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Engineering Rank Band (151-200)
Pharmacy Rank - 77
Innovation Rank Band (11-50)

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INTRODUCTION TO AI(AI101B)

Even Semester

Session 2024-25

TIC-TAC-TOE by Team CyberLoop

Divyam Raj – 202410116100066
Gaurav Chauhan – 20241011610073
Gaurav Kumar – 202410116100074
Harsh Solanki - 202410116100087

Project Supervisor:

Supervisor Name: Dr. Apoorv Jain Sir
Designation: Assistant Professor

Introduction

Tic-Tac-Toe is a classic game with simple rules and strategic depth. Players mark a 3x3 grid with 'X' or 'O'. The goal is to get three in a row. This project develops a Python-based game where a player competes against the computer.

1 **Objective**

Place three marks in a row to win.

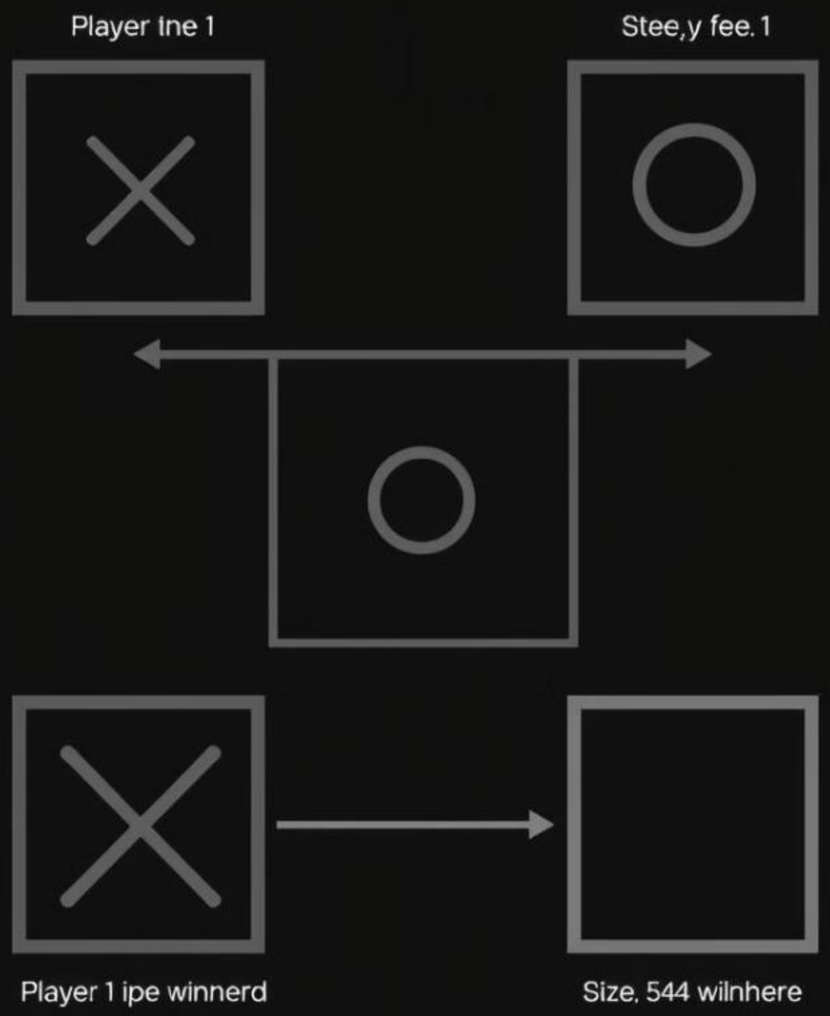
2 **Strategic AI**

Computer blocks, wins, or moves randomly.

3 **Modular Code**

Organized functions for readability.

Tic Tac Toe



Methodology

The game uses a modular approach for clarity and scalability. The implementation consists of four major steps: Initializing the Game Board, Handling User and Computer Moves, Checking for a Winner or Draw, Executing the Game Loop.

1

Initialize Board

Create a 3x3 grid.

2

Handle Moves

Validate user input and generate computer moves.

3

Check Outcome

Determine winner or draw.

4

Execute Loop

Orchestrate game flow.

Handling Moves

Correct moves are essential for an error-free experience. The player selects an empty cell. The computer uses a strategic approach: check for a winning move, block the opponent, take the center, or move randomly.

Player Move

Validate input to ensure it's an empty cell.

Computer Move

Strategic AI to block or win.

