CPSC 2150 Project 1

Connect 4

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**Requirements Analysis**

**Functional Requirements:**

**(For BoardPosition.java)**

* As a player, I need the BoardPosition class to store the row and column of a spot on the board so I can track pieces. (public BoardPosition(int aRow, int aColumn))
* As a player, I want to retrieve the row value from a BoardPosition object so that I know the row position of a specific spot. (public int getRow())
* As a player, I want to retrieve the column value from a BoardPosition object so that I know the column position of a spot. (public int getColumn())
* As a player, I want to ensure that two BoardPosition objects are called equal only if they have the same row and column so that I can compare positions on the board. (public boolean equals(Object obj))
* As a player, I want the BoardPosition object to return a string in the format "<row>,<column>" so I can easily see the position of a spot on the board. (public String toString())

**(For GameBoard.java)**

* As a player, I need the game board to be initialized with empty spaces so that I can start the game on a blank board. (public GameBoard())
* As a player, I need to check if a column is available for placing my token so that I can make a valid move in the game. (public boolean checkIfFree(int c))
* As a player, I need to be able to drop my token in a specific column and have the token drop to the lowest available row of that column so that I can make a move. (public void dropToken(char p, int c))
* As a player, I want to know if the last move I made resulted in a win so that I can see if I have won the game. (public boolean checkForWin(int c))
* As a player, I want the game to check if the board is full and no more moves can be made so that I know if the game ends in a tie. (public boolean checkTie())
* As a player, I need to check if I have 5 tokens in a row horizontally after making a move so that I can see if I have won the game with a horizontal line. (public boolean checkHorizWin(BoardPosition pos, char p))
* As a player, I need to check if I have 5 tokens in a row vertically after making a move so that I can see if I have won the game with a vertical line. (public boolean checkVertWin(BoardPosition pos, char p))
* As a player, I need to check if I have 5 tokens in a row diagonally after making a move so that I can determine if I've won the game with a diagonal line. (public boolean checkDiagWin(BoardPosition pos, char p))
* As a player, I want to know what is at a specific position on the game board (whether it is empty) so that I can keep track of the game state. (public char whatsAtPos(BoardPosition pos))
* As a player, I need to check if I am at a certain position on the board so that I can verify my moves. (public boolean isPlayerAtPos(BoardPosition pos, char player))
* As a player, I need the game board to provide a string representation of its current state so that I can visualize the entire game board during gameplay. (public String toString())

**(For GameScreen.java)**

* As a player,

**Non-Functional Requirements**

**System Design – (UML diagrams)**

