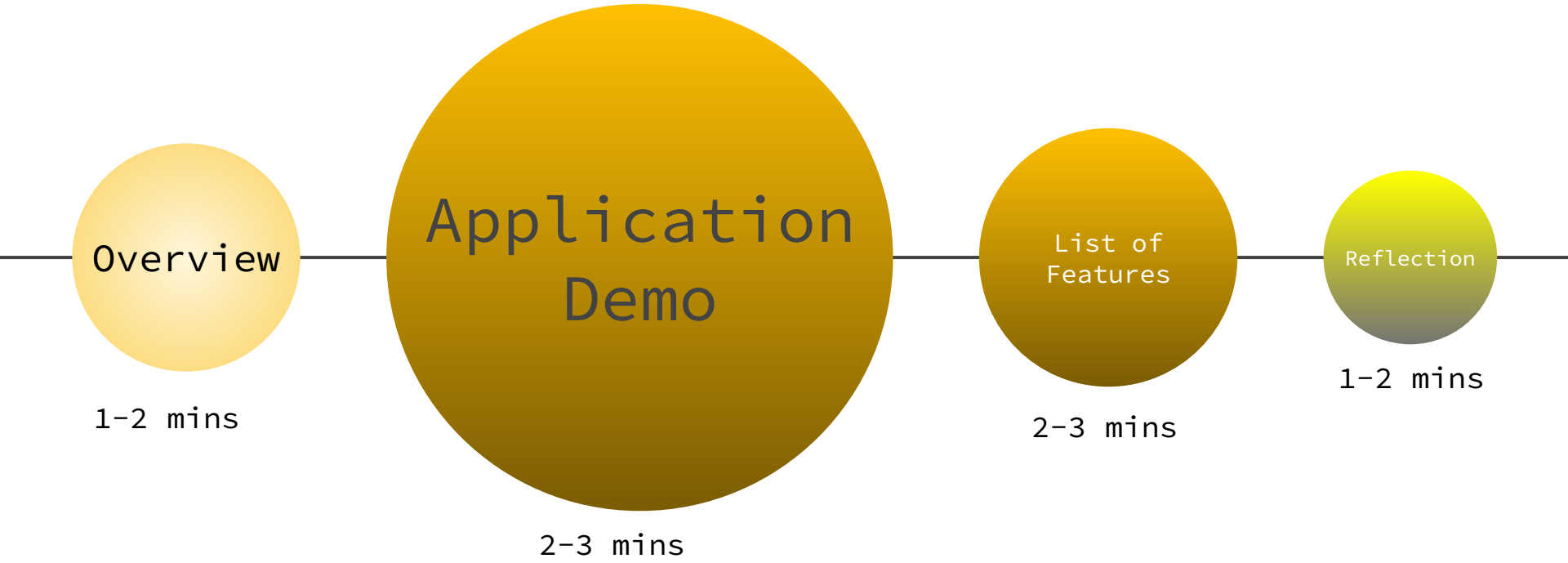
Prateek Khindri

Presenting TicTacToe terminal application

https://github.com/prateekkhindri/T1A3_terminal_application

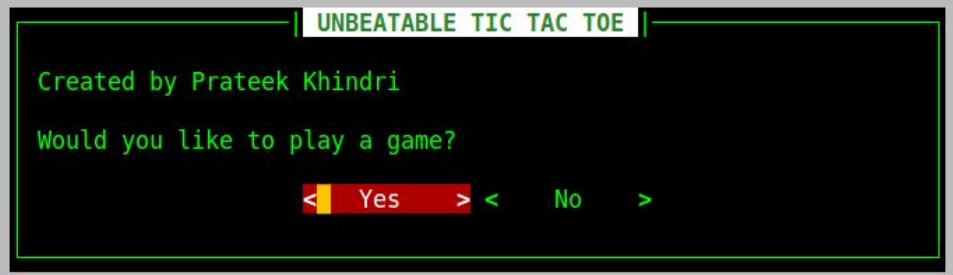
Presentation Outline

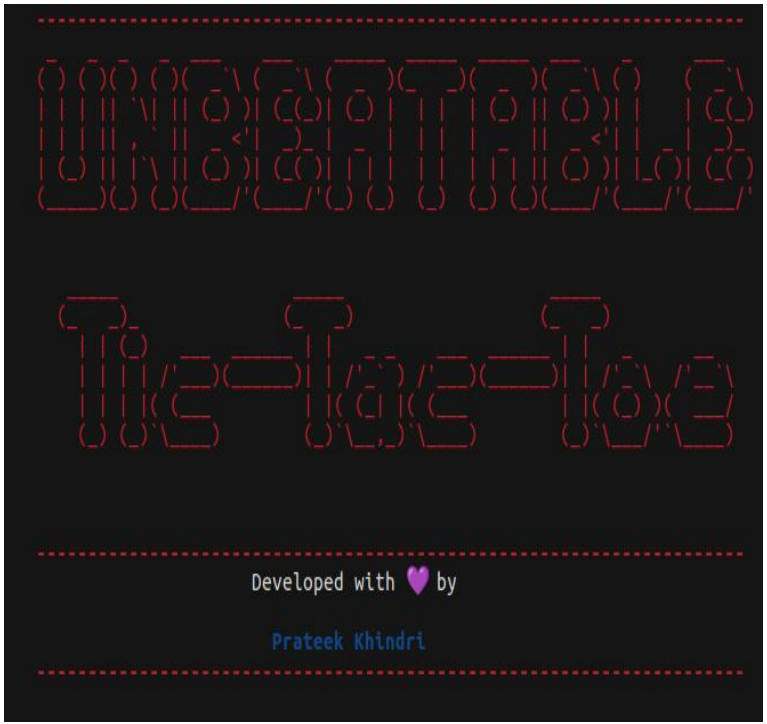


