



Logols Learning

WEEKEND WEB DEVELOPMENT BOOT CAMP

TRAINING: JAVASCRIPT/TYPESCRIPT

What is Javascript?

- Javascript != Java
- LiveScript vs. ECMAScript vs. JavaScript
- Client Side Scripting vs. Full Language
- Javascript Engine or Virtual Machine
- “Safe” Programming Language – Ignores Memory/CPU

Javascript Linking

- Script tag in html can be used to write Javascript
 - Runs JavaScript in script tag when page is loading
- Javascript files can be linked in the head element of html

Example:

```
<script>
```

```
  alert('test Javascript');
```

```
</script>
```

or

```
<script src="/script.js"></script>
```

Comments

- `//` - is used for comments
- `/* */` – is used for multi-line comments

Example:

```
// this is a comment
```

```
/*
```

```
This is a multi-line comment
```

```
*/
```

Declaring Variables

- `let [name];`
- `let [name] = [value];`
- You could use `var`, but it handles scope differently
- Use `let` or `const`

Example:

```
let message = "hello";
```

```
alert(message);
```


Data Types

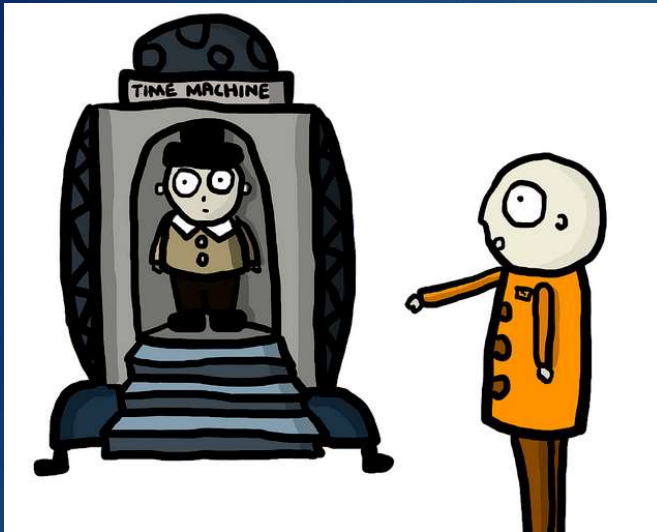
- string– Use single or double quotes
- number
- boolean
- function
- object
 - Object
 - Date
 - Array
- null – set and doesn't have a value
- undefined – not yet set
- Use typeof to find type

Variable Scope

- Local or function scope
 - defined inside a function
- Global scope
 - The scope is global if the variable is declared outside of a function
- Lexical scope
 - Function inside a function has access to variables declared in outer function (closure)

What is this?

- this can be used instead of variable name
- Different value bound to this depending on how function is called
- Refers to outer most global object (window) by default
- Within a method, defined by the object that calls it.
 - Closures used, this becomes the outer function.

