

LECTURE-2

Javascript

- Data types
- Operators
- Control Statement
- Popup Boxes
- Functions
- Arrays

JAVASCRIPT – OVERVIEW

- This course is concerned with client side JS
 - Executes on client (browser)
- Scripting – NOT compile/link.
- Helps provide dynamic nature of HTML pages.
- Included as part of HTML pages as
 - Regular code (viewable by user)
 - A file present in some location.
- **NOTE:** Javascript is **NOT** the same as JAVA

A SIMPLE JAVASCRIPT PROGRAM

```
<html>
  <head>
    <title> A simple Javascript program
    </title>
  </head>
  <body>
    <! --The code below in “script” is Javascript code. -->
    <script>
      document.write (“A Simple Javascript program”);
    </script>
  </body>
</html>
```

JAVASCRIPT CODE

- Javascript code in HTML
- Javascript code can be placed in
 - <head> part of HTML file
 - Code is NOT executed unless called in <body> part of the file.
 - <body> part of HTML file – executed along with the rest of body part.
 - Outside HTML file, location is specified.
 - Executed when called in <body>

WAYS OF DEFINING JAVASCRIPT CODE.

First:

```
<head>  
  <script type="text/javascript">  
    function foo(...) // defined here  
  </script>  
</head>  
  
<body>  
  <script type="text/javascript">  
    foo(...) // called here  
  </script>  
</body>
```

Second:

```
<head>  
  ...  
</head>  
<body>  
  <script>  
    function foo(...) // defined here  
    {  
      ..  
    }  
    foo() // Called here  
  </script>  
</body>
```

WAYS OF DEFINING JAVASCRIPT CODE, CONTD.

Third:

```
<head>  
    // Any general location, that can be accessed.  
    <script src="http://cnn.com/foo.js">  
    </script>  
</head>  
<body>  
<script>  
    // Javascript code called here.  
</script>  
</body>
```

JAVASCRIPT – DATA TYPES

- Basic data types
 - **number**: E.g., 2, 3, 4, 10.6, 3.1415, 1.2e8, 3.2e-10
 - **string**: E.g., “abc”, “Bob Doe”
 - **boolean**: true, false
- Complex data types
 - Objects
 - Functions

JAVASCRIPT – BASIC TYPES

- Not a strongly typed language
 - `x = 5; x = “string”` is perfectly acceptable.
- Case sensitive.
- A variable has a “var” prefix.
 - “`var x = 5`” is same as just, “`x = 5`”.
- Re-declaration is possible
- Possible to mix and match while printing
 - `document.write (6 + 10 + “xyz”)` → prints 16xyz
 - `document.write (“xyz” + 6 + 10)` → prints xyz610

JAVASCRIPT – OBJECTS

- ```
var person = {
 firstName:"John",
 lastName:"Doe",
 email:"JohnDoe@gmail.com",
 age: 38
};
```
- To access values, use
  - `object.propertyName` or
  - `object[“propertyName”]`
- Example
  - `person(firstName)`
  - `person[“lastName”]`

# JAVASCRIPT – FINDING DATA TYPES

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- Useful operator to find data types: `typeof`
  - `typeof(10) → number`
  - `typeof(3.1415) → number`
  - `typeof("abcd") → string`
  - `name = "Bob"; typeof(name) → string`
  - `typeof(true) → boolean`
  - `value = false; typeof(value) → boolean`
  - `var x = 10; typeof(x) → number`
  - `typeof(x) → undefined.`
  - `typeof(person) → object`

# JAVASCRIPT – OPERATORS

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- Arithmetic operators: Usual ones
  - +, -, \*, /, %, ++, --
- Assignment operators
  - =, +=, -=, \*=, /=, % =
- String operators:
  - + (concatenation operator)
- Comparison operators:
  - ==, !=, ===, >, <, >=, <=
- Logical operators
  - &&, ||, !
- Conditional operator
  - variable = (condition) ? value1 : value2

# JAVASCRIPT – CONTROL STATEMENTS

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**if statement:**

```
if (cond1)
 <code-1>
else if (cond2)
 <code-2>
...
else
 <code-3>
```

**Example:**

```
if (x %2 == 0)
 document.write("x is a multiple of 2");
else if (x%3 == 0)
 document.write("x is a multiple of 3");
else
 document.write("x is not a multiple of 2 or 3");
```

