Discussion
Week 4

PSA4: Connect Four
Getting Started

- This assignment must be done *individually*.
- There is no skeleton code! You must start from scratch…BUT we walk you through the whole thing!
- Define your method signatures **EXACTLY** as they appear in the specs. Otherwise, your code may not compile or run with the testing script.
- You should implement your methods in the order defined by the specs – we wrote them specifically to flow in a logical order.
- Look at Nim.java – this gives you a lot of hints!
Required Methods

- 2 Constructors (default and 2 parameter constructors)
- public String toString()
- public void addMove(int column, char checker)
- public void clear()
- public boolean allowsMove(int column)
- public boolean isFull()
- public boolean winsFor(char checker)
- public void hostGame()
Constructor

- Instance variables vs. local variables
  - Instance variables – can be seen by the entire class
  - Local variables – only defined within a method/block

- The keyword “this” is used to reference the current object - the object whose method or constructor is being called.
2D Arrays

- Think of it as an array of arrays.
The `toString()` method

- `public String toString()`

Here, we are returning a String. What should be in the String that we are returning?

- Make sure you are also printing out the checker!
Adding checkers to the board

- We want to add a checker to the board at column 0. Where do we start the for loop?

- When do we stop the for loop?

- How do we stop the loop?

- Aside: You are given a setBoard() method – this ONLY works if your addMove() works.
Checking for four in a row

- Tip: Don’t try to check all of the possible 4-in-a-row options in the same loop.

- Helper methods!
  - E.g. one method for checking horizontal, one method for checking vertical, etc.

- The “anchor” checker method.
  - One checker (usually the first one) is used as an “anchor” — so it is the one controlling the loop conditions.
Hosting the Game

- You want the game to run continuously until someone wins or the board is full. The specs suggest a while loop – what condition should be used for this loop?
- You also want to prompt the user continuously for a correct input. A while loop should be used for this as well.
Hosting the Game

- For each iteration:
  - Print the board.
  - Prompt for input/check validity.
  - Place checker on the board.
  - Check for win/tie.
  - Update checker.
Tips

- Do not index your for loops with i, j, k. This just leads to confusion. Instead, name them something more descriptive like “row” or “col”.
- Test each method as you write them. Don’t wait until you’ve written the entirety of your code to see if it works.
- Understand what each method should do before you write it!