

## CS5004-5005-SV – Lab 3 – May 21, 2020

### Scanner

The goal of today's lab is to practice using Java's `Scanner` class and its commonly used methods. We will also practice using `printf`, opening a **text file**, reading items from a file with `Scanner`, being careful about `==` versus `.equals`, such as with `String`, and other topics from the first few lectures. Please submit **Lab** work using the CS5005 Canvas. Any extra time should be spent working on CS5004 homework PS2.

0. Create a Java class, `Tic.java`, to represent a Tic-Tac-Toe (a.k.a., "Naughts and Crosses") game as a 2-dimensional **array** of strings. Use the single-character Strings "X", "O", and "\_" (underscore) to represent the state of the game, where "\_" means an empty cell. Usually the game starts with all cells empty. "X" normally goes first and turns alternate until one player achieves 3-in-a-row up, down, or diagonally.

a. Create a **printBoard** method that uses `printf` to print the state of the game on the console. Don't worry about "outlining" the game board, just use white space to line things up reasonably. Here is a sample board position:

```
X  _  O
 _  X  O
 _  _  X
```

b. Create a method, **readBoardKbd**, that uses `Scanner` to read in a board position from the keyboard and then print it, as in part a.

c. Create another method, **readBoardFile**, that uses `Scanner` to read in a board position from a text file, **board1.txt**. Create this file in the same folder as your program. Remember to close the file when done reading.

d. Create another method, **readBoardsFile**. Use your **readBoardFile** method above to read multiple boards and store

them in an Array of Boards. The first line of the file should contain an integer saying how many Boards there are in the file. This will enable creating an appropriately sized array. You can use a **for** loop to then read the remaining boards. (For now, don't worry about the case where the rest of the file is flawed in some way.)

e. Use a **for-each** loop to then display all of the Boards from the file on the screen.

1. Complete homework PS2. Submit that assignment to Canvas for 5004.