GENERAL ASSEMBLY

JAVASCRIPT DEVELOPMENT

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JAVASCRIPT DEVELOPMENT

CONDITIONALS AND FUNCTIONS

LEARNING OBJECTIVES

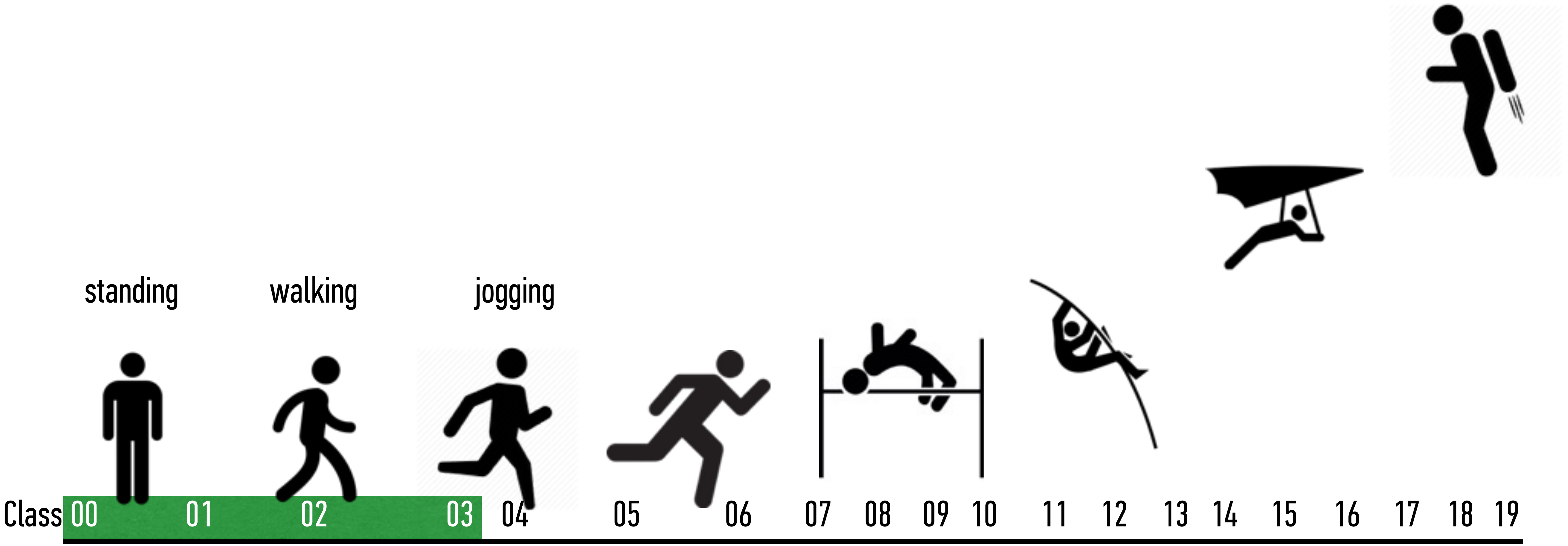
At the end of this class, you will be able to

- Use Boolean logic to combine and manipulate conditional tests.
- Use `if/else` conditionals to control program flow based on Boolean tests.
- Differentiate among true, false, truthy, and falsy.
- Describe how parameters and arguments relate to functions
- Create and call a function that accepts parameters to solve a problem
- Return a value from a function using the `return` keyword
- Define and call functions with argument-dependent return values

AGENDA

Timing	Topic
30 min	Comparison operators
15 min	Conditional statements
15 min	Logical operators
5 min	Break
15 min	Lab: Ages
35 min	Function declarations & function expressions
5 min	Break
15 min	Parameters
10 min	The return statement
20 min	Lab: Rolling dice
15 min	Final Questions & Exit Tickets

Where we are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Checkin and questions

- The **most significant thing I learned** about using Conditionals and Functions is ___________.
- My **biggest outstanding question** about using Conditionals and Functions is ___________.

How to you decide what to have for dinner?

- What factors do you consider?
- How do you decide between them?

