Mike Brandin

Dr. Yu-Shan Sun

CPSC 2150 Section 002

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Project Report:

Project 1 – Part 2

### **Requirements Analysis**

### **Functional Requirements**

- As a user, I can input a column number, so I can mark a spot on the game board and progress the game.
- As a user, I can input a Y or an N after the game has concluded, to start a new game or terminate the game session, respectively.
- As a user, I can place four markers touching horizontally, to conclude the match and receive a congratulatory message and a request to play again.
- As a user, I can place four markers touching vertically, to conclude the match and receive a congratulatory message and a request to play again.
- As a user, I can place four markers touching diagonally, to conclude the match and receive a congratulatory message and a request to play again.
- As a user, I can defend the opponent from connecting four markers in a row while also failing to connect four markers myself, resulting in a tie game and a request to play again.

### Nonfunctional Requirements

- Must have a device that supports Java.
- Must have a keyboard to play the game.
- Must run on the Schools of Computing's virtual machine.
- Must have adequate memory to allocate towards objects.

### **Design**

**UML Class Diagrams** 

#### Game Screen

+ main(String[]):void {static}

#### GameBoard

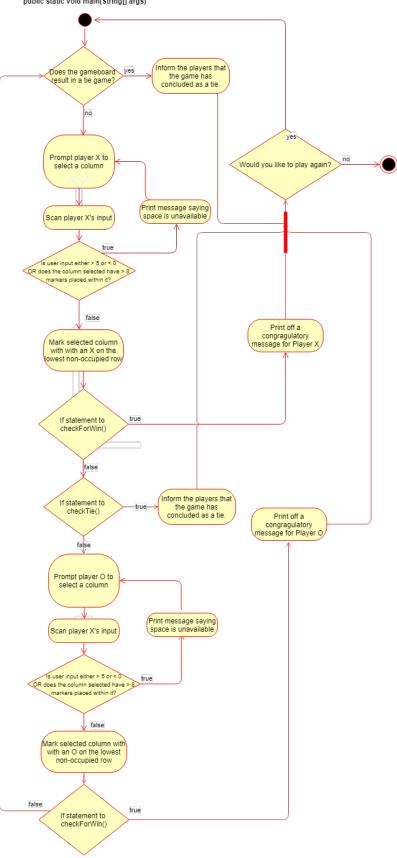
- board: char[][] [0...5][0...8]
- NUM\_TO\_WIN: final int [1] {static}
- MAX\_ROW: int [1] {static}
- MAX\_COLUMN: int [1] {static}
- + checklfFree(int): boolean
- + checkForWin(int): boolean
- + checkTie(void): boolean
- + placeToken(char, int): void
- + checkHorizWin(BoardPosition, char): boolean
- + checkVertWin(BoardPosition, char): boolean
- + checkDiagWin(BoardPosition, char): boolean
- + whatAtPos(BoardPosition): char
- + isPlayerAtPos(BoardPosition, char): boolean
- + toString(void): String
- + GameBoard(void): void

### BoardPosition

- Row: int[1]
- Column: int[1]
- + getRow(void): int
- + getColumn(void): int
- + toString(void): String
- + equals(void): boolean
- + BoardPosition(int, int): void

### **UML Activity Diagrams**

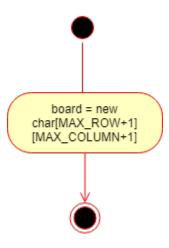
- GameScreen.java:
  - o main function



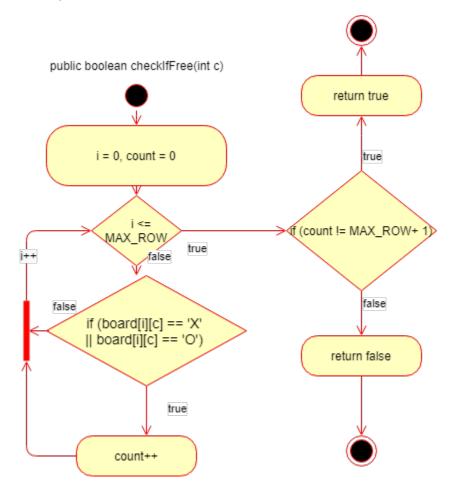
# - GameBoard.java

o GameBoard constructor

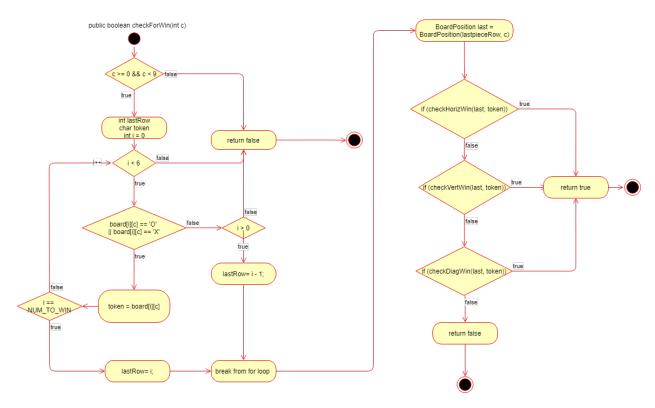
### public GameBoard()