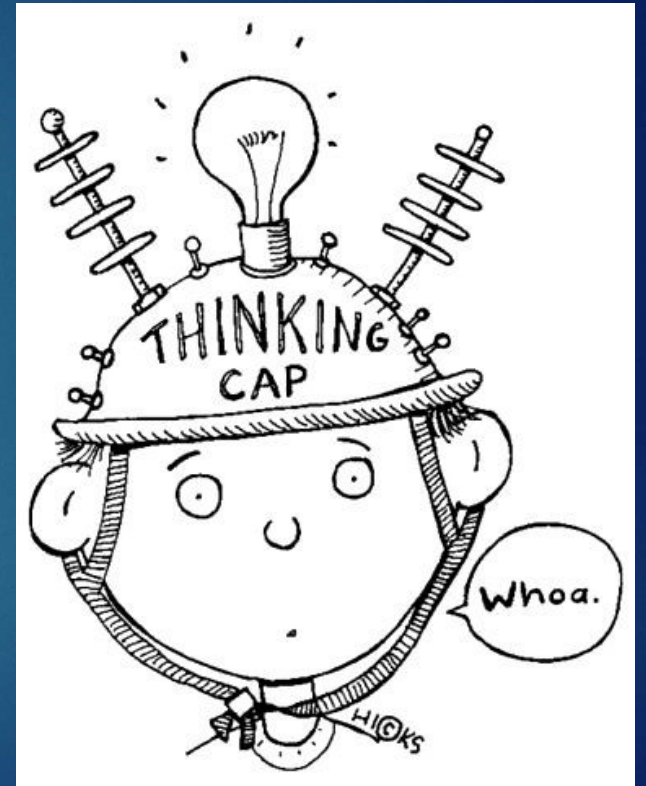


EXAMPLE

VARIABLES

ASSESSMENT

VARIABLES



Comparison Operators

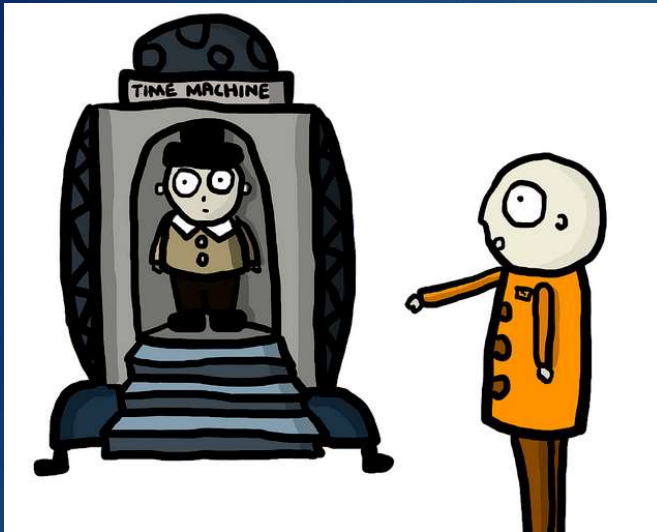
- == equal to
- === equal value and equal type
- != not equal
- !== not equal value or not equal type
- > greater than
- < less than
- >= greater than or equal to
- <= less than or equal to