CONDITIONALS

CONDITIONAL STATEMENTS

- Decide which blocks of code to execute and which to skip, based on the results of tests that we run

`if` STATEMENT

```
if (expression) { code }
```

```
if (expression) {
   code
}
```

BOOLEAN VALUES

- A separate data type
- Only valid values are `true` or `false`
- Named after George Boole, a mathematician

COMPARISON OPERATORS

>	greater than
>=	greater than or equal to
<	less than
<=	less than or equal to
===	strict equal (use this one)
==	coercive equal (AVOID)
!==	strict not equal (use this one)
!=	coercive not equal (AVOID)

TYPE COERCION

- JavaScript “feature” that attempts to make it possible to run a comparison operation on two objects of different data types
- Results are sometimes unpredictable
- `==` and `!=` use coercion if necessary to arrive at an answer — avoid them
- `===` and `!==` do not use coercion — best practice is to use these rather than the coercive operators

`if` STATEMENT

```
var weather = "sunny";

if (weather === "sunny") {
   console.log("Grab your sunglasses");
}
```

`if/else` STATEMENT

```
var weather = "sunny";

if (weather === "sunny") {
   console.log("Bring your sunglasses");
} else {
   console.log("Grab a jacket");
}
```

`else if` STATEMENT

```
var weather = "sunny";

if (weather === "sunny") {
   console.log("Bring your sunglasses");
} else if (weather === "rainy") {
   console.log("Take an umbrella");
} else {
   console.log("Grab a jacket");
}
```

TERNARY OPERATOR

- A compact `if/else` statement on a single line
- “ternary” means that it takes 3 operands

TERNARY OPERATOR

```
(expression) ? trueCode : falseCode;
```

TERNARY OPERATOR

- Can produce one of two values, which can be assigned to a variable in the same statement

```
var name = (expression) ? trueCode : falseCode;
```

BLOCK STATEMENTS

- Statements to be executed after a control flow operation are grouped into a block statement
- A block statement is placed inside braces

```
{
   console.log("Grab your sunglasses.");
   console.log("Enjoy the beach!");
}
```

LOGICAL OPERATORS

LOGICAL OPERATORS

- Operators that let you chain conditional expressions

&&	AND	Returns `true` when both left and right values are `true`
||	OR	Returns `true` when at least one of the left or right values is `true`
!	NOT	Takes a single value and returns the opposite Boolean value

TRUTHY AND FALSY VALUES

TRUTHY AND FALSY VALUES

- All of these values become `false` when converted to a Boolean:
  - `false`
  - `0`
  - `“”`
  - `NaN`
  - `null`
- These are known as **falsy values** because they are equivalent to `false`
- All other values become `true` when converted to a Boolean and are known as **truthy values** because they are equivalent to `true`

VERIFYING TRUTHINESS AND FALSINESS

- Adding `!` before a value returns the inverse of the value as a Boolean
- Adding `!!` before a value gives you the original value as a Boolean
- This is a simple shortcut to verifying truthiness and falsiness

SHORT-CIRCUIT LOGIC

- A way of making sure things like variables exist before running conditional code

BREAK (5 MINUTES)

