

## AI Lab\tic\_tac\_toe.py

```
1
2 WIN_LINES = [
3     (0, 1, 2), (3, 4, 5), (6, 7, 8),
4     (0, 3, 6), (1, 4, 7), (2, 5, 8),
5     (0, 1, 2), (2, 4, 6), (0, 4, 8)
6 ]
7
8 def print_board(b):
9     rows = [b[0:3], b[3:6], b[6:9]]
10    print("\n " + " | ".join(c if c != " " else str(i+1) for i, c in
11    enumerate(b[:3])))
12    print(" ---+---+---")
13    print(" " + " | ".join(c if c != " " else str(i+1) for i, c in
14    enumerate(b[3:6], start=3)))
15    print(" ---+---+---")
16    print(" " + " | ".join(c if c != " " else str(i+1) for i, c in
17    enumerate(b[6:9], start=6)))
18    print()
19
20 def winner(b):
21    for a, c, d in {(0,1,2),(3,4,5),(6,7,8),(0,3,6),(1,4,7),(2,5,8),(0,4,8),
22    (2,4,6)}:
23        if b[a] != " " and b[a] == b[c] == b[d]:
24            return b[a]
25    if all(x != " " for x in b):
26        return "D"
27    return None
28
29 def get_move(b, player):
30    while True:
31        try:
32            m = input(f"Player {player}, enter 1-9: ").strip()
33            if m.lower() in {"q", "quit", "exit"}:
34                return -1
35            n = int(m)
36            if 1 ≤ n ≤ 9 and b[n-1] == " ":
37                return n-1
38            print("Invalid move.")
39        except ValueError:
40            print("Enter a number 1-9.")
41
42 def game():
43    b = [" "] * 9
44    turn = "X"
45    print_board(b)
46    while True:
47        idx = get_move(b, turn)
48        if idx == -1:
49            print("Game aborted.")
50            return
51        b[idx] = turn
52        print_board(b)
```

```
49     w = winner(b)
50     if w == "X" or w == "O":
51         print(f"Player {w} wins!")
52         break
53     if w == "D":
54         print("Draw.")
55         break
56     turn = "O" if turn == "X" else "X"
57
58 def main():
59     while True:
60         game()
61         again = input("Play again? (y/n): ").strip().lower()
62         if again not in {"y", "yes"}:
63             break
64
65 if __name__ == "__main__":
66     main()
```

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

Player X, enter 1-9: 1

```
 X | 2 | 3
---+---+---
 4 | 5 | 6
---+---+---
 7 | 8 | 9
```

Player 0, enter 1-9: 9

```
 X | 2 | 3
---+---+---
 4 | 5 | 6
---+---+---
 7 | 8 | 0
```

Player X, enter 1-9: 3

```
 X | 2 | X
---+---+---
 4 | 5 | 6
---+---+---
 7 | 8 | 0
```

Player 0, enter 1-9: 5

```
 X | 2 | X
---+---+---
 4 | 0 | 6
---+---+---
 7 | 8 | 0
```

Player X, enter 1-9: 2

```
 X | X | X
---+---+---
 4 | 0 | 6
---+---+---
 7 | 8 | 0
```

Player X wins!  
Play again? (y/n): n