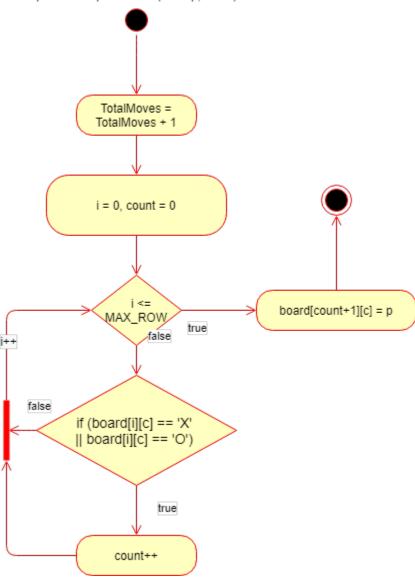
#### o checkIfFree method



### o checkForWin method

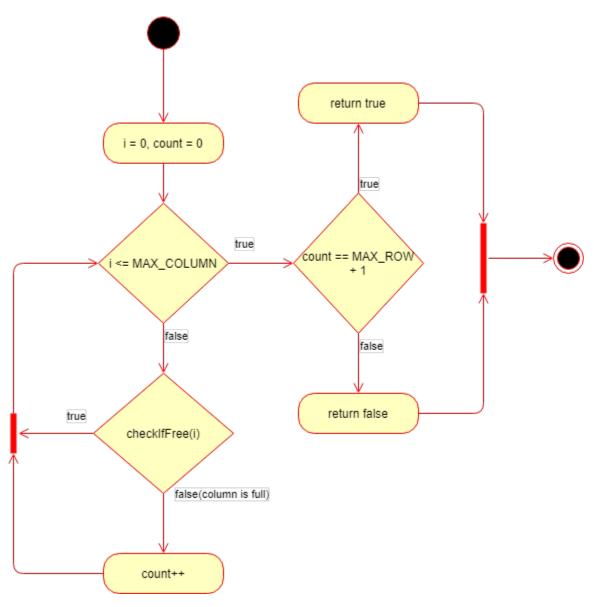


o placeToken method

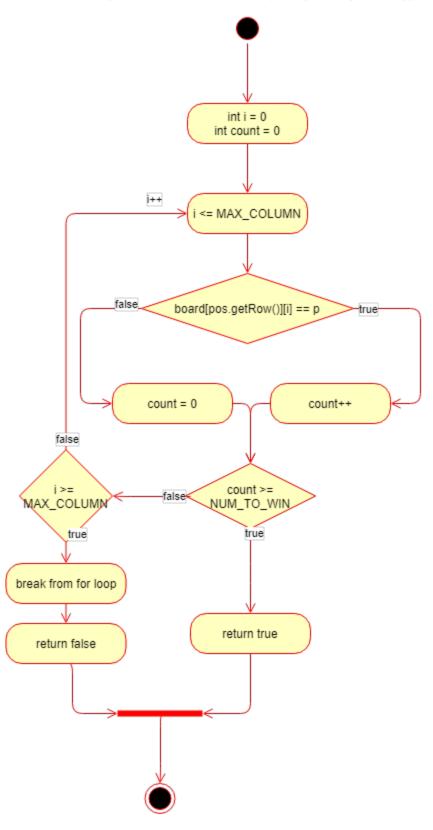


o checkTie method

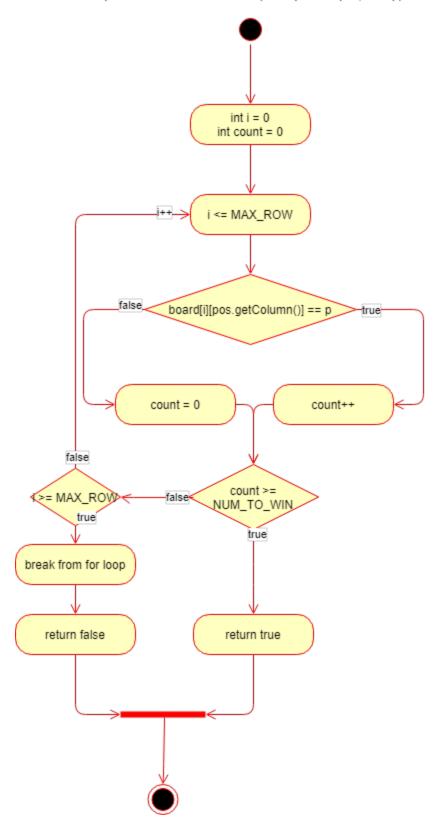
### public boolean checkTie()



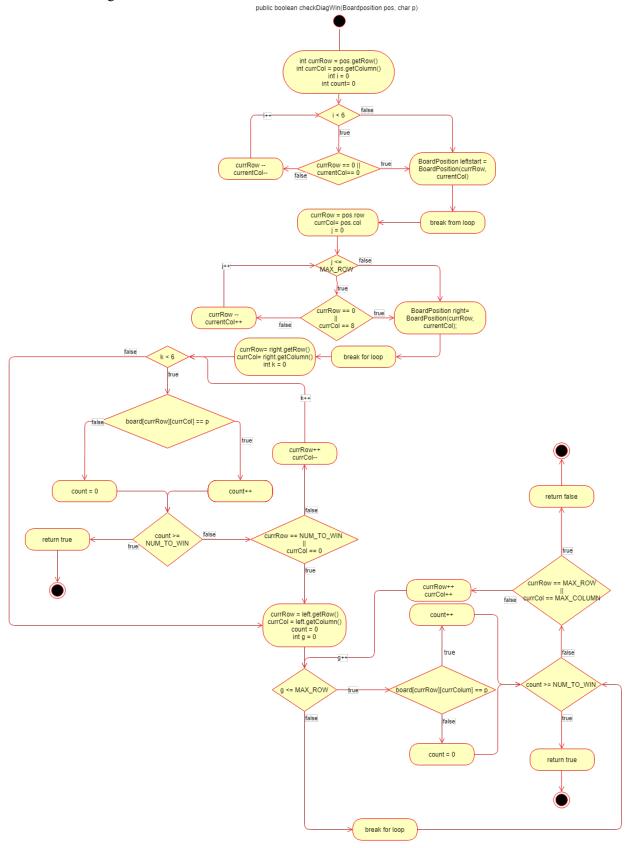