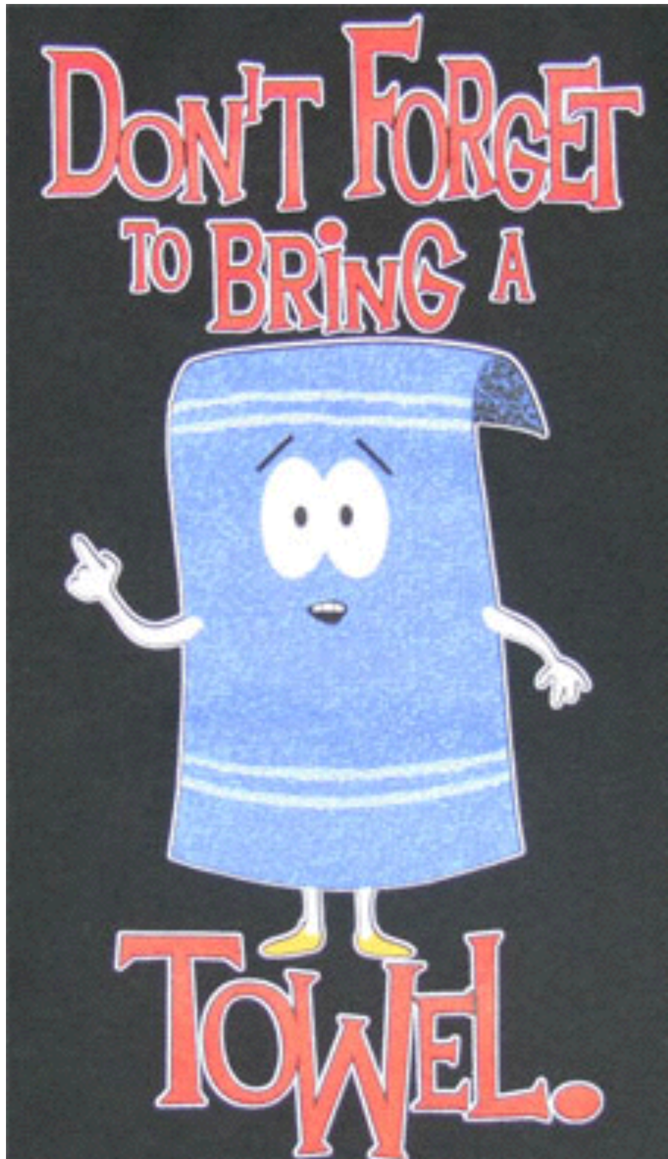
LAB: AGES

FUNCTIONS

- A **function** is a reusable statement, or a group of reusable statements, that can be called anywhere in a program.
- A function avoids the need to rewrite the same statement(s) over and over.
- Functions enable software developers to segment large, unwieldy applications into smaller, more manageable pieces.

DRY (DON'T REPEAT YOURSELF)

- A key tenet of engineering.
- Our goal is to create programs with as little code as possible, while maintaining complete clarity.
- Functions are a critical component of doing this.



FUNCTION DECLARATION EXAMPLE

```
function speak() {
  console.log(“Hello!”);
}
```

FUNCTION EXPRESSION EXAMPLE

```
var speak = function () {
  console.log(“Hello!”);
};
```

CALLING A FUNCTION

- Invoking, or **calling**, a function executes the code defined inside this function.
- Calling a function is different from defining it. A function is not called when it's defined.
- You call a function by specifying the function name with parentheses after it

FUNCTION EXPRESSION VS FUNCTION DECLARATION

- Function expressions define functions that can be used anywhere in the scope where they're defined.
- You can call a function that is defined using a function declaration before the part of the code where you actually define it.
- Function expressions must be defined before they are called.

FUNCTION DECLARATION SYNTAX

```
function name(parameter) {
  statement;
}
```

FUNCTION EXPRESSION SYNTAX

```
var variable = function (parameter) {
  statement;
}
```

OBJECTS

- A separate data type
- defined by code enclosed in braces { } — but not the same thing as a function
- Can contain properties and methods
- Functions are used to define methods

OBJECT EXAMPLE

```
var person = {
  fName: 'Barack',
  lName: 'Obama',
  speak: function () {
    console.log("Hello world!");
  }
}

person.speak()
=> ‘Hello world!’
```

LAB: ROLLING DICE

`document.getElementById()`

- Part of the Document Object Model (DOM)
- Lets us access an HTML element by specifying the value of its `id` attribute
- Also lets us change attribute values or text content of that HTML element by specifying values

document.getElementById()

HTML

```
<img id="photo" src="giraffe.png">
```

JavaScript

```
var desc = document.getElementById("photo");
desc.src = "elephant.png";
```

HTML

```
<img id="photo" src="elephant.png">
```

BREAK (5 MINUTES)

PARAMETERS

DOES THIS CODE SCALE?

```
function helloDonald () {
  console.log('hello, Donald');
}

function helloHillary () {
  console.log('hello, Hillary')
}
```

USING A PARAMETER

parameter

```
function sayHello (name) {
  console.log('Hello ' + name);
}
```

argument

```
sayHello('Donald');
=> 'Hello Donald'

sayHello('Hillary');
=> 'Hello Hillary'
```

USING MULTIPLE PARAMETERS

```
function sum(x, y, z) {
  console.log(x + y + z)
}

sum(1, 2, 3);
=> 6
```

THE `return` STATEMENT

`return` STATEMENT

- Ends function’s execution
- Returns a value — the result of running the function

`return` STOPS A FUNCTION'S EXECUTION

```
function speak (words) {
  return words;

  // The following statements will not run:
  var x = 1;
  var y = 2;
  console.log(x + y)
}
```

LAB: FIZZ BUZZ

LEARNING OBJECTIVES - REVIEW

- Use `if/else` conditionals to control program flow based on Boolean tests.
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NEXT CLASS PREVIEW

Scope and Closures

- Determine the scope of local and global variables
- Create a program that hoists variables
- Understand and explain closures

Exit Tickets!

Q&A