

## 井字遊戲

Tic-Tac-Toe (井字遊戲) is a game for two players, X and O, who take turns marking the cells in a 3x3 grid. The player who succeeds in placing three of their marks in a horizontal, vertical, or diagonal row wins the game. The following example game is won by the player X.



Step	what program do	Action and Presentation									
1	Inform both players about the positions 1~9 of the board at the beginning of the game.	Draw a 3x3 board that shows position numbers 1~9 in the corresponding cells of the board. <table border="1" data-bbox="1185 837 1340 985"> <tr><td>1</td><td>2</td><td>3</td></tr> <tr><td>4</td><td>5</td><td>6</td></tr> <tr><td>7</td><td>8</td><td>9</td></tr> </table>	1	2	3	4	5	6	7	8	9
1	2	3									
4	5	6									
7	8	9									
2	Keep track of whose turn it is.	Indicate the current player (X or O).									
3	Allow a player to select a cell 1~9 in the board at each round. Make sure disallow illegal moves.	A player can select a cell from the board by entering 1~9 at each round. A cell that had been selected cannot be selected again. In addition, show feedback to the player about an illegal selection, ask the player to enter the selection again until a legal selection is entered.									
4	Place selected marks (X or O) in the specified position of the board.	Draw the selections (Xs and Os) from the beginning to the current round. Let those cells without selection be blank.									
5	Implement the winning rule.	For a player, if there are three of his/her marks (selections) in a horizontal, vertical, or diagonal row, he/she wins the game.									
6	Determine whether or not there is a winner at each round.	If there is a winner, show the winner, show the board, and terminate the game. If there is no winner, simply show the current board to let the players know the current selections.									

Program output: (The output in Cygwin is as good as I expect, all the lines are in alignment, but there is something wrong when I paste Cygwin output on word.)

```
1 | 2 | 3
---|---|---
4 | 5 | 6
---|---|---
7 | 8 | 9
```

```
  |  |
---|---|---
  |  |
---|---|---
  |  |
```

(O) select [1-9]: 9

```
  |  |
---|---|---
  |  |
---|---|---
  |  | 0
```

(X) select [1-9]: 8

```
  |  |
---|---|---
  |  |
---|---|---
  | x | 0
```

(O) select [1-9]: 4

```
  |  |
---|---|---
0 |  |
---|---|---
  | x | 0
```

(X) select [1-9]: 3

```
  |  | X
---|---|---
O |  |
---|---|---
  | X | O
```

(O) select [1-9]: 2

```
  | O | X
---|---|---
O |  |
---|---|---
  | X | O
```

(X) select [1-9]: 5

```
  | O | X
---|---|---
O | X |
---|---|---
  | X | O
```

(O) select [1-9]: 6

```
  | O | X
---|---|---
O | X | O
---|---|---
  | X | O
```

(X) select [1-9]: 1

```
X | O | X
---|---|---
O | X | O
```

```
---|---|---  
  | x | o
```

(O) select [1-9]: 7

Tie. Bye~

```
  x | o | x  
---|---|---  
  o | x | o  
---|---|---  
  o | x | o
```