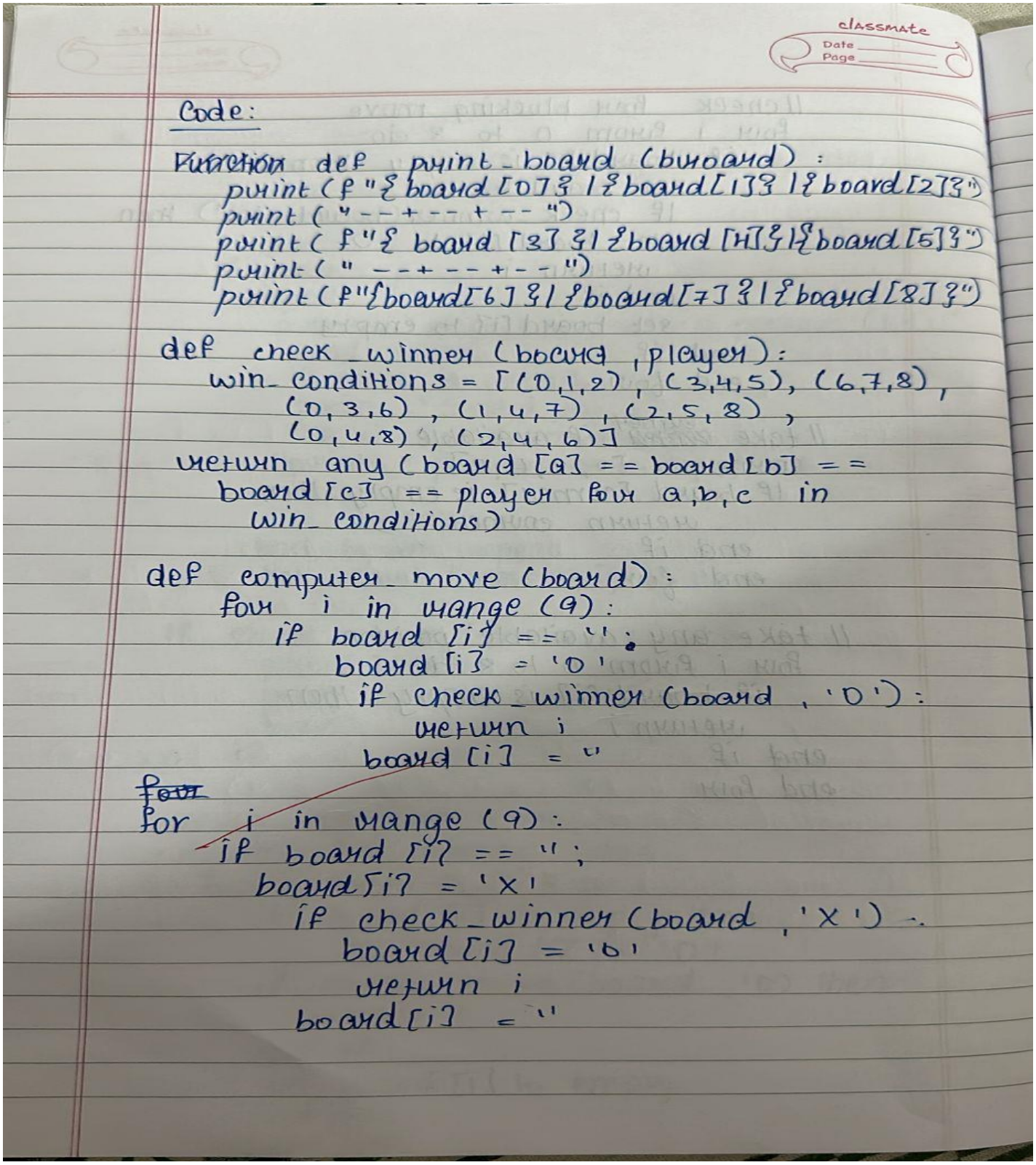
Tic-Tac-Toe (Lab 1: 24-09-2024)

Observation Book:



