

## JavaScript/Jscript

- Web browser contains the **JavaScript interpreter**, which processes JavaScript commands.
- JavaScript often appears in the <HEAD> section of the HTML document. The browser interprets the contents of the <HEAD> section first, executed before the <BODY> of the HTML document is displayed.
- JavaScript is **Case Sensitive**
- All **Keywords** are lower case
- **White space** ignored = spaces, tabs, new lines.

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## <SCRIPT> tag

- **<SCRIPT>** tag indicates to browser that the text that follows is part of a script.
  - LANGUAGE attribute specifies scripting language
  - Both Microsoft IE and Netscape Navigator use JavaScript as the default scripting language.

```
<SCRIPT LANGUAGE = "JavaScript">
  <!--
    script code statements;
  // -->
</SCRIPT>
```

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## JavaScript Comments

- **COMMENTS**
  - single-line comments `//`
  - `/* This is a multiple-line comment. */`
- Browser that does not support scripts, ignores the <SCRIPT> and </SCRIPT> tags and the script code in the HTML comment.
- Note: `-->` required for script to interpret properly.
- All JavaScript statements end with a semicolon;
- Javascript writes HTML and browser renders HTML.

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## JavaScript Output

- **document.writeln**
- **Object is document**
- **Method is writeln**



```
<HTML>
<HEAD>
<TITLE>A First Program in JavaScript</TITLE>
<SCRIPT LANGUAGE = "JavaScript">
  document.writeln( "<H3>Hello World!</H3>" );
</SCRIPT>
</HEAD><BODY></BODY></HTML>
```

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## JavaScript Output Method Statements

- **writeln** = includes new line
- **write** = no new line

```
<HTML>
<HEAD>
<TITLE>Printing a Line with Multiple Statements</TITLE>
<SCRIPT LANGUAGE = "JavaScript">
  document.write( "<FONT COLOR='red'><H2>Welcome to " );
  document.writeln( "Hello World 2!</H2></FONT>" );
</SCRIPT></HEAD><BODY></BODY></HTML>
```



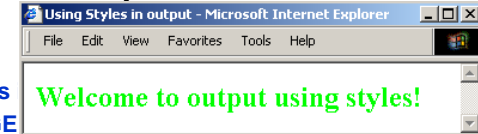
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## JavaScript Output Using Styles

- **Inline style** used for text format
- **Special Character \**
- **String Catenation Operator +**

```
<HTML>
<HEAD>
<TITLE>Using Styles</TITLE>
<SCRIPT LANGUAGE
  document.write("<H2 style = \"color:#00FF00\">" );
  document.write( "Welcome to output " +
    "using styles! </H2>" );
</SCRIPT></HEAD><BODY></BODY></HTML>
```



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## JavaScript Character Strings

- **Character Strings** are denoted by enclosing text in either 'single' or "double quotes"
- **Special Characters** must use a backslash preceding the specification

Text string special characters

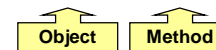
**\n** = newline    **\r** = carriage return    **\t** = tab  
**\f** = form feed    **\"** = double quote  
**\\** = backslash    **'** = single quote

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## JavaScript Alert Window

- **window.alert**



```
<HTML><HEAD>
<SCRIPT LANGUAGE = "JavaScript">
  window.alert( "Welcome to\nJavaScript\nProgramming!" );
</SCRIPT></HEAD>
<BODY>
<H2>Click Refresh (or Reload)<BR>
to run this script again.</H2>
</BODY></HTML>
```

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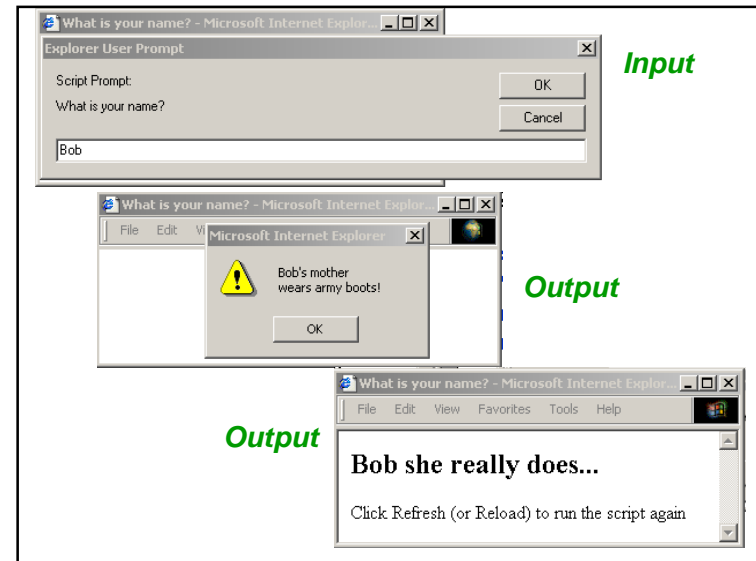
## JavaScript Prompt for Input Data

