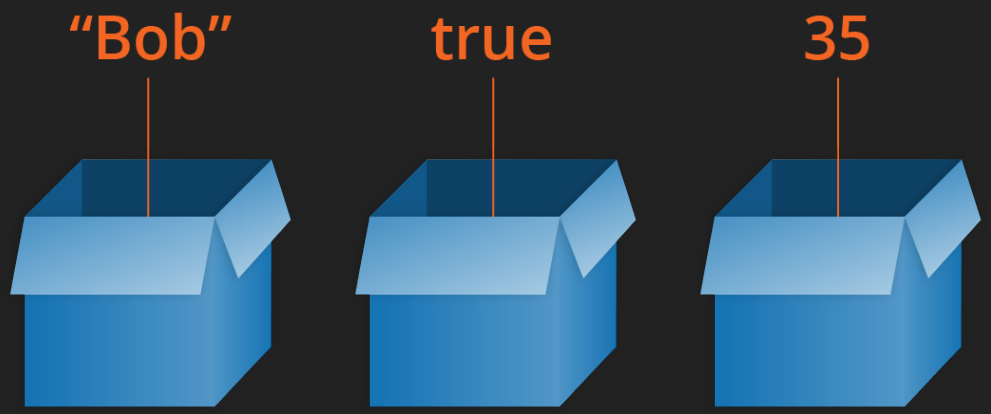
MIS3690 - Web Technologies

Variables

Variables in JavaScript

- A variable is a container for a value
  - like a temporary holding place for keeping web page element, a property, or a number
- Note:
  - Variables aren't the values themselves; they are containers for values.
  - You can think of them being like little cardboard boxes that you can store things in.



Declaring variables using `let` and `const`

- Creating a variable in JavaScript is called "**declaring**" a variable
- use `let` when declaring the variable, if variable's value will change
  - Example:

```
let x = 10;
//Some JS statements
x = 20;
```

- cannot re-assign value using `const`
  - Example:

```
const COLUMNS = 80;
// ...
COLUMNS = 120; // Uncaught TypeError: Assignment to constant variable.
```

- **DO NOT** use `var`

Naming convention

- You can name a variable anyway you want
  - just do not use "reserved" words
    - e.g. don't name a variable as `"form"` or `"element"` or `"backgroundColor"`
- Local variable names are written in ***lowerCamelCase***
  - per Google JavaScript Style Guide
- Constant names use ***CONSTANT_CASE***
  - per Google JavaScript Style Guide

Arithmetic manipulation of variables

```
let x;
// Declare a variable x.
x = 10;
//Assign the value of 10 to variable x
```

```
let x = 10;
// Declare a variable and assign it a value of 10
// (both declaration and assignment in the same one step)
x = x + 10;
// Add 10 to the value that is in variable x and store the result in x
x = x * 5;
x = x / 5;
```

Arithmetic operators

- Addition (`+`)
- Subtraction (`-`)
- Division (`/`)
- Multiplication (`*`)
- Remainder (`%`)
- Exponentiation (`**`)
- Increment (`++`)
- Decrement (`--`)
-

Exercise

- Play with all the arithmetic operators

Handling strings

- Example:

```
x = "My name is Michael"; // note the quote
// Strings are always placed within quotes
y = " Scott";
x = x + y
```

- What will the result of this addition be?
- When you have a variable that has an alphanumeric (string) value, when you use the `+` sign to "add" another value, the `+` will ***concatenate*** the string with the value.
- If the variable has a numeric value, the `+` will perform a regular **add** (mathematical) operation.

Functions

Functions in JavaScript

- Generally speaking, a function is a "subprogram" that can be called by code external to the function.
- in JavaScript, a function is a set of instructions to the browser to do something
- We will be creating our own functions
- Pre-defined functions
  - global functions
  - from Web APIs
    - e.g. Window.alert() method

```
window.alert("Hello world!");
```

    - technically they are called ***methods***

Write our own functions

```
<script>
  function functionName(arguments) {
    // JavaScript statements;
  }
</script>
```

- Note: The `arguments` list is required. It can be
  - empty – just the parenthesis like `()`
  - a single argument
  - multimple arguments separated by `,`

Exercise: *ex13.html*

- Download *ex13.html* from GitHub (*mis3690/resources/templates*)
- We will try and write a function that will enlarge the image when user moves mouse *over* the image
- What is the *event*? *element* (eventTarget)?
- Let's write pseudo-code together
- Can you also change something else in the same function?

Exercise: *ex13.html* (cont.)

- Write another function that will resize the image to original size when user moves mouse *off* it

Exercise: *ex13.html* (cont.)

- Using the same functions to work with multiple images
  - need to use ***arguments***
  - maybe very confusing if you don't understand the purpose of arguments 😎
- Update *sitemap.html* and ***commit/push*** to GitHub

Questions?