

# Lab 05b – More Functions!

## Tic-Tac-Toe with BYOB (is AWESOME)

- Open up the example tic tac toe program in the BYOB (Build Your Own Block) version of Scratch:

<http://inst.eecs.berkeley.edu/~cs39n/fa09/hw/04/>

- We want to modify the script that changes whose turn it is and calculates if someone has won.
- We want to make all of the new blocks that are below.
  - Make a command block called “Change player” to change the variable “Player” based upon whether X or O goes next.
  - Make a reporter block to calculate the value total, which is the sum of all of the positions for the next set of possible winning moves.
  - Follow the directions below to make the Boolean block “X wins?” and “O wins?”

OLD

```
when I receive Change Turn
if X = Player
  set Player to O
else
  set Player to X
set index to 1
repeat length of winning moves
  set total to 0
  set one-winning-move to item index of winning moves
  change total by item letter 1 of one-winning-move of board
  change total by item letter 2 of one-winning-move of board
  change total by item letter 3 of one-winning-move of board
  if total = 3
    say X - wins for 2 secs
  if total = -3
    say O - wins for 2 secs
  change index by 1
```

NEW

```
when I receive Change Turn
when clicked
  set Player to X
Change Player
set index to 1
repeat length of winning moves
  set total to Position Total for item index of winning moves
  if X wins?
    say X - wins for 2 secs
  if O wins?
    say O - wins for 2 secs
  change index by 1
```

- To make the Boolean block “X wins?” we click on “Make a Block” and select “Boolean”. A Boolean block returns a value just like a reporter block. However instead of returning a number or a word, it will report a true or a false.

- The actual script to put in the block editor for “X wins” is pretty short. We just want to return true if total is equal to 3 and false otherwise.

