

# Language Study: Erlang

CMSC 233

## -Midterm Project

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Goals

To continue bask in the glory that is recursion whilst enjoying the challenge of developing a “perfect” Tic-Tac-Toe game. “Perfect” in this context means that the computer should never lose; it should always be able to tie the human player or win.

Instructions

Use a divide and conquer approach here, much like we do when applying recursion to solve a problem. Break the task into small parts and solve those parts individually. Here’s some advice on doing that:

### **Part One**

- Represent the game with Erlang functions and constructs
- Use a list of integer values to represent X and O and blank.
- Be able to address the board positions in the list.
- Write functions to get values from the board.

### **Part Two**

- Develop a natural interface to the game. Write a ttt() or play() (or whatever you want to name it) function that launches the game.
- The computer should:
  - ▶ display the board
  - ▶ prompt the user for the X player’s move
  - ▶ make the move
  - ▶ display the board
  - ▶ determine the O (computer’s) move
  - ▶ make the move
  - ▶ display the board
  - ▶ repeat until the end of the game

### **Part Three**

- Check all input for range validity.
- Check that the user is not moving into an already occupied space.

### **Part Four**

- Check for a winner. You should probably do this after every move.
- Detect ties as soon as possible. You can certainly tell if it’s a tie after move nine because the board will be full and there will be no winner. You can detect a tie after move eight in most cases. There are some cases where you can detect a tie after move seven or perhaps sooner.

Submitting

Print out . . .

- your source code
  - a transcript of two successful runs with expected data
  - a transcript of two successful runs with unexpected data
- . . . and **staple it all together** and hand it in at the start of the class in which it is due. Remember to include your name.