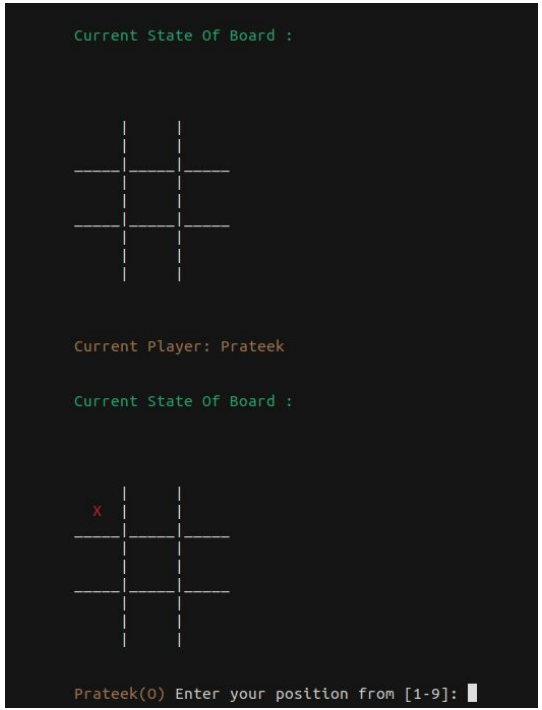
Overview

An overview of the list of features

Terminal Application Project

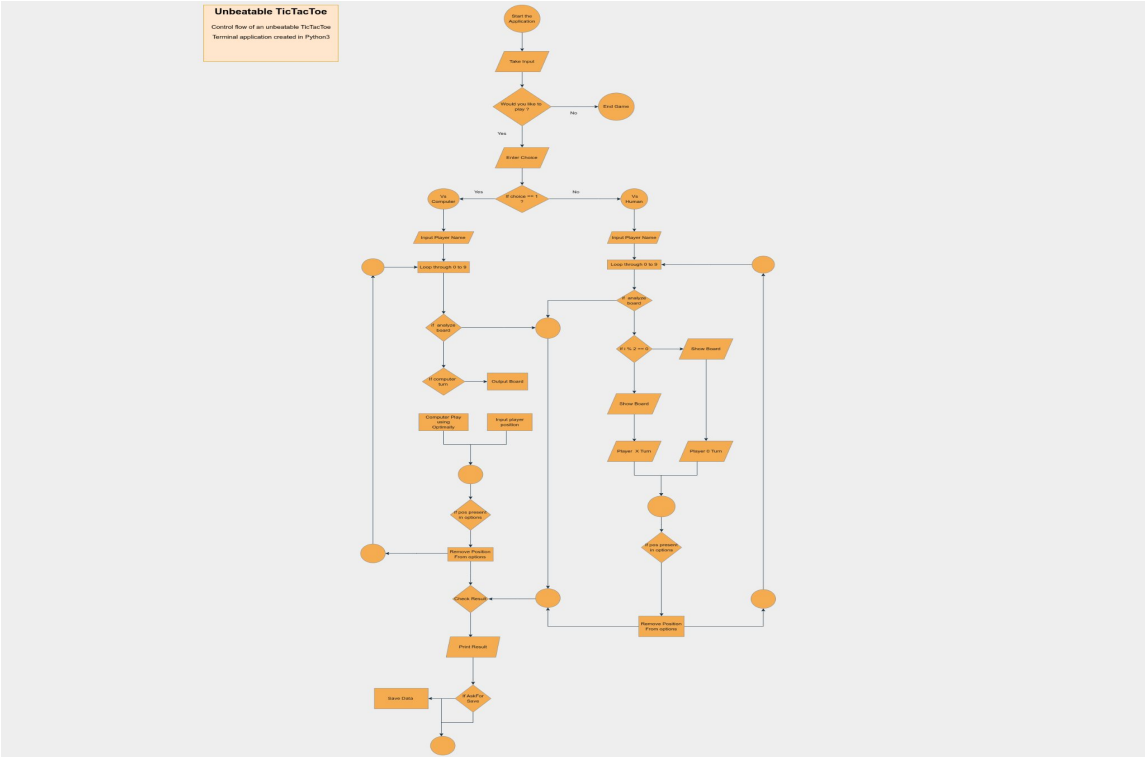






Project Features

The project consists of choosing between Single and Multiplayer modes, an AI and a game statistics feature