Logical Operators

- && logical and
- || logical or
- ! Logical not

Conditional Statements

- If
- else
- else if
- switch

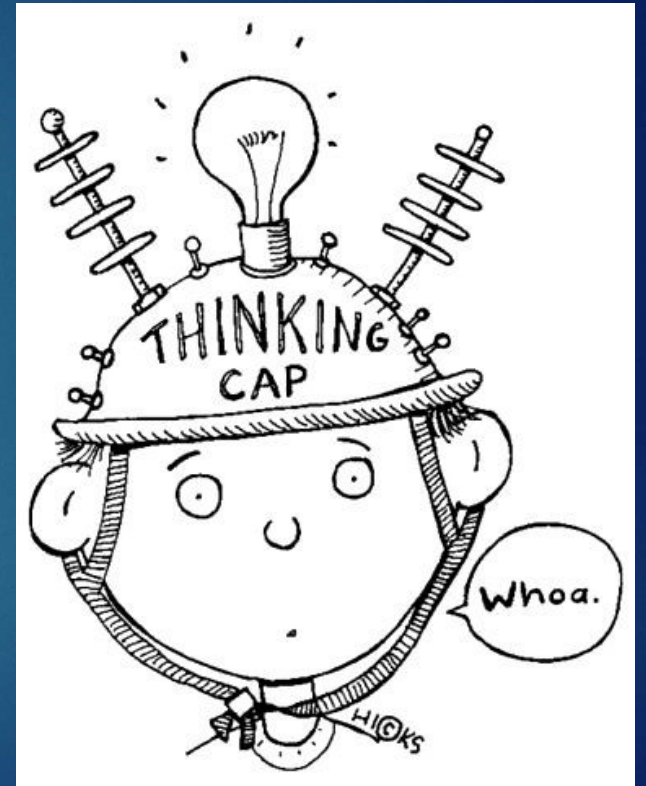


EXAMPLE

CONDITIONS

ASSESSMENT

CONDITIONS



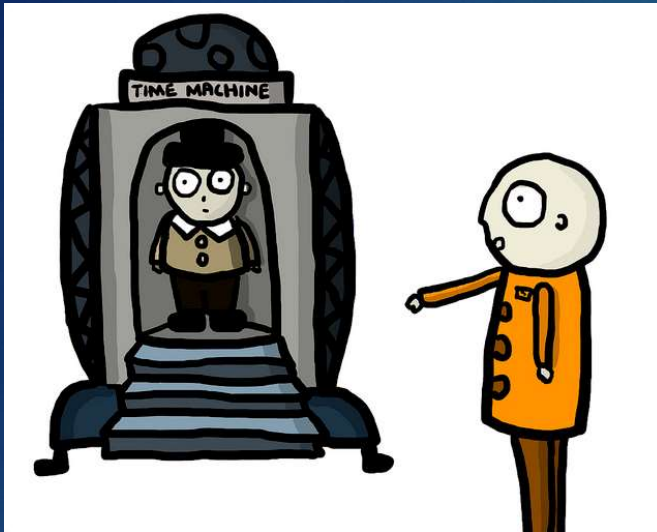
Assignment

- A status report is needed of all government employees. Statuses are:
 - 1: Alive, 2: Zombie, 3: Dead, 4: Unknown
- Given a number variable, write if else statements and console out the persons status.
- Using the same number variable, modify your code to perform the same operation with a switch statement.



Loops

- for
- for / of
- while
- do / while

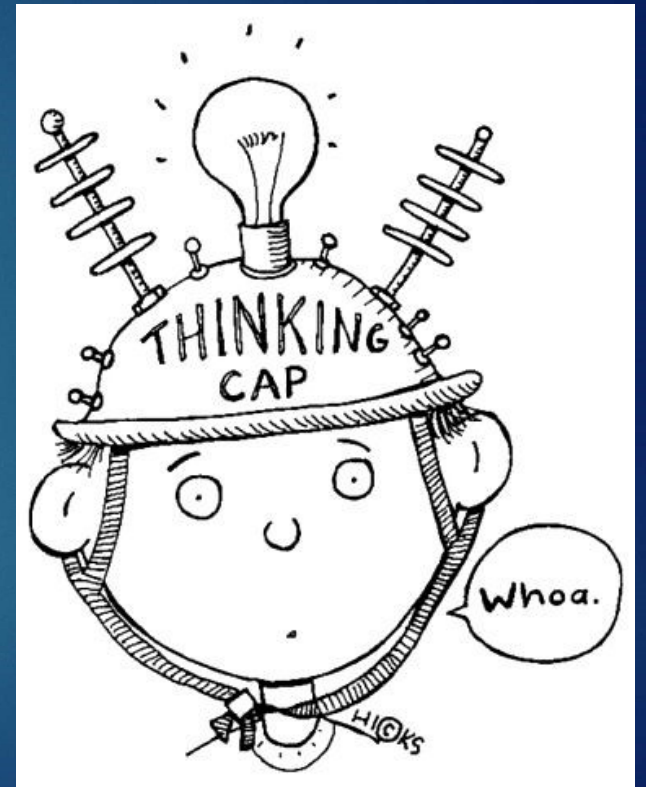


EXAMPLE

LOOPS

ASSESSMENT

LOOPS



Assignment

- A status report is needed of all government employees. Statuses are:
 - 1: Alive, 2: Zombie, 3: Dead, 4: Unknown
- Given an array of number variable, write loops with if else statements and console out everyone's status.
- Use all loop types.
- Given another array of string variables with names, write out the name and their status.

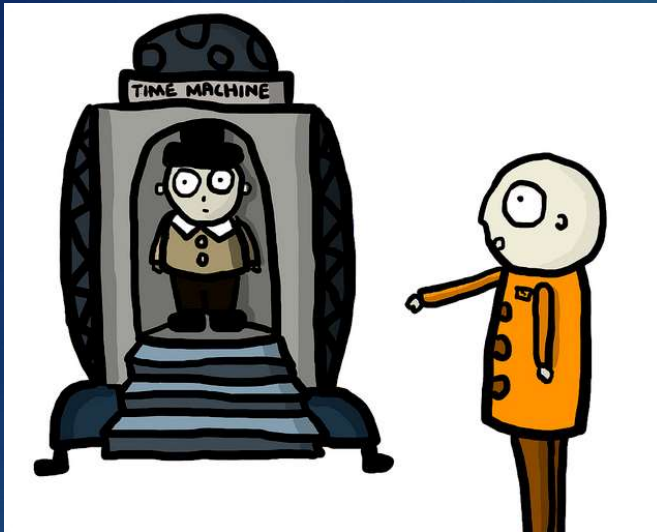


function Syntax

- Function performs an action
- Can also be a type in Javascript

Example:

```
function square(num) {  
    return num * num;  
}  
alert(square(4));
```

