Connect Four

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CONNECT FOUR OVERVIEW

MAIN FEATURES

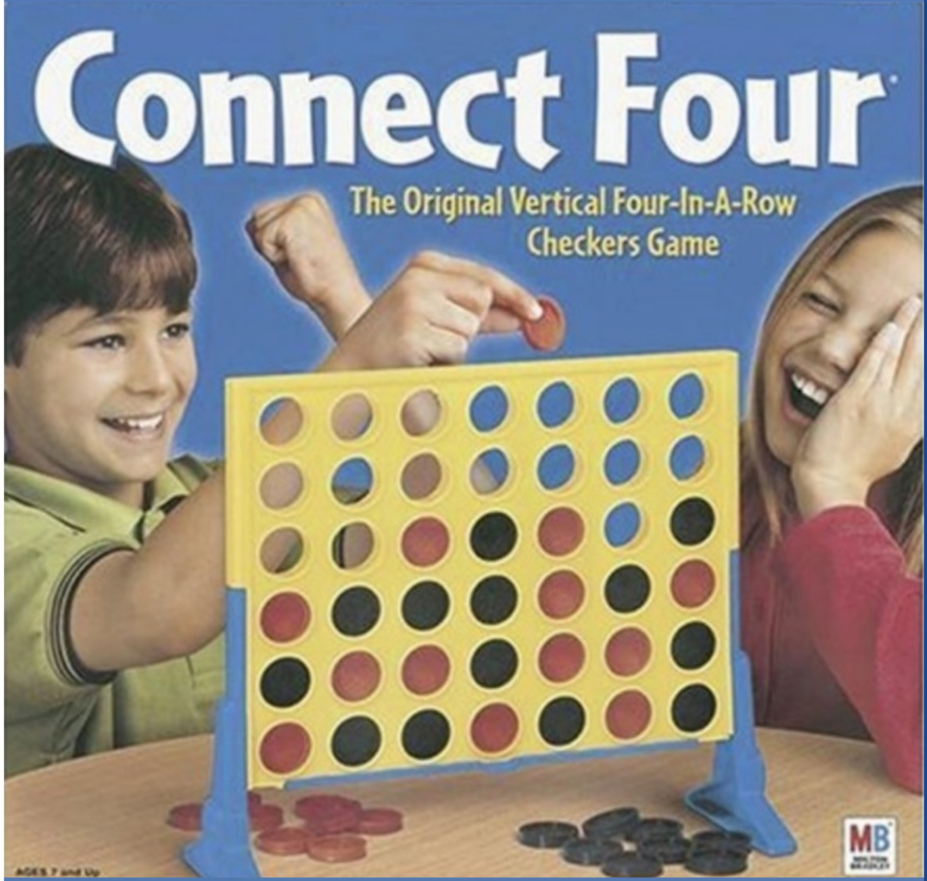
- Player can choose game mode, color, and name
- Place token in column
- Detect four in a row

ASSUMPTIONS

- Player understands how the game works

LIMITATIONS

- Physical gameplay must be replicated with GUI
- Limited time frame of three weeks and Thanksgiving break



TRADITIONAL CONNECT FOUR

- A two-player strategy game

- Objective is to be the first player to connect four tokens in a row

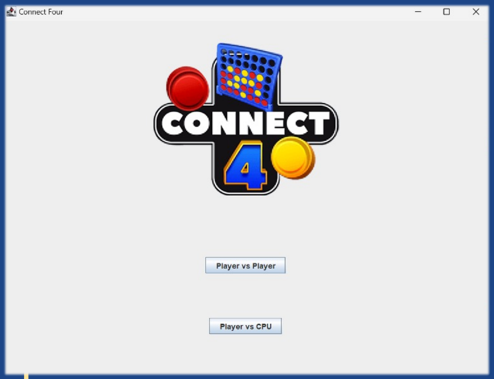
- The grid consists of 6 rows and 7 columns, forming 42 slots for disks to be placed

- Each player selects a column to place their color token until the objective is met or grid is filled