o checkHorizWin method



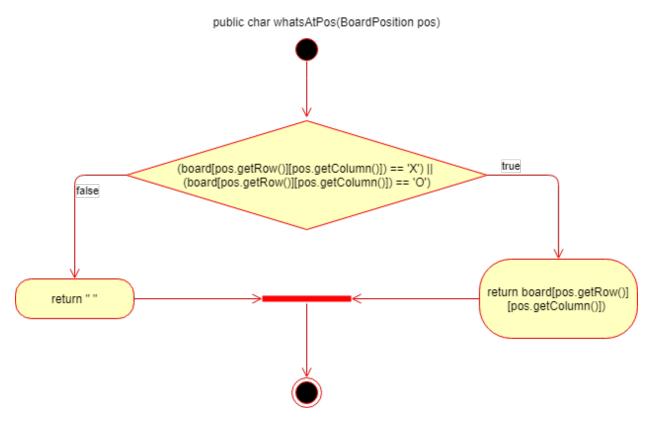
o checkVertWin method



# o checkDiagWin method

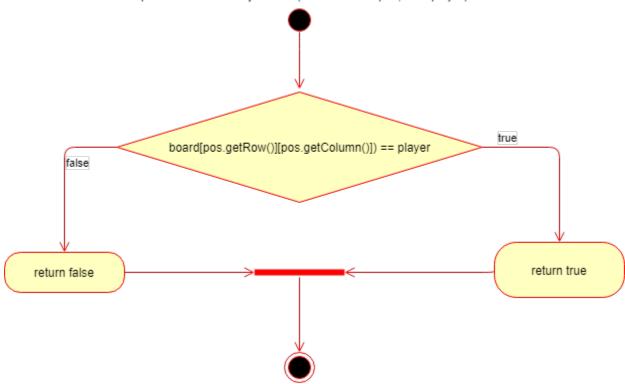


### whatsAtPos method



o isPlayerAtPos method

# public boolean isPlayerAtPos(BoardPosition pos, char player)



o toString method

