Datatypes in JavaScript

Primitive Types

Javascript has five primitive types: Number, String, Boolean, Undefined and Null

1. Numbers. (num.html)

-JavaScript numbers can be written with or without decimals.

```
var x = 10;
var y = 3.14;
var z = 123e5;
```

} Valid JavaScript numbers.

2. Strings. (strg.html)

-JavaScript strings are used for storing and manipulating text. A JavaScript string is zero or more characters written inside quotes

-You can use quotes inside a string, as long as they don't match the quotes

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surrounding the string.

eg: var str1 = "It's alright";
var str2 = "He is named 'Johny'";

Both these work fine. But if the string is

var x = "India is my "country"";

then JavaScript will misunderstand the string.

The solution to avoid this problem is to use a backslash escape character. This turns the special characters to string characters.

var x = "India is my \"country\"";

Some of the string functions used

1. To find the length of a string, we use the length property.
2. indexOf() method returns the index of

(position of) the first occurence of a specified text in a string. JavaScript counts position from zero

The lastIndexOf() method returns the index of the last occurence of a specified text in a string.

Both indexOf() and lastIndexOf() returns -1 if the text is not found.

3. The search() method searches a string for a specified value and returns the position of the match.

4 Extracting String Parts.

a) slice (start, end)
b) substring (start, end)
c) substr (start, length).

slice() extracts a part of a string and returns the extracted part in a new string.
This method takes 2 parameters: the start

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position and the end position (end not included)

eg: var res = str.slice(7, 13);
slices out portion of the string str from position 7 to 12

If a parameter is negative, the position is counted from the end of a string.

eg: var res = str.slice(-12, -6);
slices out the portion of a string from position -12 to position -5.

substring() is similar to slice(), but cannot accept negative indices.

substr() is similar to slice(). The difference is that the second parameter specifies the length of the extracted part.

5. The replace() method replaces a specified value with another value in a string.
This method replaces only the first

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match. This method is case sensitive.

6. A string is converted to upper case with toUpperCase() and to lower case by toLowerCase()

7. The concat() method joins two or more strings.

8. The trim method removes whitespaces from both sides of a string.

9. The charAt() method returns the character at a specified index (position) in a string.

10. localeCompare() method compares two strings in the current locale, returns 0 if both strings are equal.

11. The includes() method determines whether a string contains the characters of a specified string. This method returns true if the string contains the characters and false if not.

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3. Boolean: (bool.html)

Represents a logical entity and can have two values: true or false.

4. Undefined

In JavaScript, a variable without a value has the value undefined. The type is also undefined

eg:- var a;
document.write(a); // displays undefined.

5. Null.

The only value of type Null is null, which indicates no value. If an attempt is made to use the value of a variable whose value is null, it will cause a run time error.

Syntax Directed Definitions.

- Syntax directed definition is a generalisation of a context free grammar in which each grammar symbol has an associated set of attributes, partitioned into two subsets called the synthesized and inherited attributes of that grammar
- An attribute can represent anything we choose. a string, a number, a type and memory location etc.
- The value of an attribute at the parse tree node is defined by the semantic rule associated with the production used at this node.
- The value of a synthesized attribute at a node is computed from the values of attributes at the children of that node in the parse tree.
- The value of an inherited attribute is computed from the values of attributes at the sebling's and parent of that node.
- A parse tree showing the values of attributes at each node is called an annotated parse tree The process of computing the attribute values at the nodes is called annotating or decorating the parse tree.