ENGG1110 Problem Solving by Programming (Fall 2021)
Project test cases for TA1

Besides writing clearly in text, you can also give feedback is in the format of: `<test case>-<grading item>`
You need to pay attention to the **texts in blue** in the test cases.

Description on each test case:

#Test case	Brief description	Associated grading item
1	Game with 2 human players, invalid input range, player sequence, column full, win at the last move.	C1, C2, C3, C4, C5fgh
2	Draw game, no incorrect winning conditions	C1, C2, C3ab, C4, C5aegh
3	Draw game, no incorrect winning conditions	C1, C2, C3ab, C4, C5aegh
4	Draw game, no incorrect winning conditions	C1, C2, C3ab, C4, C5aegh
5	Draw game, no incorrect winning conditions	C1, C2, C3ab, C4, C5aegh
6	Player 1 wins for horizontal	C1, C2, C3ab, C4, C5bgh
7	Player 2 wins for horizontal	C1, C2, C3ab, C4, C5bgh
8	Player 1 wins for vertical	C1, C2, C3ab, C4, C5cgh
9	Player 2 wins for vertical	C1, C2, C3ab, C4, C5cgh
10	Player 1 wins for forward diagonal	C1, C2, C3ab, C4, C5dgh
11	Player 2 wins for backward diagonal	C1, C2, C3ab, C4, C5dgh

Other remarks:
1. If there are some "floating" O or X, C3ab (4%) should be deducted. And specify the test case where you observe this error.
2. If the game ends unexpectedly, C5e (4%) should be deducted. And specify the test case where you observe the error.
3. The program does not terminate after showing the end game message, C5h (2%) should be deducted. And specify the test case where you observe the error.

4. Each incorrect test point deducted 1 point in the corresponding grading item, except 2% for C5bcd (test cases 6-11) and 4% for C5f (test case 1)
5. Make sure you don't deduct the same item twice.

#Test case	Input	Expected visualization

1.1	2 1	**Enter the number of human players [1-2]:**
		2 1
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		` 1 2 3 4 5 6 7`
		Player 1's turn:
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`|O| | | | | | |`
		` 1 2 3 4 5 6 7`
		Player 2's turn:

1.2	0 -1 8 9 4	`0 -1 8 9 4`
		Input out of range. Please input again:
		Input out of range. Please input again:
		Input out of range. Please input again:
		Input out of range. Please input again:
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`|O| | |X| | | |`
		` 1 2 3 4 5 6 7`
		Player 1's turn:

1.3	0 -1 8 9 3	`0 -1 8 9 3`
		Input out of range. Please input again:
		Input out of range. Please input again:
		Input out of range. Please input again:
		Input out of range. Please input again:
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`|O| |O|X| | | |`
		` 1 2 3 4 5 6 7`
		Player 2's turn:

1.4	3 3 3 3 3 3	`3 3 3 3 3 3`
		`| | | | | | | |`
		`| | | | | | | |`

3

```
| | | | | | | |
| | | | | | | |
| | |X| | | | |
|O| |O|X| | | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | |O| | | | |
| | |X| | | | |
|O| |O|X| | | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | | | | | | |
| | | | | | | |
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|O| |O|X| | | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | | | | | | |
| | |O| | | | |
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|O| |O|X| | | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|O| |O|X| | | |
 1 2 3 4 5 6 7
```
Player 1's turn:
Column is full. Please input again:

1.5	3 3 5	3 3 5

Column is full. Please input again:
Column is full. Please input again:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|O| |O|X|O| | |
 1 2 3 4 5 6 7
```
Player 2's turn:

1.6	3 3 4	3 3 4

<table>
<tr><td></td><td></td><td>

Column is full. Please input again:
Column is full. Please input again:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|O| |O|X|O| | |
 1 2 3 4 5 6 7
```
Player 1's turn:
</td></tr>
<tr><td>

