

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
21 def winner(b):
22     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),
23 (2,4,6)}:
24         if b[a] != " " and b[a] == b[c] == b[d]:
25             return b[a]
26     if all(x != " " for x in b):
27         return "D"
28     return None
29
30
31 def get_move(b, player):
32     while True:
33         try:
34             m = input(f"Player {player}, enter 1-9: ").strip()
35             if m.lower() in {"q", "quit", "exit"}:
36                 return -1
37             n = int(m)
38             if 1 <= n <= 9 and b[n-1] == " ":
39                 return n-1
40             print("Invalid move.")
41         except ValueError:
42             print("Enter a number 1-9.")
43
44
45 def game():
46     b = [" "] * 9
47     turn = "X"
48     print_board(b)
49     while True:
50         idx = get_move(b, turn)
51         if idx == -1:
52             print("Game aborted.")
53             return
54         b[idx] = turn
55         print_board(b)
```

```
49         w = winner(b)
50         if w == "X" or w == "0":
51             print(f"Player {w} wins!")
52             break
53         if w == "D":
54             print("Draw.")
55             break
56         turn = "0" 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()
```