**GROUP MEMBERS:**

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**Project Proposal: 3-Player Checkers with AI Bot**

**1. Project Title**

3-Player Checkers Game with AI Bot (Minimax Algorithm)

**2. Project Overview**

This project is a Python-based implementation of a 3-Player Checkers game using Tkinter for GUI and a basic AI bot (Minimax with alpha-beta pruning) for one of the players. Two players (Red and Blue) are controlled manually by mouse clicks, while the third player (Green) is controlled automatically by the AI.

The goal of the game is for a player to eliminate the other two players by capturing all their pieces, becoming the last player standing.

**3. Objectives**

* Develop an interactive and playable 3-player board game.
* Implement a simple but functional AI opponent using Minimax algorithm.
* Provide a user-friendly graphical interface for the players.
* Ensure fair turn-based movement and capture logic.
* Display clear winning conditions and end the game appropriately.

**4. Key Features**

* 🚶 Manual movement for Red and Blue players (click-based interface).
* 🧙 Green player (AI Bot) uses Minimax algorithm (depth 2) with alpha-beta pruning.
* 🌍 15x15 board with distinct areas for each player's pieces.
* 🔄 Smooth turn management (Red → Blue → Green cycle).
* 🏆 Automatic win detection and Game Over screen display.

**5. Technologies Used**

* Python 3
* Tkinter (GUI development)
* Minimax Algorithm (basic AI logic)
* Alpha-Beta Pruning (optimization for AI search)

**6. Project Structure**

* checkers.py : Main game logic and GUI.
* README.md : Instructions for running and playing the game.
* explanation.txt : Two-minute script and main logic breakdown for understanding the project.

**7. Challenges Addressed**

* Designing a fair 3-player board setup.
* Balancing simplicity of AI (so it's beatable) and smartness (so it's competitive).
* Handling move validation, capturing, and multiple turns correctly.
* Providing a visually intuitive interface with feedback to players.

**8. Future Improvements**

* Add piece promotion to "King" pieces.
* Increase AI difficulty with deeper Minimax search.
* Add undo/redo move functionality.
* Support for multiplayer over network.
* Add sound effects and animations.

**9. Conclusion**

This 3-Player Checkers project successfully integrates game design, GUI programming, and artificial intelligence techniques. It demonstrates turn-based logic, AI decision-making, and user interaction in a simple yet enjoyable board game format.

✨ Thank you for reviewing this proposal! ✨