, 6	5, 7
6, 1	6, 2	6, 3	6, 4	6, 5	6, 6	6, 7

- The starting elements would have row = 1 or column = 1.
- The ending elements would have row = 6 or column = 7.
- Skipped diagonals are not analysed for Connect 4, because they cannot fit 4 elements.

Diagonal analysis 2: left to right /

1, 1	1, 2	1, 3	1, 4	1, 5	1, 6	1, 7
2, 1	2, 2	2, 3	2, 4	2, 5	2, 6	2, 7
3, 1	3, 2	3, 3	3, 4	3, 5	3, 6	3, 7
4, 1	4, 2	4, 3	4, 4	4, 5	4, 6	4, 7
5, 1	5, 2	5, 3	5, 4	5, 5	5, 6	5, 7
6, 1	6, 2	6, 3	6, 4	6, 5	6, 6	6, 7

- The starting elements would have row = 6 or column = 1.
- The ending elements would have row = 1 or column = 7.
- Skipped diagonals are not analysed for Connect 4, because they cannot fit 4 elements.

Below: The counting iteration

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Counting iteration

Iterating through a line (row, column, or diagonal) to count same-player, adjacent moves and determine if four are connected. Three orientation-normalised examples are below.

Player \Column	1	2	3	4	5	6	7
🔴	🔴	🔴	🔴	🟡	🔴	🔴	🔴
Count:	1	2	3	0	1	2	3
🟡		🟡	🔴	🟡	🟡	🟡	🟡
Count:	0	1	0	1	2	3	4
🔴		🔴				🟡	
Count:	0	1	0	0	0	0	0