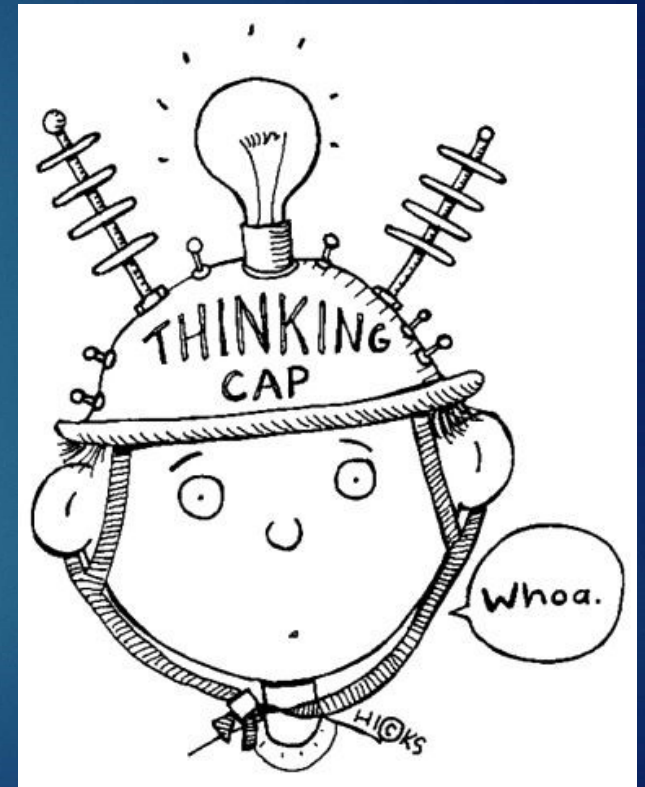


EXAMPLE

FUNCTIONS

ASSESSMENT

FUNCTIONS



Assignment

- A status report is needed of all government employees. Statuses are:
 - 1: Alive, 2: Zombie, 3: Dead, 4: Unknown
- Modify your previous program to create a function that handles the condition given a parameter for status and for name that returns the concatenated string.
- Write a void method that takes a string parameter and writes it to the console.



What is TypeScript?

- Superset of the Javascript language
- Transpiler – interprets Typescript to Javascript
- Strongly Typed
- Also Support for:
 - Generics
 - Classes
 - Interfaces
 - Namespaces
 - OOP (Extends and Implements)



Typescript Types

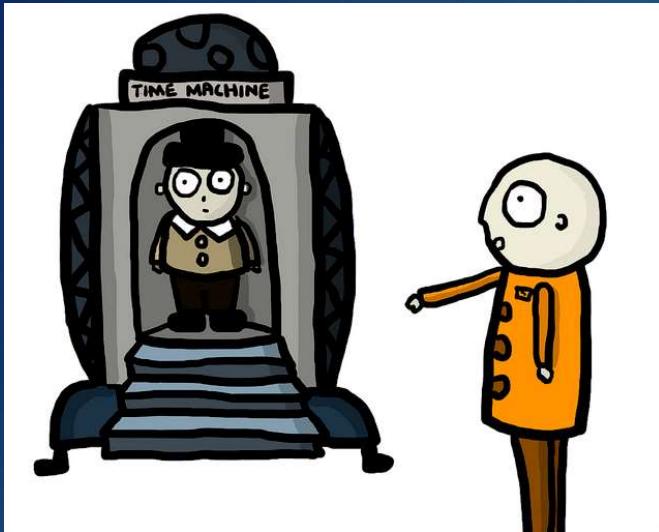
- * - any
- Built-in Types
 - Number
 - String
 - Boolean
 - Void
 - Null
 - Undefined
- User-defined Types
 - enum
 - class
 - Interface
 - array
 - tuple

TypeScript Syntax

- Typescript is written in .ts files that are transpiled to .js files
- Also option to create .d.ts declaration files for intellisense
- Variable Declaration: `let[name] :[type] = [value];`
`function [name] ([param1]:[type], [param2]:[type]) : [return type] {}`

Ex.

```
class [name] {  
  name:string;  
  
  constructor(name:string) {  
    this.name = name;  
  }  
  
  private write():void {  
    console.log("Name is " + this.name);  
  }  
}
```

