## UNIT: 1 Introduction to JAVA Script Reference:- HTML, JAVASCRIPT, DHTMAL AND PHP by IVAN BAYROSS Chapter:- 8: Introduction to Java Script

### JAVA Script in web pages

- Website
  - Intelligent enough to accept user input and dynamically structure web page content as per user's requirement.
  - Content should be dynamic based on what user wants to see
  - Need for creating interactive web pages.
  - Web page will accept input from user, based on input customize web page is returned.
  - In absence of any user input website must be intelligent enough to return a default web page.
  - Environment requires coding techniques
    - Capable of accepting client's request
    - Processing request
    - Result of processing passed back to client via HTML pages

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### JAVA Script in web pages

- Website
  - Capturing user request is done via Form.
  - After capturing input form must have built in technique for sending information captured back to the server for processing.
  - This is done via script (small programs) that are based on server.

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### JAVA Script in web pages

- Wohcite
  - Should provide facility for validating user input.
  - Invalid input will cause data to be sent back to browser from web server.
  - Repeat visit of the website for inputting valid values is tedious.
  - Need of environment which facilitates coding that runs in a browser at a client side for data.

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### JAVA Script in web pages

- JAVA Script
  - Have standard programming construct for:
    - Condition checking constructs
    - · Case checking constructs
    - Super controlled loop constructs
    - Syntax to create and use memory variables, constants and functions
    - Object Oriented Programming environment.
    - Offers event driven programming
  - Created by Netscape
  - Netscape Client browser product is called "Netscape Communicator"
  - Netscape Server product is called "Netscape Commerce Server"

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### JAVA Script in web pages

- JAVA Script
  - Netscape product → Live Wire,
  - Permits server side Java Script code to connect to RDBMS (e.g. Oracle, MS SQL server, MySQL, mSQL)
  - Also supports non-relational database.

### JAVA Script in web pages

- · Client side JAVA Script
  - Embedded into standard HTML program.
  - <SCRIPT>....</SCRIPT> tag.
  - tag embedded within <HEAD>...</HEAD> or <BODY>...</BODY>
  - Browser with Javascript enabled will interpret Java script code.

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### JAVA Script in web pages

- · Capturing user input
  - <FORM>....</FORM> used to create user Request form.
  - <INPUT>....</INPUT> used to instantiate HTML objects in HTML form for capturing user data.
- HTML itself is static. HTML allows a very minimum interaction with users by providing hyperlinks.

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### **JAVA Script**

- · Object-oriented language
- · Allows creation of interactive web pages.

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### Advantage of JAVA Script

- Interpreted Language
  - No compilation steps, syntax interpreted by browser.
- Embedded within HTML
  - Doesn't require special editor, written in any text editor, script can be embedded within html file
- Minimal syntax Easy to learn
  - Simple rules of syntax
- Quick Development
  - Doesn't require time consuming compilation, scripts can be developed with short period of time
  - Many GUI elements like alert, prompt, confirm box.

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### Advantage of JAVA Script

- Design for simple, small program
  - Well suited for simple, small programs
- Dorformance
  - Script are fairly compact and quite small,
  - Minimizes storage requirements on web server and download time for client
  - Require few separate network access as embedded with HTML file
- Procedural Capabilities
  - Condition checking, Looping, Branching etc.
- Designed for programming user events
  - Supports Object / Event based programming

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### Advantage of JAVA Script

- Easy Debugging and Testing
  - Script is tested line by line as it is interpreted language.
  - Errors are listed as they are encountered.
  - So appropriate error message along with line number is listed
  - So easy to locate errors, make changes and test it again.
- Platform independence / Architecture Neutral
  - Completely independent of hardware on which it works.
  - Understood by any Computer with Javascript enabled browser.
  - As browser is for specific platform , Javascript interpretation will be with respect to specific platform.
  - Browser will add platform specific information for Javascript.
  - Developed on Unix machine will work well for Windows machine

### <SCRIPT> tag

- · Marks beginning of snippet of scripting code.
- · Paired tag
- Attribute → Language
- Purpose: Indicates the scripting language used for writing the snipped scripting code.
- Default is: Javascript for Netscape communicator
- Default is: VB script for Internet Explorer.
- F σ
  - <SCRIPT Languge="JavaScript">

</SCRIPT>

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### Variables and Constants

- <HEAD>...</HEAD> is ideal place → Create Javascript variables and constants.
- As head of HTML document is always processed before body.
- Attempt to use any variable before it is defined will give error.
- Variables → used to store values, have a name associated with them via which they can be referenced later.