- **window.prompt(prompt, default)**
  - Return the string entered to assigned variable

```
<HTML>
<HEAD> <TITLE>What is your name?</TITLE>
<SCRIPT LANGUAGE = "JavaScript">
  var szName; // String of characters entered variable
  szName = window.prompt( "What is your name?", "" );
  window.alert(szName + "\'s mother\nwears army boots!");
  document.writeln("<H2>" + szName + " she really does...</H2>");
</SCRIPT></HEAD>
<BODY>
<P>Click Refresh (or Reload) to run the script again</P>
</BODY></HTML>
```

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## JavaScript Variables

- A **Variable** is a container of data and **untyped**
- Variables declared with **var** statement
  - **var i;** // Single variable declaration
  - **var firstEntry, secondEntry, j, M;** // Multiple variables
- Declaration statements end with a semicolon (;) and can be comma-separated list.
- **variable name** can be any valid **identifier**.
  - An identifier is a name for a variable of function
  - Consisting of letters, digits, "\_" and "\$"
  - Can NOT begin with a digit
  - Can NOT have spaces or symbols other than \_ and \$
- Can NOT be a JavaScript keyword

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## JavaScript Data Types and Values

- JavaScript is "loosely" typed language
- Simple Data Types
  - **Number**
    - 8 byte (64 bit) floating point format
    - $\pm 1.8 \times 10^{\pm 308}$
  - **String of text**
    - Symbolized using "abc123" or 'abc123'
    - Special Characters may be used \n \t \b \' \'
  - **Boolean**
    - 1 (true) / 0 (false)

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## JavaScript Arithmetic Operators

- Used to perform arithmetic operations on numbers and data contained in variables, with the result usually assigned to variable
- Order of precedence determines which order the operations will be performed
- Note that the assignment operator '=' is defined last and precedence is last
- For readability insert parenthesis if order is not apparent in code

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## Arithmetic Operators Precedence

(Highest to Lowest)

- ( ) Defines order of operation
- Minus (unary)
- \* / % Multiply, Division, Remainder
- + - Addition, Subtraction
- = Assignment

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## Operator Usage Examples

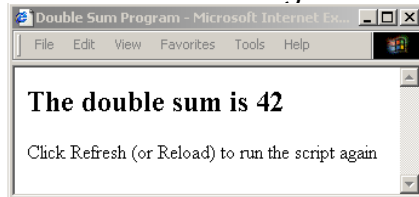
```
var Score = 93, ScoreCount = 0;
TotalScore = Score;
Score = 78;
TotalScore = TotalScore + Score;
ScoreCount = ScoreCount + 1;
AvgScore = TotalScore/ScoreCount;
Remainder = TotalScore % ScoreCount;
document.writeln("F < " + AvgScore / 2);
```

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```
<HTML><HEAD>
<TITLE>Double Sum Program</TITLE>
<SCRIPT LANGUAGE = "JavaScript">
  var firstEntry, secondEntry; // Strings entered by user
  var Number1, Number2,      // Converted number entries
      Sum, Double;           // sum of number1 and number2
  //Prompt and Receive numbers
  firstEntry = window.prompt( "Enter first number", "0" );
  secondEntry = window.prompt( "Enter second number", "0" );
  // Convert numbers from strings to integers
  Number1 = parseInt( firstEntry );
  Number2 = parseInt( secondEntry );
  // Add the numbers
  Sum = Number1 + Number2;
  Double = Sum * 2;
  // Display the results
  document.writeln( "<H2>The double sum is " + Double + "</H2>" );
</SCRIPT></HEAD>
<BODY><&P>Click Refresh (or Reload) to run the script again</P>
</BODY></HTML>
```

## Double Sum Program GUI and Alternative



```
<HTML><HEAD>
<TITLE>Double Sum Program</TITLE>
<SCRIPT LANGUAGE = "JavaScript">
  var Num1, Num2,    // Converted number entries
  Num1 = parseFloat(window.prompt( "Enter first number", "0" ));
  Num2 = parseFloat(window.prompt( "Enter second number", "0" ));
  document.writeln( "<H2>The double sum is " + (Num1+Num2)*2 + "</H2>" );
</SCRIPT></HEAD>
<BODY><P>Click Refresh (or Reload) to run the script again</P>
</BODY></HTML>
```

## Project 2: Part A

- Create a JavaScript program that will prompt and receive an integer number
- Display in the browser window:
  - This number in with color black and relative font size +3
  - The square of the number in green
  - The cube in blue and with font size +2
  - Also display your name in the browser window
- Print a copy of code and browser display

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