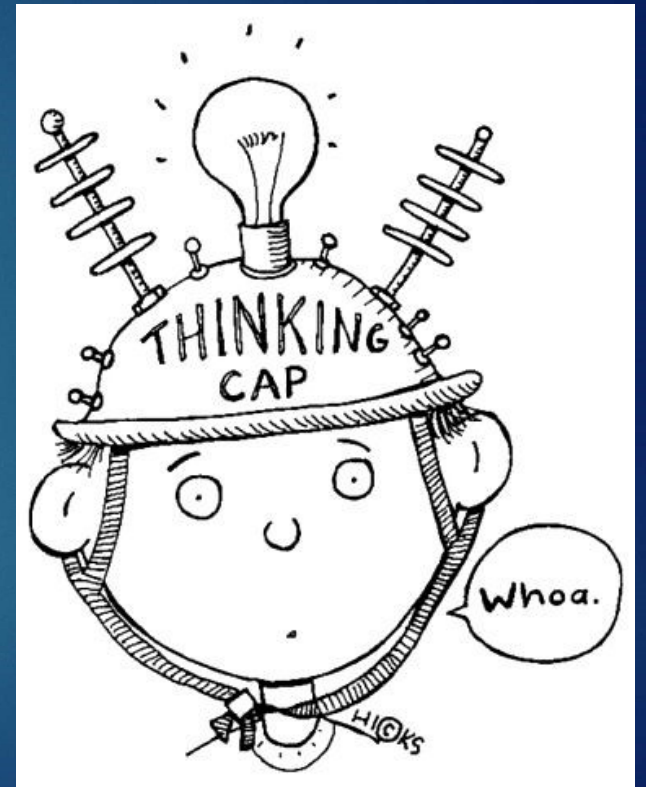


EXAMPLE

TYPESCRIPT

ASSESSMENT

TYPESCRIPT



Assignment

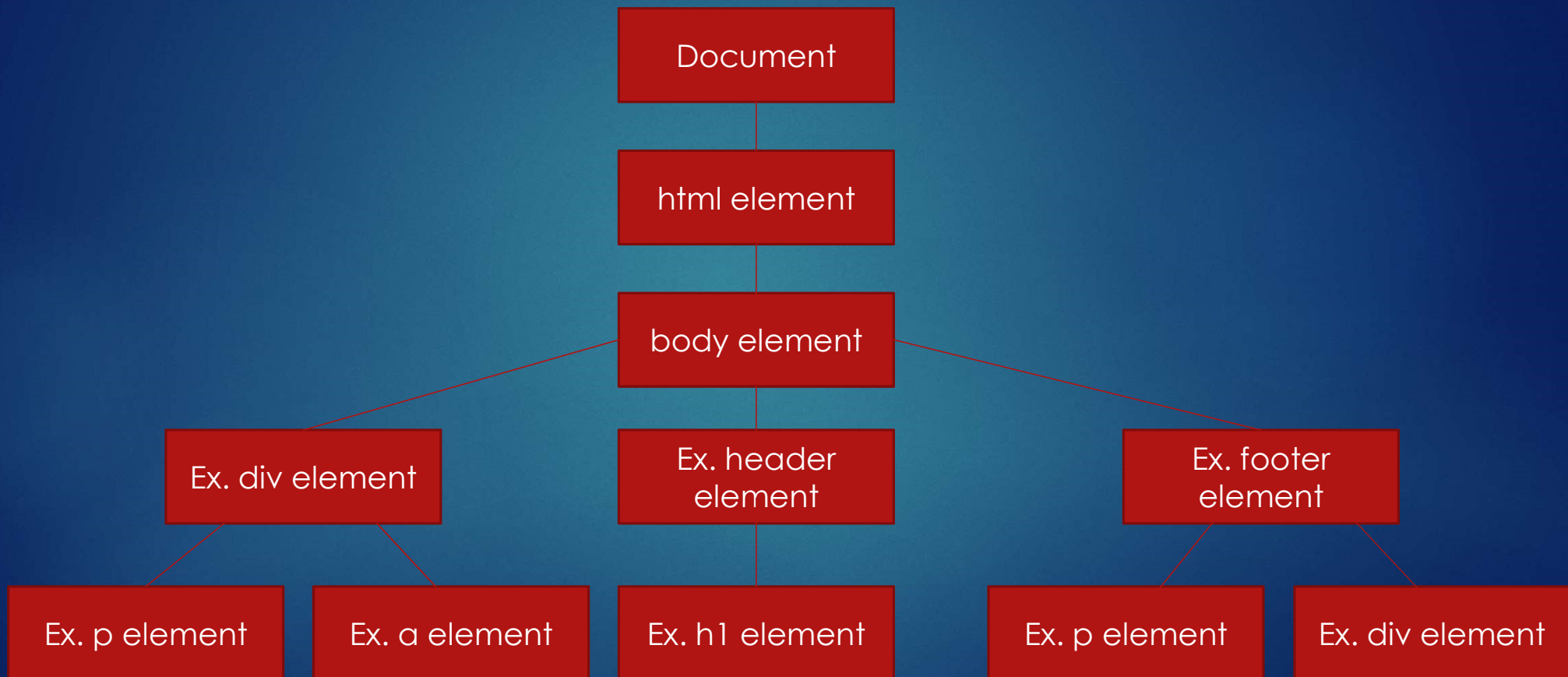
- A status report is needed of all government employees. Statuses are:
 - 1: Alive, 2: Zombie, 3: Dead, 4: Unknown
- Write the same program in TypeScript Syntax that you just created in JavaScript. Make use of typing.



