Project Update

Tic-Tac-Toe AI Implementation with Minimax and Alpha-Beta Pruning

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Group Number: 1
Course: CSE 440
Role: Worked on Game Logic Module (game_logic.py)

Week 1 (September 27 – October 3)

During the first week, no specific project topic was assigned yet. So no development work was started at this stage.

Week 2 — Topic Selection and Task Distribution (October 4 – October 10)

In the second week, our group discussed the provided list of project topics and evaluated their complexity and learning potential. We finally selected "Tic-Tac-Toe AI using Minimax and Alpha-Beta Pruning" as our project. I chose to work on the Game Logic Module, while other teammates focused on the AI and interface parts. I also began reviewing how to represent a Tic-Tac-Toe board in Python using lists or 2D arrays.

Week 3 — Board Representation and Basic Functions (October 11 – October 17)

I started implementing the Game Logic Module by creating the board representation and basic functions to handle player moves. The focus was to ensure that the board updates correctly with each move and displays properly in the console. This laid the foundation for later win/draw logic integration.

Week 4 — Win/Draw Logic and Manual Testing (October 18 – October 24)

I implemented functions to check all winning possibilities (rows, columns, diagonals) and a draw-checking condition to detect a full board without a winner. Afterward, I manually tested the game flow to confirm accurate win/draw detection and valid move

handling.

Week 5 — Refinement and Documentation (October 25 – October 31)

In this week, I refined the game logic code for better readability and added inline comments for clarity. I ensured that the module handled all possible move cases properly. The Game Logic Module is now complete and ready to integrate with the AI logic for the next phase of development.

Summary of My Work

- Selected project topic and individual task responsibilities.
- Designed and implemented the Tic-Tac-Toe game logic structure.
- Created functions for win, draw, and move validation.
- Performed manual testing for accuracy and reliability.

Future Plans

- Integrate the Game Logic Module with the AI logic (Minimax + Alpha-Beta).
- Conduct combined testing of the full system.
- Prepare presentation slides and report for the final submission.