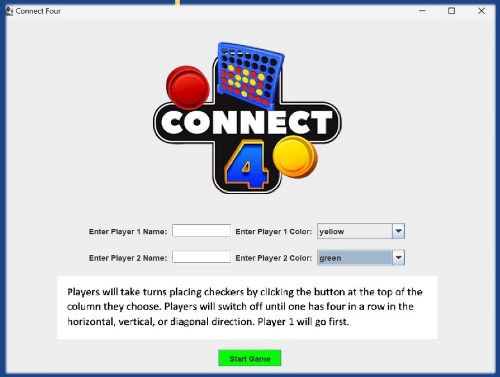
OUR CONNECT FOUR

- Multiplayer or singleplayer
  - if single player is chosen that the user plays against a CPU
- Players must select the color of their tokens
- Player 1, then players take turns placing tokens by clicking the column buttons
- Players cannot pick a column once the six rows are already full
- Take tuns until four in a row is found in a horizontal, vertical, or diagonal direction

OUR CONNECT FOUR



Select game mode screen

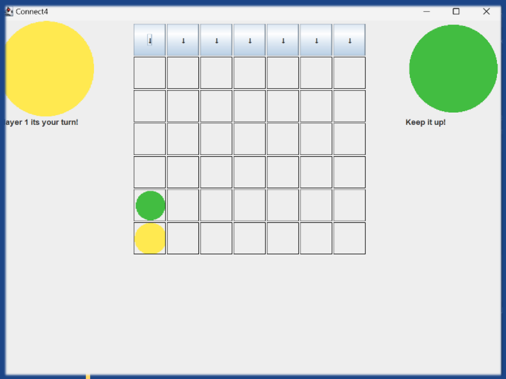


Enter Player 1 Name: Enter Player 1 Color: yellow

Enter Player 2 Name: Enter Player 2 Color: green

Players will take turns placing checkers by clicking the button at the top of the column they choose. Players will switch off until one has four in a row in the horizontal, vertical, or diagonal direction. Player 1 will go first.

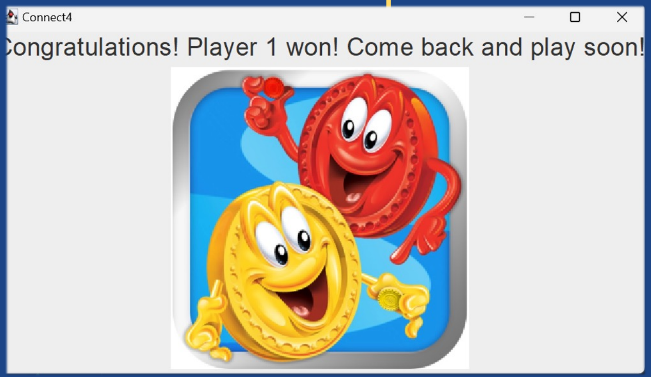
Screen to select colors and names



ayer 1 its your turn!

Keep it up!

Game play screen



Congratulations! Player 1 won! Come back and play soon!

Winner screen

PROJECT REQUIREMENTS

FUNCTIONAL REQUIREMENTS

- Detecting four-in-a-row
- Being able to select a column so a token of the correct color will appear
- Understand who's turn it is at all times

NON-FUNCTIONAL REQUIREMENTS

- Game meant to feel like the classic Connect Four game
- How tokens appear
- Layout of start screen

PROJECT SOLUTION APPROACH

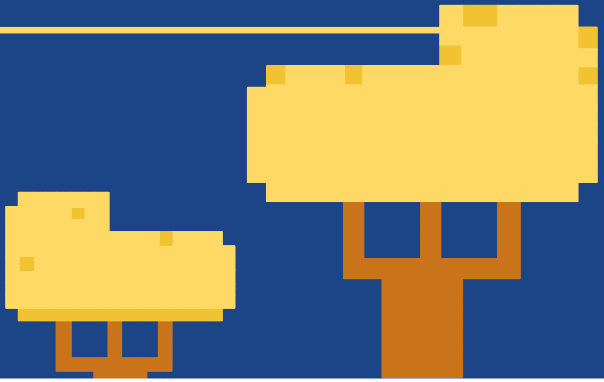
Has the same components as the classic Connect Four game

