Review!

* Explain what if else statements are
* Explain what switch statements are

Loops

* You want to have your code print out “hello world” 10 times. How do you do it?
* With a loop!
* Javascript has 5 different types of loops.
  + While loop
    - Checks condition before loop is run
  + Do while
    - Do {
    - } while ()
    - Difference: this code will always be run at least once, because the check happens at the the end
  + For loop
    - For (int I = 0; I < length; i++)
    - First statement executes at the beginning
    - Second statement is checked before the loop is run, it stops the loop if it evaluates to false
    - Third statement is run at the end
    - Don’t always need to include all statements. In fact, you can omit first and third statements
      * For (; I < length; )
  + For in loop
    - Goes through the keys of everything
      * Arrays: shows index
    - Website is wrong
  + For of loop
    - Goes through the values of an object
      * Arrays: shows values of everything
  + If you can use one of the more specialized for loops, you should because it’s a little more readable
  + Choosing loops
    - If you know the number of iterations you need to make, a for loop may be a good choice. Otherwise, a while loop may be better.
    - If you want to go through all properties of an object, use a for in loop.
    - If you want to go through everything in an iterable, use a for of loop.
    - If you want to run some piece of code once and you don't know the number of times the loop should be repeated, use a do while loop.
  + Infinite loops
    - Loop that runs infinitely
    - Never stops
    - Make sure everything has a valid end condition
      * End condition will be reached
    - If you do get an infinite loops, just stop the program.
      * Can use task manager, ctrl + c, close browser tab
* <https://codeshare.io/K88rYo>
  + Print “hello world” 10 times with while loop, do while loop, and for loop

Arrays

* Arrays more in depth
* What are arrays?
* Unlike java or other programming languages where you have to explicitly state how many slots you want, its dynamic
  + For java people just think of this as more of an arraylist type thing
* You can store whatever you want in an array
* Initialize:
  + Array literal
  + Array constructor
* Index can only be numeric, but it can be any number
  + If you add something to a really big index, it’ll just make everything in between undefined
* Iterating through arrays
  + Ok we just covered this
  + .forEach()
    - This will make more sense when we go over methods / functions, which will be in the next two lessons
* Manipulating arrays
  + .push()
    - Adds to the end
  + .unshift()
    - Adds to the beginning
  + .concat()
    - Takes another array as input
    - Doesn’t modify either array, unlike push
    - Instead, concat returns a new array
  + .splice(beginning index, length, elements to add from 0 … N)
    - If length is 0, no elements are removed
    - If there is no length, all elements from beginning index to end will be removed
    - If you don’t add any elements, this method will only remove
      * This is how we remove elements from arrays in javascript
  + Use codeshare to get students to add, delete, concat, etc
* 2d arrays
  + Just arrays inside arrays
    - Can create with array literal
    - let activities = [
    - ['Work', 9],
    - ['Eat', 1],
    - ['Commute', 2],
    - ['Play Game', 1],
    - ['Sleep', 7]
    - ];
  + Show of console.table
  + Useful if you want to represent a chessboard, a 2d grid
  + How to iterate?
    - Use codeshare to get students to do it themselves
    - A: use nested loops

Arrays vs Objects

* Arrays and objects both store large amounts of data in a single variable. What’s the difference?
  + Arrays are indexed, the order is guaranteed
  + Objects use a key value system, order is kinda?? guaranteed
    - Depends on implementation
    - Just to be safe, assume objects aren’t guaranteed to be ordered
  + Semantics:
    - An object is one thing in your code
      * Represent a person, an animal, a car, etc
    - Arrays are lists of data
      * List of students for an attendance system
      * Number of people inside a bus