CS2300 Programming Assignment #2

Tate Minch

Github Repo Link: <https://github.com/TateMinch/Coursework-for-CS2300-FA22/tree/main/Program2>

Psuedocode:

Program operates through board class with two constructors for if input will come from a file or not and with private member functions:

playGame

generateBoard

printBoard

readFile

displayBoard

freeMemory

isValid

flipCells

displayBoardEnd

**Constructor for file used:**

Sets manualPlay to false, gameOver to false, initializes scores to 0, opens the input file, reads in n and k, and calls playGame function

After game has been played, dynamically allocated memory is freed

**Constructor for no file:**

Initializes manual play to true, gameOver to false, p1InvalidMove and p2InvalidMove to false, and scores to 0.

Takes in n and k from input

Calls playgame

After game is completed, frees dynamically allocated memory

**playGame()**

calls generateBoard function

if it is not manual

read the file in

while there are still moves and game is not over

check move for validity

flip cells

display board and score and check for game over

if it is manual, perform the same steps taking input at each move

**isValid()**

Checks to see if any elements of the move are out of bounds of the board

Gets the slope and the negative inverse and checks against last k moves for perpendicular

Checks that both start and end cells are empty

**flipCells()**

if the first move is greater than the second move, flip them

if either of the divisors for slope is 0, just set slope to 0

do checks for straight lines with no slope

if not straight line, get b for the y = mx+b equation

increment over board and calculate point if it is within the points based on the equation using rounding on doubles to determine which cell gets filled