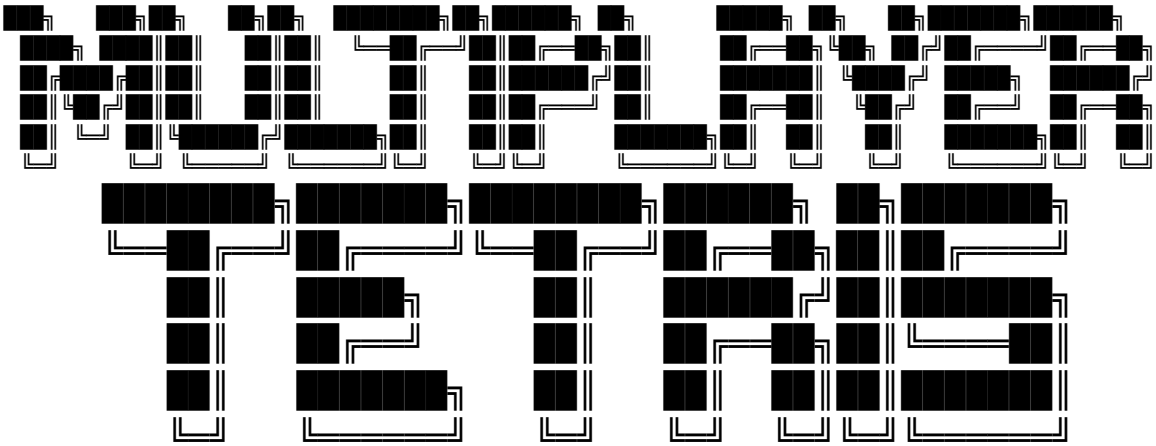

Amelia Cook, Alex Williams Ferreira, Trevor Sullivan

1. What is your team name? (Keep it relatively short, clean, and free of embedded spaces or other special characters. — we'll use this internally for grading.)

amexor

2. Who's in the group?

Amelia Cook
Trevor Sullivan
Alex Williams Ferreira

3. What's the project?

Concurrent Tetris!
Our project will be a multiplayer tetris game hosted on the halligan server. The server will allow people to either join public lobbies with other random players or create a private lobby that friends can access using its name. There will be multiple game modes available to play. The three game modes will be **Head-to-Head**, **CHAOS MODE**, and **Tetris21** (directly inspired by Tetris99). All games will be based on point systems to determine a winner, but **Tetris21** and **Head-to-Head** also have knockout properties. **Head-to-Head** mode has one large board cut up by n users. Traditional tetris is played, but rows must be cleared across all players. The player who clears the row gets the points for it. **CHAOS MODE** will have all players playing on one board sized by the number of players. All players can place blocks at any point, those who clear rows get the points. **Tetris21** will be a simplified version of Tetris99. Each player will have their own board and when players clear rows, rows get sent to other players' game boards as punishment. This game is played battle royale style, and the final person standing wins. There will be a leaderboard that keeps track of top scores across the games!

4. What's the minimum/maximum deliverable?

Our minimum deliverable would be a server that supports multiple players in multiple rooms. This deliverable will have a GUI to represent the game play, likely in terminal. Our default game mode, Head-to-Head, will involve multiple processes playing on the same tetris board. In this mode, the board will be wider to accommodate the additional players and each player will be given a section that it may place blocks in. Players will be able to place blocks concurrently, but the points will be given to the player who places the last block to clear a row. Should any player lose, their section will become full of blocks and the game will continue for the other players.

If we have enough time, we would like to implement additional game modes. CHAOS MODE will be similar to Head-to-Head, but the players would not be restricted to sections of the board. This would create some interesting concurrency challenges to avoid blocks being placed on top of each other, for example. Tetris21, inspired by Tetris99, would give each player their own board but allow them to see other players' boards. When a player finishes a row, they can target other players and give them additional rows as an additional challenge.

An additional function we would like to implement is a global leaderboard for each game mode across all players and rooms.

5. What's your first step?

Our first step is to design message protocols. After that, we plan to set up the server and begin developing the GUI. We hope to build a normal game of tetris on the foundations of our concurrent multiplayer game to make sure we have things working.

6. What's the biggest problem you foresee or question you need to answer to get started?

We foresee two main problems: designing/implementing a GUI, and keeping a server running. We want to have a server running continuously for a smooth user experience. We don't think this will be difficult to solve–we just don't know how the logistics would work. Our next (and biggest problem) is designing a GUI. We want to make it terminal-based, but we don't have much experience designing GUIs. It's going to be difficult to figure out how each player interacts with the GUI, and what the GUI displays for the other players (e.g. should we update the GUI every time another player rotates their block, or should we only update it when they successfully place a block?). Since our project is multiplayer, it is critical that the GUI updates as quickly as possible since any delays will hinder the players' experience.