ECE243 Project

Aim of the game:

The game created, called nim, is a mathematical game of strategy in which two players take turns in removing beads from piles. On each turn, the player must remove at least one bead from the desired pile. The goal of the game is to try and pick up the last set of beads. First to 5 wins!

Each player can only pick up beads from one column at a time, meaning all beads picked up by a player in a single turn should be of the same color.

How to use the program:

- After compiling and clicking on continue the user will be met with an introduction screen that displays instructions regarding whether the user would like to play against a friend or computer and the current score.

- After choosing which mode the user would like to play in, the VGA screen will display multiple columns with a certain amount of beads in it.

- When it's time for the user to play, the terminal will ask the designated player which column they would like to remove pieces from. Using the PS2 keyboard, the user will enter the desired column number followed by pressing enter.

- After choosing the desired column, the terminal will further ask the designated player the number of pieces they would like to remove, similar to choosing the column number, the user will enter the desired number of pieces followed by pressing enter.

- After each round, the score will be updated based on who wins. If any player reaches 5, the scores will reset to 0

Attribution Table:

1) Kareem
    - Worked on function that receives keyboard input
    - Worked on displaying intro screen
    - Worked on the logic that helps user transition from intro screen into game mode
    - Worked on updating the scores after each round and making them display on the VGA screen
    - Put some effort in trying to restart game after a specific round is done
    - Worked on displaying who's turn it is on the VGA screen in the two player mode.
2) Arshia
    - Worked on logic for keeping track of the number of pieces in each column.
    - Wrote functions for drawing circles and columns.

- Worked on logic for drawing the remaining pieces on the VGA.
- Worked on the wincode, including the win condition and resetting the game state after a round passed.
- Worked on implementing the AI mode of the game, including the algorithm for selecting the optimal move.
- Worked on displaying text that indicates it is the user's move in AI mode.
- Worked on coloring the columns of pieces in different colors using a random seed.