Checking Game State

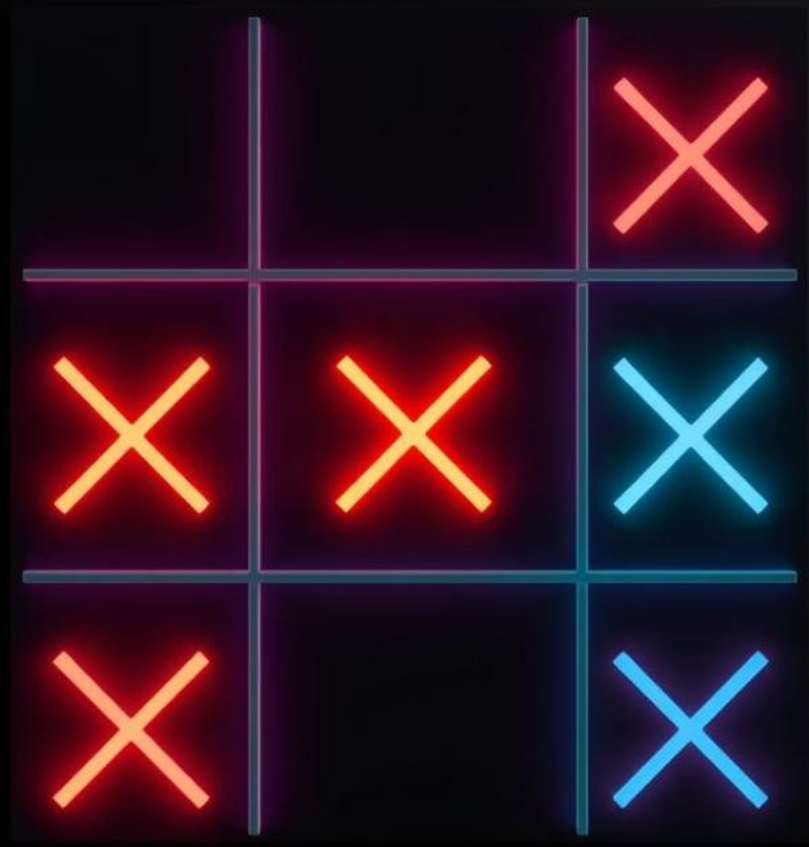
The program determines if there is a winner or a draw. The check_win function examines all possible winning conditions. The check_draw function verifies if all cells are filled without a winner.

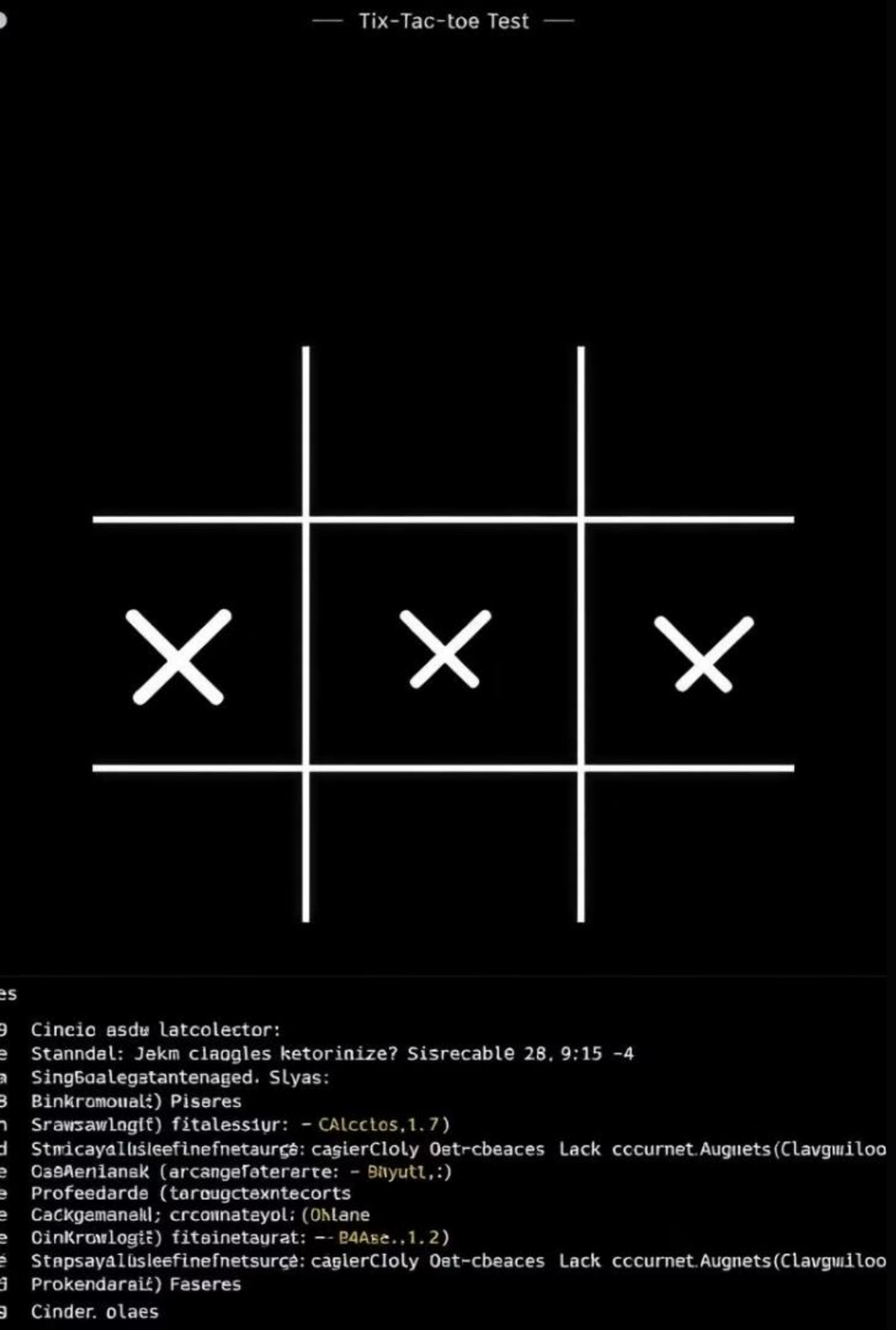
Winning Conditions

Rows, columns, diagonals.

Draw Condition

All cells filled, no winner.





Output

The game displays the board, prompts the player for a move, shows the computer's move, and declares the outcome. Input validation ensures a smooth user experience.

9

Cells

Total cells on the board.

3

In a Row

Needed to win.

Conclusion

The Tic-Tac-Toe game highlights key programming concepts. The modular approach makes the code easy to maintain. The computer uses defensive and offensive tactics. Input validation ensures a smooth experience.