# JAVASCRIPT – CONTROL STATEMENTS

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for statement:

```
for (i = 0; i < n; i++)
{
 // code
}
```

Example:

```
var x;

var mycars = new Array();
mycars[0] = "Saab";
mycars[1] = "Volvo";
mycars[2] = "BMW";

for (x in mycars)
{
 document.write (mycars[x] + "
");
}
```

# JAVASCRIPT – CONTROL STATEMENTS ... CONTD.

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## do statement

```
do
{
 <code>
} while (cond);
```

## while statement:

```
while (cond)
{
 <code>
}
```

## switch statement:

```
switch (n)
{
 case n1:
 <code>
 break;
 ...
 default:
 <code>
}
```

# JAVASCRIPT – POPUP BOXES

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- Alert box
  - `alert ("alert text");`
- Confirm box
  - `confirm ("confirm some text");`
- Prompt box
  - `prompt ("prompt text", "default value")`

# JS POPUP BOXES – GETTING VALUES

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- Confirm box
  - `var i = confirm ("Press OK or Cancel")`
- Prompt box
  - `var i = prompt ("Enter some value", "default");`
- Alert box
  - `alert ("alert text");`

# JAVASCRIPT FUNCTIONS

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## Syntax

```
function <functionName> (params)
{
 // code
}
```

Note: Parameters do **NOT** have variable type.

1. Recall: Function definition can be in
  - <head> part of HTML file.
  - <body> portion of HTML file
  - An external file.
2. “return” value of the function is optional.

# FUNCTIONS – EXAMPLE I

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```
<html>
 <head>
 <title> Example of a simple function </title>
 <script type="text/javascript">
 function factorial (input)
 {
 product = 1;
 for (i=1; i <= input; i++)
 product *= i;
 document.write ("factorial of " + product);
 }
 </script>
 </head>
 <body>
 <h1> Example of a simple function </h1>
 <script>
 factorial (9);
 </script>
 </body>
</html>
```

# FUNCTIONS – EXAMPLE2

```
<html>
 <head>
 <title>Browser Information example</title>
 <script>
 function BrowserInfoFn()
 {
 var browser = navigator.appName;
 var version = navigator.appVersion;
 var ver = parseFloat (version);
 document.write ("Broswer: " + browser + " version:" + version + " ver: " + ver + "
");
 }
 </script>
 </head>
 <body>
 <h1>Browser Information example</h1>
 <script>
 BrowserInfoFn();
 </script>
 <hr>
 </body>
</html>
```

# SPECIAL FUNCTIONS IN JAVASCRIPT

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encodeURI	encodes special characters of a URI, except: , / ? : @ & = + \$ #
encodeComponentURI	Encodes special characters and , / ? : @ & = + \$ # of a URI
decodeURI	Opposite of encodeURI
decodeComponentURI	Opposite of decodeComponentURI
escape	encodes special characters, except: * @ - _ + . /
unescape	Opposite of escape - decodes a string
eval	Evaluates and executes a string as Javascript code
isFinite	Finds out if argument is a finite, valid number
isNaN	Finds out if argument is not a number
Number	Converts a string to integer
String	Converts argument to string
parseFloat	Parses argument and returns a float value
parseInt	Parses argument and returns an integer value

# ARRAYS

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- Arrays: Hold multiple objects
  - E.g., array of strings, array of numbers, etc.

E.g., var mycars = ["Toyota", "Honda", "BMW"];

or

```
var mycars = new Array();
```

```
mycars[0] = "Toyota";
```

```
mycars[1] = "Honda";
```

```
mycars[2] = "BMW";
```

or

```
var myCars=new Array("Toyota","Honda","BMW");
```

```
myCars.push("Acura", "Lexus"); // Add more cars
```

```
document.write (myCars); // Toyota, Honda, BMW, Acura, Lexus
```

```
myCars.pop(); // Get the last car – here Lexus
```

# ARRAYS

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- Useful array functions
  - push – Add an element at the end
  - pop – Remove the last element added
  - length – Get the number of elements added
  - toString – Convert to a string. Elements are "," separated
  - shift – Removes and returns first element
  - Unshift – adds an element at the beginning
- Ref: [https://www.w3schools.com/js/js\\_array\\_methods.asp](https://www.w3schools.com/js/js_array_methods.asp)