JavaScript Data Types

Our Goals

- Identify and explain primitive data types in JavaScript
- Define what a variable is and explain how and why we would use them
- Be able to discuss conventions and rules when creating variables
- Distinguish between loose and static typing
- Be able to use JavaScript comments
- Identify statements and expressions in JS code

What do I do with them?

- Data types are the types of information provided by a programming language
- **Primitive** data types are the basic building blocks of a language
  - They are immutable (cannot be changed) - ?!
- There are also **composite** types. These are types of data that can be constructed by combining primitive and other composite data types
  - They are not immutable

Primitive Data Types

- string
- number
- boolean
- null
- undefined
- (symbol)

There are more!

But they are all composite types...

- Objects
- Arrays
- Functions
- etc.

Strings

```
"Hello World";

"Jane's Bag";

'It\'s gibberish!';
```

Numbers

```
42;

1;

0.2;

-1242.151251;
```

Booleans

```
true;

false;
```

Undefined

```
undefined;

// No value yet
```

Null

```
null;

// This is explicitly empty
```

I don't want to forget!

- Enter variables.
- Variables are ways to store information in memory.
    - You assign a name to a certain piece of data or collection of code. Think of them as named containers.
- The name of a variable is occasionally called the JavaScript identifier.

How do they work?

```
var name = "James Joyce";

// OR...

var name;
name = "James Joyce";
```

How do they work?

```
var x = 10;
console.log( x );

x = 20;
console.log( x );
```

Expressions vs. Statements

An expression **evaluates** - it produces a value

A statement **performs an action**

Variables can store results

```
var x = 2 + 2;

var y = 2 * 3;

var name = "James " + "Joyce";
// Concatenation!
```

They can change types

```
var x = 2;

x = null;

x = "Hello World";
```

Static and Dynamic

- **Static typing** is where you have to say in advance that a particular variable is going to be a string, or number for example - and you can't change your mind about what type of variable it is later
- **Dynamic (loose) typing** is where the type of data stored in a variable can change over the lifetime of a program

What's JavaScript's type system?

How to name them

- Begin with letters, $ or _
- Only contain letters, numbers, $ or _
- Case sensitive
- Avoid reserved words
- Choose clarity and meaning
- Pick a naming convention
    - Use camelCase for multipleWords

Comments

Remember that there are two audiences for every program that you write! Humans and computers. Code with the human audience as a priority!

This means you should add comments to your code that explain what is going on.

```
// A single line comment


/*
  A multiline comment
    (I'd avoid these)
*/
```

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Have a go at these exercises