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### Variables and Constants

- Variable
  - Begin with upper case letter, lower case letter, underscore character, dollar sign character.
  - Remaining characters can consist of letter, underscore, dollar sign or digits.
  - Variable names are case sensitive.
  - If two words used then start first letter of first word in lower case and first letter of second word in upper case
    - E.g. variableName.
  - Doesn't allow data type of variable to be declared when variable is create
  - Same variable may be used to hold different types of data at different times when javascript code runs.

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### Data types and Literals

- Supports four primitive types, complex types such as arrays and objects
- · Literals are fixed values, provides value in a program.
- Number
  - Consists of integer and floating point numbers and special NaN (Not a Number) value.
  - Integer literal can be represented in : decimal, hexadecimal, Octal form.
  - Floating point literal: used to represent very large or very small numbers,
    - E.g. 12.10, 2E3, 0X5F

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### Data types and Literals

- Boolean
  - Consist of logical value true and false.
  - Supports pure Boolean type consist of two values.
  - Logical operators can be used in Boolean expressions.
  - Automatically converts the boolean values true and false into 1 and 0 when used in numerical expressions.

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### Data types and Literals

- Strin
  - Consist of string value enclosed in single or double quotes.
  - Sequence of zero or more characters.
  - E.g. "24, abc nagar, Banglore" Valid
    - "abc' invalid.
  - To include quote character in string it must be preceded by the backslash (\) escape character.

### Data types and Literals

- Null
  - Identifies null, empty or nonexistent reference.
  - Used to set variable to initial value.
  - Prevents from error which is caused by use of un-initialized error
  - Automatically converted to default value of other type when used in expression.

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### Data types and Literals

- Type casting
  - Variables are loosely cast.
  - Type of variable is implicitly defined based on literal value assigned to it.
  - E.g. "Total amount is " with literal 1000 results to string
  - -10.5 + "20" results in floating point lieral 30.5.

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### **Creating Variables**

- · Variable can be created to hold any type of data.
- Syntax:
  - var <variable name> = value;
- Example:
  - var first\_name;
  - Var last name="Thaker";
  - Var phone = 123456123;
  - Example

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### Javascript Array

- · Capable of storing sequence of values.
- · Values are stored in indexed location within the array.
- · Length of array is number elements that an array contains.
- Individual elements of array are accessed by name of array followed by index value of array element enclosed in square brackets.

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### Javascript Array

- Array must be declared before it is used.
- Syntax:
  - arrayName = new Array(Array length)
    arrayName = new Array()
- Example:

```
cust_Orders = new Array();
cust_Orders[50] = "test";
cust_Orders[100] = "test1";
```

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### **Javascript Array**

- Encounter reference to order[50], will extend the size of array to 51 and initializes order[50].
- Even if array is initially created of fixed length it still be extended by referencing elements that are outside the current size of the array.
- · This is done same manner as with zero-length arrays.

### Javascript Array

- Dense array
  - Created with each of its elements being assigned a specific value
  - E.g. arrayName = new Array(value0,value1,.....,valuen
  - Elements starts with 0
- Join()
  - return all elements of the array joined together as single string.
  - $-\,$  Takes one argument  $\Rightarrow$  a string to be used as separator between each element in the final string.
  - Default is comma-space
- Reverse()
  - Reverses the order of the elements in the array
  - Example

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### Javascript Array

- · Element of Array
  - No restriction on the values
  - Values can be of different types or can refer other array object
  - Example
- · Length property
  - Arrays are implemented as objects
  - Objects are name collection of data that have properties and methods.
  - Property returns a value → state of an object
  - Method use to read / modify data contained in object's property.
  - Length is property of array.
  - To access property → objectname.propertyname.<sub>By:-HetalThaker</sub>

### **Operators & Expressions**

- Operator
  - Used to transform one or more values into a single resultant value.
  - Value to which operator is applied is operand
- Expression
  - Are evaluated to determine the value of the expression.

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# Arithmetic Operator Operator Description + Additon - Subtraction / Unary Negation + Multiplication / Division / Modulus - Decrement by 1

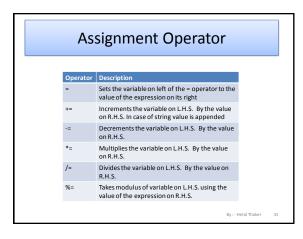
Increment bu 1

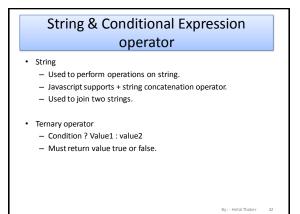
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### Operator Operator Base Logical AND Logical OR Logical NOT

