Criterion B – Design

Design of the Solution

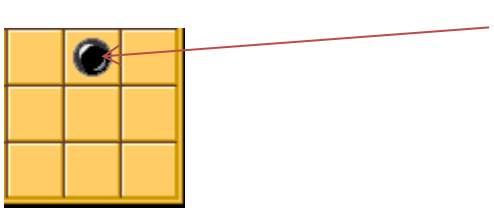
Important Components:

- Board
- Black Chip (Button)

Board has following properties:

- Holds black chips for both players whether they are humans or computers
- Limits incorrect move

For example)



This is how black chips will most likely appear

Black Chip has following properties:

- It is represented by buttons
- When a specific spot on a board is clicked, a black chip immediately appears and the place is occupied meaning it cannot be clicked again

Player 1: 

Player 2 or Computer:

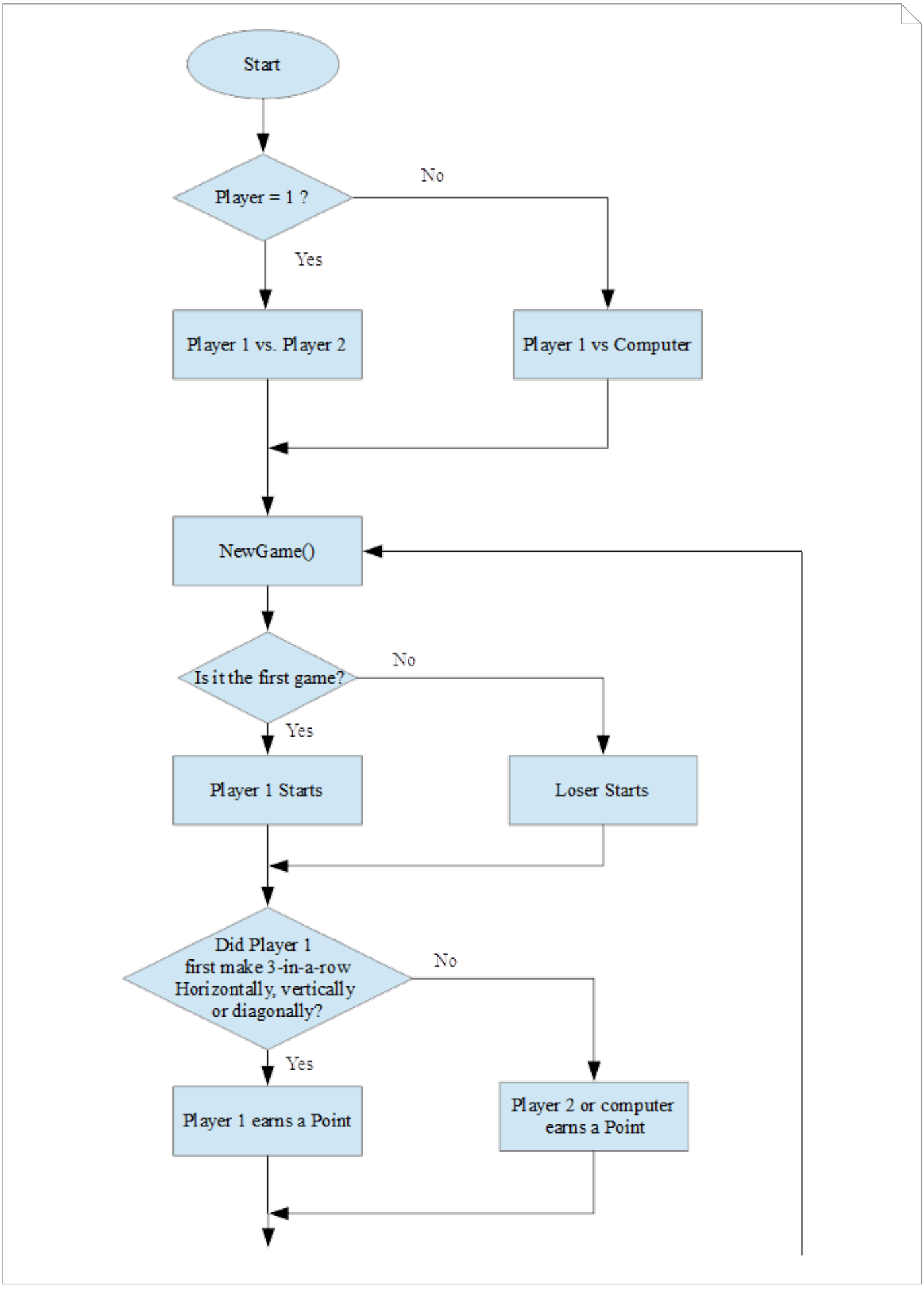
* Note that in Triplets, both players use same chips