1.7
</td><td>

1 1 2 2 4 4 5
5 6 6 7 7
</td><td>

```
1 1 2 2 4 4 5 5 6 6 7 7
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
| | |O| | | | |
|O| |X|X| | | |
|O| |O|X|O| | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|X| |O| | | | |
|O| |X|X| | | |
|O| |O|X|O| | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|X| |O| | | | |
|O| |X|X| | | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|X| |O| | | | |
|O|X|X|X| | | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X| | | | |
|X| |O|O| | | |
|O|X|X|X| | | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
```
</td></tr>
</table>

```
| | |O| | | | |
| | |X|X| | | |
|X| |O|O| | | |
|O|X|X|X| | | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O| | | |
|O|X|X|X|O| | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O|X| | |
|O|X|X|X|O| | |
|O|O|O|X|O| | |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O|X| | |
|O|X|X|X|O| | |
|O|O|O|X|O|O| |
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O|X| | |
|O|X|X|X|O|X| |
|O|O|O|X|O|O| |
 1 2 3 4 5 6 7
```
Player 1's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O|X| | |
|O|X|X|X|O|X| |
|O|O|O|X|O|O|O|
 1 2 3 4 5 6 7
```
Player 2's turn:
```
| | |X| | | | |
| | |O| | | | |
| | |X|X| | | |
|X| |O|O|X| | |
|O|X|X|X|O|X|X|
|O|O|O|X|O|O|O|
```

		`1 2 3 4 5 6 7` `Player 1's turn:`

1.8	1 1 2 2 4 4 5
	5 6 6 7 7 1 2
	2 5 7 6 7 6
		`...`
		`|O|O|X|X|X|X|O|`
		`|X|X|O|O|X|X|O|`
		`|O|X|X|X|O|X|X|`
		`|X|O|O|O|X|O|O|`
		`|O|X|X|X|O|X|X|`
		`|O|O|O|X|O|O|O|`
		`1 2 3 4 5 6 7`
		`Congratulations! Player 2 wins!`

2	2 1 1 2 2 1 3
	3 4 4 1 5 5 2
	6 6 7 7 2 1 3
	3 4 4 1 5 5 2
	6 6 7 7 3 5 4
	3 6 4 7 6 2 7
	5
		`...`
		`|X|X|O|O|X|O|O|`
		`|O|O|X|X|O|X|X|`
		`|X|X|O|O|X|O|O|`
		`|O|O|X|X|O|X|X|`
		`|X|X|O|O|X|O|O|`
		`|O|O|X|X|O|X|X|`
		`1 2 3 4 5 6 7`
		`Draw game.`

3	2 2 1 2 1 2 1
	6 7 6 7 6 7 4
	3 4 3 4 3 1 5
	1 5 1 5 3 4 3
	4 3 4 5 2 5 2
	5 2 7 6 7 6 7
	6
		`...`
		`|O|X|O|X|O|X|O|`
		`|O|X|O|X|O|X|O|`
		`|O|X|O|X|O|X|O|`
		`|X|O|X|O|X|O|X|`
		`|X|O|X|O|X|O|X|`
		`|X|O|X|O|X|O|X|`
		`1 2 3 4 5 6 7`
		`Draw game.`

4	2 1 2 2 1 1 2
	2 1 1 2 2 1 6
	7 7 6 6 7 7 6
	6 7 7 6 5 3 3
	5 5 3 3 5 5 3
	3 5 4 4 4 4 4
	4
		`...`
		`|X|O|O|X|X|X|O|`
		`|O|X|X|O|O|O|X|`
		`|X|O|O|X|X|X|O|`
		`|O|X|X|O|O|O|X|`
		`|X|O|O|X|X|X|O|`
		`|O|X|X|O|O|O|X|`
		`1 2 3 4 5 6 7`
		`Draw game.`

5	2 2 1 1 2 1 2
	2 1 2 1 1 2 4
	3 3 4 3 4 4 3
	4 3 3 4 6 5 5
	7 7 6 5 6 6 5
	7 7 6 7 7 5 5
	6
		`...`
		`|O|X|O|X|O|X|O|`
		`|X|O|X|O|X|O|X|`
		`|X|O|X|O|X|O|X|`
		`|O|X|O|X|O|X|O|`
		`|O|X|O|X|O|X|O|`
		`|X|O|X|O|X|O|X|`
		`1 2 3 4 5 6 7`
		`Draw game.`

6	2 1 2 2 3 3 4	`...`

	4 4 5 4 5	`| | | | | | | |`
		`| | | | | | | |`
		`| | | |X| | | |`
		`| | | |X| | | |`
		`| |O|O|O| | |`
		`|O|X|X|X|O| | |`
		` 1 2 3 4 5 6 7`
		`Congratulations! Player 1 wins!`

7	2 3 3 4 4 5 5
	5 6 4 6
		`...`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | |O|O| | |`
		`| | |X|X|X|X| |`
		`| | |O|O|O|X| |`
		` 1 2 3 4 5 6 7`
		`Congratulations! Player 2 wins!`

8	2 2 1 1 4 1 6
	1 7 1 7 1
		`...`
		`| | | | | | | |`
		`|O| | | | | | |`
		`|O| | | | | | |`
		`|O| | | | | | |`
		`|O| | | | | | |`
		`|X|O| |X| |X|X|`
		` 1 2 3 4 5 6 7`
		`Congratulations! Player 1 wins!`

9	2 6 7 6 7 5 6
	4 6 7 6 7 6
		`...`
		`| | | | | |X| |`
		`| | | | | |X| |`
		`| | | | | |X|O|`
		`| | | | | |X|O|`
		`| | | | | |O|X|`
		`| | |O|O|O|O|X|`
		` 1 2 3 4 5 6 7`
		`Congratulations! Player 2 wins!`

10	2 4 5 6 7 5 6
	7 4 7 4 6 5 7
		`...`
		`| | | | | | | |`
		`| | | | | | | |`
		`| | | | | | |O|`
		`| | | |X|X|O|O|`
		`| | | |X|O|X|O|`
		`| | | |O|X|O|X|`
		` 1 2 3 4 5 6 7`
		`Congratulations! Player 1 wins!`

11	2 4 5 2 3 5 4
	3 2 4 3 2 2
		`...`
		`| | | | | | | |`
		`| | | | | | | |`
		`| |X| | | | | |`

		``	|O|X|O|		|```
					``
						|X|O|X|O|	|```
							``
								|O|X|O|X|	|```
									``` 1 2 3 4 5 6 7```
									`Congratulations! Player 2 wins!`