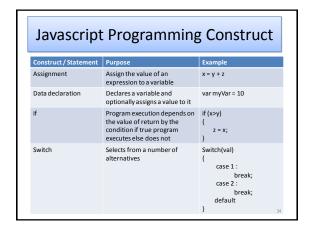
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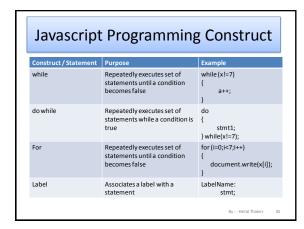
### 

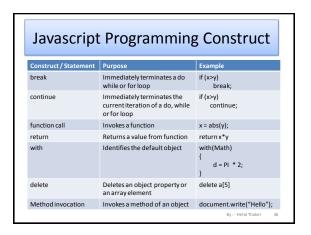




# Special Operator delete operator Used to delete property of an object or an element at an array index. E.g. delete stud[5] will delete sixth element of array stud. new operator Used to create an instance of an object type. void operator Doesn't return a value.







### **Functions**

- Blocks of javascript code designed to do specific task and often return value.
- May take zero or more parameters

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### Built - in Functions

- · Type conversion functions
  - eval()
    - Used to convert string expression to numeric value
    - E.g. var a = eval("10\*10+5");
  - parseInt()
    - · Used to convert a string value to an integer.
    - · Return first ineger contained in the string
    - · Return 0 if string doesn't begin with an ineger.
    - E.g. var a = parseInt("123xyz"); → Result a will contain 123
    - var a = parseInt("xyz"); → Result a will contain NaN.

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### Built - in Functions

- · Type conversion functions
  - parseFloat()
    - Return first float contained in the string
    - Return 0 if string doesn't begin with an ineger.
    - E.g. var a = parseInt("1.23xyz"); → Result a will contain 1.23
    - var a = parseInt("xyz"); → Result a will contain NaN.

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### **User Defined Functions**

- · Declaring functions
  - Declared and created using function keyword.
  - Contains
    - Name of a function
    - List of parameters
    - Block of javascript code that defines what the function does
  - Syntax:

function function\_name(parameter1,parameter2....)
{
 block of code.
}
Case sensitive;
Can include underscore, has to start with a letter

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### **User Defined Functions**

- · Place of Declaration
  - $-\,$  Can be declared anywhere within HTML file
  - Preferably IN <HEAD> ... </HEAD> → ensures all functions will be parsed before they are invoked.
  - If called before it is declared / parsed will lead to error.
- Passing Parameters
  - Values are listed in parentheses separated by comma.
  - During declaration function need to be informed about the no. of values that will be passed.

<u>Example</u>

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### **User Defined Functions**

- Variable scope
  - Parameter are local to the function.
  - Come into existence when function is called and cease to exist when function ends.
  - Any variable declared within function will have scope within it.
  - If declared outside body of function then available to all stmt. of script.
  - If global and local variable have same name then if used within function then local will get priority over global variable.

### **User Defined Functions**

- · Return value
  - return statement is used to return value.
  - Any valid expression that evaluates to single value can be returned.
  - Example:

```
function cube (number)
{
    return number * number * number;
}
```

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```
User Defined Functions
```

- · Recursive function
  - Function calls itself.
  - If-else construct can prevents infinite recursion.

```
- Example:
function factorial(number)
{
    if (number>1)
    {
        return number * factorial(nuber-1);
    }
    else
        return number;
```

### **Dialog Boxes**

- · Provides ability to pick up user input or display small amount of text
- Appears as a separate window.
- Three types of dialog box:
  - Alert Dialog Box
  - Prompt Dialog Box
  - Confirm Dialog Box

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### **Alert Dialog Box**

- Purpose: To display a cautionary message or display some information.
- · Takes single string argument.
- · Displays string passed
- Have "OK" button
- Will not continue processing until OK is clicked.
- Example

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### **Prompt Dialog Box**

- Purpose : To get input from user which allows user interaction.
- Prompt Dialog box
  - Displays predefined message
  - Displays textbox and accepts user input
    - Can pass the text back to Javascript
  - Displays "OK" and "Cancel" button.
  - Program execution gets halt until user clicks OK or Cancel button.
- Prompt() method has two parameters
  - A message to be displayed as a prompt to the user.
  - Any message to be displayed in textbox(optional)

Syntax:

prompt("<msg>","<default value>");

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### **Confirm Dialog Box**

- Purpose: Serves as a technique for confirming user action.
- Confirm Dialog box
  - Displays predefined message
  - Displays "OK" and "Cancel" button.
  - Program execution gets halt until user clicks OK or Cancel button.
  - $-\,$  "OK" causes TRUE to be passed to program and
  - "Cancel" causes FALSE to be passed to the program

Syntax:

confirm("<message>");