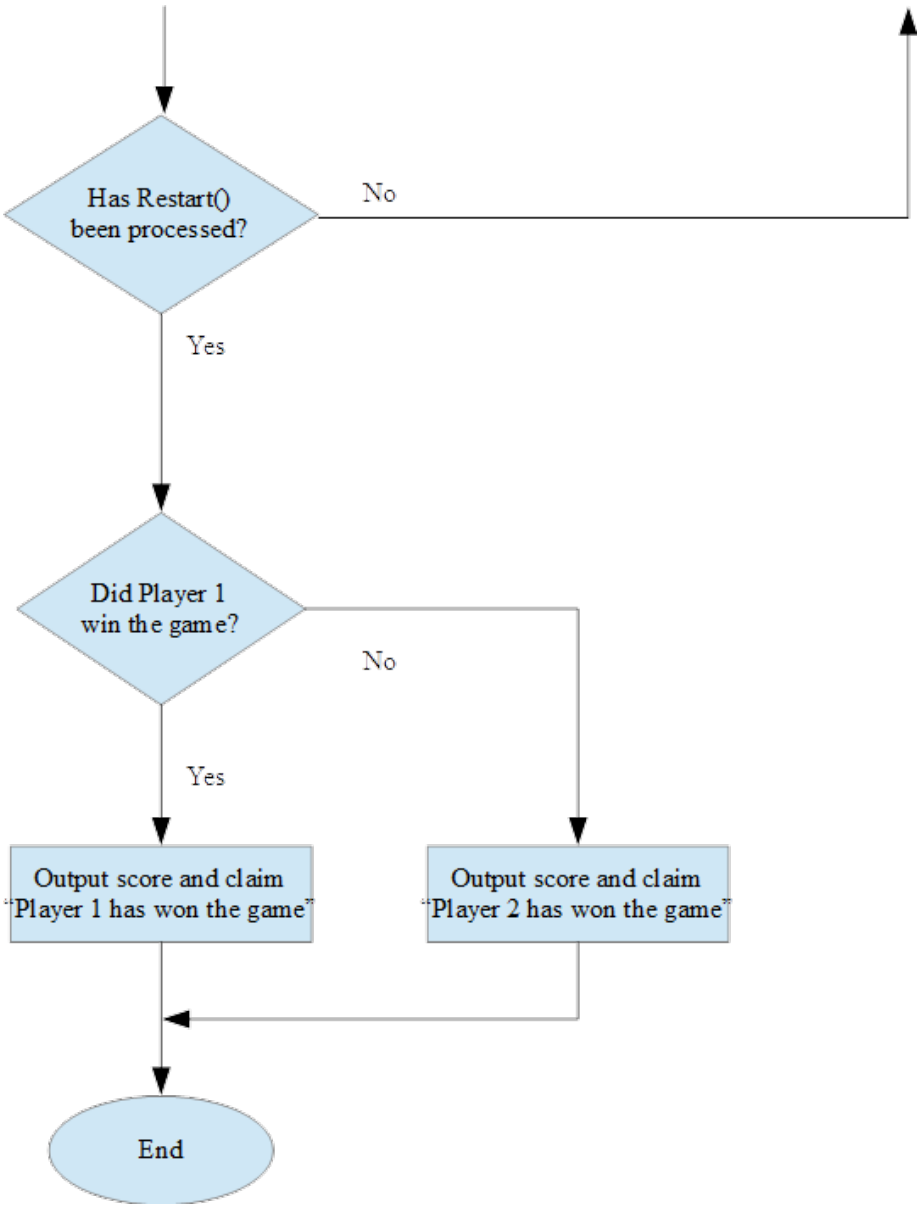
Board Actions

Main() – This will be the first method executed which will let player choose to whether play against another player or a computer
Difficulty() – When a player wants to play Triplets against computer, he or she may alter the difficulty by choosing the level.
Restart() – This will clear the board up so that new game can be played. It will save score and import the data of who won so that loser can start

Chip (Button) Actions

AllButton() – will include all jButtons
AllButton.ActionPerformed() – when clicked, it will be colored black and "occupied".


Start
Player = 1 ?
No
Yes
Player 1 vs. Player 2
Player 1 vs Computer
NewGame()
Is it the first game?
No
Yes
Player 1 Starts
Loser Starts
Did Player 1 first make 3-in-a-row Horizontally, vertically or diagonally?
No
Yes
Player 1 earns a Point
Player 2 or computer earns a Point


Has Restart() been processed?
No
Yes
Did Player 1 win the game?
No
Yes
Output score and claim "Player 1 has won the game"
Output score and claim "Player 2 has won the game"
End

Yet, the methods above are just simple methods in order to represent with a flowchart. There is a crucial programming to be included in order to fully execute the game correctly.

- **WinPattern()** // This checks board whether a player won for 6x6 board
  Pseudocode for checking WinSquares

  For row from 0 to TotalRows
  For column from 0 to TotalColumns
  //for horizontal
  If Button(column,row) and Button(column+1,row) and Button(column+2,row) are occupied
  The game has been won by the last player who placed the chip

  //for vertical
  If Button(column,row) and Button(column,row+1) and Button(column,row+2) are occupied
  The game has been won by the last player who placed the chip

  //for diagonal
  If Button(column,row) and Button(column+1,row+1) and Button(column+2,row+2) are occupied
  The game has been won by the last player who placed the chip

- **Difficulty()** // This will be how computer will act according to player's move
  Pseudocode for the Moves of AI

  Get level from where the user inputs what level to play with
  If level is BEG // stands for beginner
  ComputerPlay(beginner)
  The computer move will be random // any place on board
  If level is INT // intermediate
  ComputerPlay(intermediate)
  The computer will check which buttons has been pressed by the user with loop and check for a place that would not let the user make three in row for example if Button(column,row) is occupied, Button(column+1,row+2) will be pressed by the computer

  More Explanation to Intermediate Mode: Computer tries to figure a spot that would not let the player to make 3-in-a-row. To do this, the computer must not try to place the chip right next to or one place gap between existing chip horizontally, vertically or diagonally.

  For example)