DOM – Document Object Model

- Browser creates the model when the page is loaded
- W3C Standard
- Core DOM, XML DOM, HTML DOM
- Every element is an object
- Property is a value to get or set
- There are also methods and events associated with elements

HTML DOM



Getting DOM Elements/Objects

- `document.getElementById`
- `document.getElementsByTagName`
- `document.getElementsByClassName`
- `document.querySelector`
- `document.querySelectorAll`

Updating the DOM

- `document.getElementById([id]).innerHTML = "";`
- `document.getElementById([id]).[attribute] = "";`
- `document.getElementById([id]).setAttribute([attribute], "");`
- `document.getElementById([id]).style.[property] = "";`

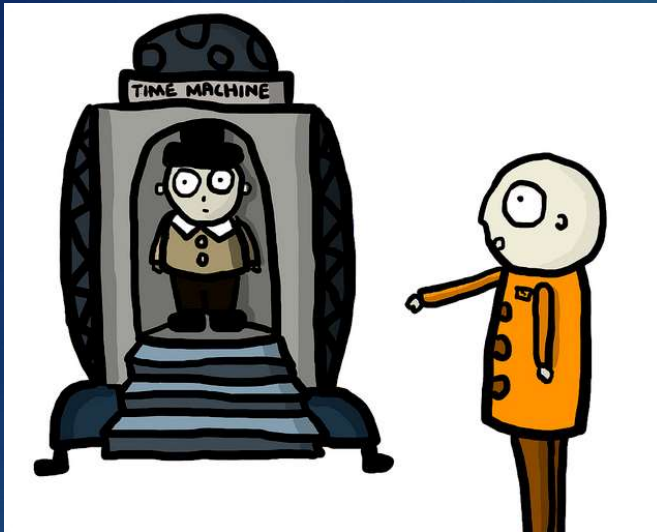
Adding to the DOM

- `document.createElement("");`
- `document.removeChild("");`
- `document.appendChild("");`
- `document.replaceChild("");`
- `document.write("");`

Handling DOM Events

- `My Link`
- `document.getElementById("myLink").onclick = linkClicked;`
- `document.getElementById("myLink").addEventListener("click", linkClicked);`

```
function linkClicked() {  
    alert("link clicked");  
}
```



EXAMPLE

DOM

Assignment

- Create a page through the DOM
 - Start with an empty html page
 - On load, create multiple DOM elements and append them to the document.
 - Create a link, “Add text”
 - Add an event listener to the element
 - On click add a div with text “more text”



QUICK REVIEW

JAVASCRIPT / TYPESCRIPT



Not really a sign you'd want to see whilst driving through an eerily quiet neighbourhood...

Additional Resources

- ▶ JSFiddle
 - ▶ <https://jsfiddle.net/>
- ▶ free Code Camp
 - ▶ <https://www.freecodecamp.org/>
- ▶ Microsoft Virtual Academy
 - ▶ <https://mva.microsoft.com/en-us/training-courses/javascript-fundamentals-for-absolute-beginners-14194>
- ▶ MDN Web Docs
 - ▶ https://developer.mozilla.org/en-US/docs/Web/JavaScript/Language_Resources
- ▶ TypeScript Documentation
 - ▶ <https://www.typescriptlang.org/docs/home.html>