Code:

```
def print_board(board):
    print(f"{board[0]}|{board[1]}|{board[2]}")
    print("-+-+-")
    print(f"{board[3]}|{board[4]}|{board[5]}")
    print("-+-+-")
    print(f"{board[6]}|{board[7]}|{board[8]}")

def check_winner(board, player):
    win_conditions = [(0,1,2), (3,4,5), (6,7,8),
                      (0,3,6), (1,4,7), (2,5,8),
                      (0,4,8), (2,4,6)]
    return any(board[a] == board[b] ==
               board[c] == player for a,b,c in
               win_conditions)

def computer_move(board):
    for i in range(9):
        if board[i] == " ":
            board[i] = 'O'
            if check_winner(board, 'O'):
                return i
            board[i] = " "
for i in range(9):
    if board[i] == " ":
        board[i] = 'X'
        if check_winner(board, 'X'):
            board[i] = 'O'
            return i
        board[i] = " "
```

```
# If any move
    for i in range(9):
        if board[i] == ' ':
            return i

def play_game():
    board = [" " for _ in range(9)]
    current_player = 'X'
    while True:
        print_board(board)
    if current_player == 'X':
        try:
            move = int(input("Choose a position")) - 1

        except ValueError:
            print("Invalid input")
            continue.
    if move < 0 or move > 8:
            print("invalid move")
    if board[move] != ' ':
            print("position taken")
            continue.
    else:
            move = computer_move(board)
    board[move] = current_player
    if check_winner(board, current_player)
    print_board(board)
    print(f"player {current_player} win!")
    break.

if is_board_full(board)
    print_board(board)
    print("Tie!").
    break
play_game()
```

o/p 9.

Output Screenshots:

Player X winning:

```
  |   |
--+---+--
  |   |
--+---+--
  |   |
Player X, choose a position (1-9): 9
  |   |
--+---+--
  |   |
--+---+--
  |   | X
Computer's turn (O)...
  |   |
--+---+--
  | O |
--+---+--
  |   | X
Player X, choose a position (1-9): 1
X |   |
--+---+--
  | O |
--+---+--
  |   | X
Computer's turn (O)...
X |   | O
--+---+--
  | O |
--+---+--
  |   | X
```

```
Player X, choose a position (1-9): 7
X |   | O
--+---+--
  | O |
--+---+--
X |   | X
Computer's turn (O)...
X |   | O
--+---+--
O | O |
--+---+--
X |   | X
Player X, choose a position (1-9): 8
X |   | O
--+---+--
O | O |
--+---+--
X | X | X
Player X wins!
```

Player O winning (Computer winning):

```
  |   |
--+---+--
  |   |
--+---+--
  |   |
Player X, choose a position (1-9): 2
  | X |
--+---+--
  |   |
--+---+--
  |   |
Computer's turn (O)...
  | X |
--+---+--
  | O |
--+---+--
  |   |
Player X, choose a position (1-9): 3
  | X | X
--+---+--
  | O |
--+---+--
  |   |
```

```
Computer's turn (O)...
O | X | X
--+---+--
  | O |
--+---+--
  |   |
Player X, choose a position (1-9): 6
O | X | X
--+---+--
  | O | X
--+---+--
  |   |
Computer's turn (O)...
O | X | X
--+---+--
  | O | X
--+---+--
  |   | O
Player O wins!
```

Tie:

```
  |   |
--+---+--
  |   |
--+---+--
  |   |
Player X, choose a position (1-9): 7
  |   |
--+---+--
  |   |
--+---+--
X |   |
Computer's turn (O)...
  |   |
--+---+--
  | O |
--+---+--
X |   |
Player X, choose a position (1-9): 1
X |   |
--+---+--
  | O |
--+---+--
X |   |
Computer's turn (O)...
X |   |
--+---+--
O | O |
--+---+--
X |   |
```

```
Player X, choose a position (1-9): 6
X |   |
--+---+--
O | O | X
--+---+--
X |   |
Computer's turn (O)...
X |   | O
--+---+--
O | O | X
--+---+--
X |   |
Player X, choose a position (1-9): 9
X |   | O
--+---+--
O | O | X
--+---+--
X |   | X
Computer's turn (O)...
X |   | O
--+---+--
O | O | X
--+---+--
X | O | X
Player X, choose a position (1-9): 2
X | X | O
--+---+--
O | O | X
--+---+--
X | O | X
It's a tie!
```