Designed gameplay via terminal then moved to GUI gameplay

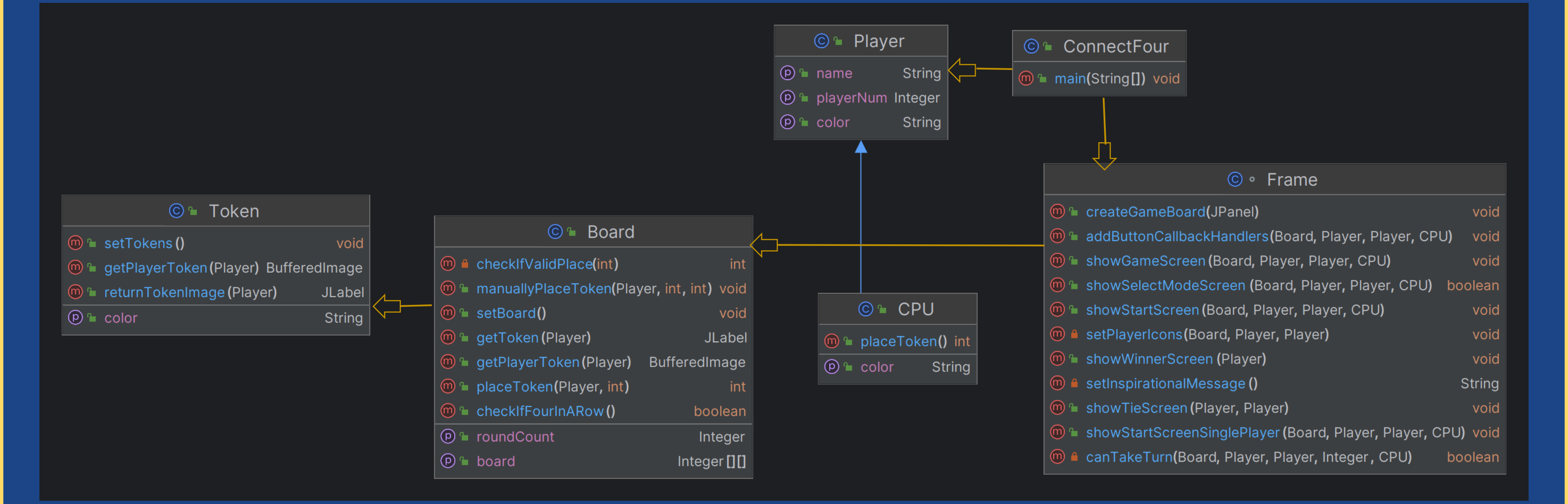
Multiple screens for game mode, player info, gameplay, and winning screen

Singleplayer (with CPU) or multiplayer

Keeping track of whose turn it is and ability to see the board



UML Design



Player
name String
playerNum Integer
color String

ConnectFour
main(String[]) void

Token
setTokens () void
getPlayerToken (Player) BufferedImage
returnTokenImage (Player) JLabel
color String

Board
checkIfValidPlace(int) int
manuallyPlaceToken(Player, int, int) void
setBoard() void
getToken (Player) JLabel
getPlayerToken (Player) BufferedImage
placeToken(Player, int) int
checkIfFourInARow () boolean
roundCount Integer
board Integer [][]

CPU
placeToken() int
color String

Frame
createGameBoard(JPanel) void
addButtonCallbackHandlers(Board, Player, Player, CPU) void
showGameScreen (Board, Player, Player, CPU) void
showSelectModeScreen (Board, Player, Player, CPU) boolean
showStartScreen (Board, Player, Player, CPU) void
setPlayerIcons (Board, Player, Player) void
showWinnerScreen (Player) void
setInspirationalMessage () String
showTieScreen (Player, Player) void
showStartScreenSinglePlayer (Board, Player, Player, CPU) void
canTakeTurn(Board, Player, Player, Integer , CPU) boolean

TEAM COLLARBORATION APPROACHES

- iMessage and clarifying in-person before class
- Twice per week meetings
- Work on branches separately and meet to manage any merge conflicts
- Trello to assign and keep track of tasks
- Started and ended with group hacking sessions then met periodically to go over code
- Each branch related to a new feature that we were implementing or a bug fix
- Collaborating when coding ultimately easier

TESTING, VALIDATION, AND ACCEPTANCE

GAMEPLAY

- Unit tests
- Attempting to break the game
- Terminal outputs when designing game play

GUI

- User checklist
- Running the program and checking the output is correct
- All buttons work, design enforces gameplay

MULTIPLAYER AND SINGLEPLAYER LIVE DEMO

THANKS!