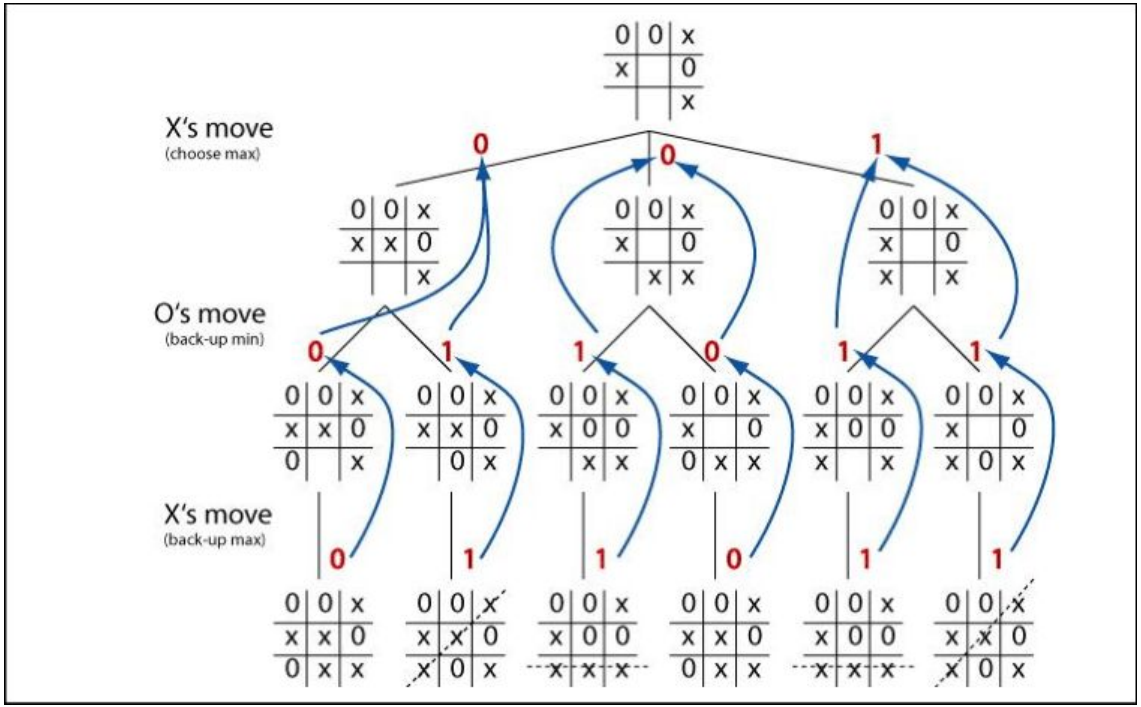
Flowchart

Flowchart explaining the logic of the application

Application Demo

Overview of Code

A discussion of the minimax algorithm which calculates the best possible move



Minimax Algorithm

The minimax algorithm to predict the best possible move

```python
class AI:
    @classmethod
    def analyze_board(cls, board):
        cb = [[0, 1, 2], [3, 4, 5], [6, 7, 8],
        [0, 3, 6],
              [1, 4, 7], [2, 5, 8], [0, 4, 8],
              [2, 4, 6]]

        for i in range(0, 8):
            if (board[cb[i][0]] != 0 and board
            [cb[i][0]] == board[cb[i][1]] and
            board[cb[i][0]] == board[cb[i][2]]):
                return board[cb[i][2]]
        return 0
```

```python
@classmethod
def minimax(cls, board, player):
    x = cls.analyze_board(board)
    if (x != 0):
        return (x*player)
    pos = -1
    value = -2
    for i in range(0, 9):
        if (board[i] == 0):
            board[i] = player
            score = -cls.minimax(board,
            (player*-1))
            if (score > value):
                value = score
                pos = i
            board[i] = 0

    if (pos == -1):
        return 0
    return value
```

```python
def computer_turn(self):
    pos = -1
    value = -2
    for i in range(0, 9):
        if (self.board_array[i] == 0):
            self.board_array[i] = 1
            score = -AI.minimax(self.board_array, -1)
            self.board_array[i] = 0
            if (score > value):
                value = score
                pos = i

    self.board_array[pos] = 1
    return pos
```

Computer Move

The computer making a move using the minimax algorithm

Reflection

What I learnt from building a terminal application

- Command-line interface (CLI) fundamentals
- Text manipulation
- Scripting languages
- Operating system concepts
- Debugging skills

Contact

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