Java Script

CS242

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JavaScript Facts

- Lightweight programming language.
- Developed by Brendan Eich at Netscape in 1995..
- Generally used for client-side scripting, making web-pages dynamic, responsive, and interactive.
- Also used for plug-in scripting, browser-based game scripting, etc.

Installation and Running

- No installation is required.
- Majority of the **web-browser** supports JS.
- To **run**,
  - JS code is written in a html file.
  - Open the file in browser.
  - Inspect Element.
  - Console

```
<html>
    <head>
        <script>
            console.log(“Hello
    World!”);
        </script>
    </head>
    <body>
    </body>
</html>
```

Statement & Comment

Every Statement in JS is like,

```
console.log(“Hello World!”);
```


Semicolon marks the end

Single line comment,

```
// This is single line comment
```

Multi line comment,

```
/* This is
multi line
Comment */
```

Variables

Variable are declared with *var* keyword.

Declaration and Initialization separately,

```
var x;
x = 5;
console.log(x);
```

Declaration and initialization simultaneously

```
var y = x + 5;
console.log(x);
```

- Variables can later be re-assigned.
- Variables can also store result of an expression.
- Types are not specified (loosely typed). Can find out variable's type

```
console.log(typeof x);
```

Primitive Data Types

- **Number:** Integer and Real.

```
var x = 25;
```

- **String:** immutable sequence of characters.

```
var genre = 'rock and roll';
```

- **Boolean:** Logical values True or False.

```
var iambatman = true;
```

- **Undefined:** not defined yet

```
var robin;
```

- **Null:** represents explicitly empty value.

```
var aquamanOnLand = null;
```

Expressions and Operators

Expressions involving numbers,

```
var x = 25 + 4;
var y;
y = x - 20;
console.log(x, y);
```

Expressions involving string,

```
var name = ‘Dany';
var greeting = 'Hello ' + name;
console.log(greeting);
```

‘+’ is also used for string concatenation.

- All the operators (arithmetic, logical, etc) are similar to C/C++/Java.
- Most operators automatically do type-conversion.

Pop-up Box

1. To display message box on screen.

```
alert("I am Ironman");
```

2. To accept Yes/No from user.

```
confirm("Are you Sure?");
```

3. To accept user input.

```
prompt("Input Username");
```

Functions for type-conversion,

- Boolean(value)
- parseInt(value)
- parseFloat(value)
- Number(value)
- String(value)

Functions

function keyword is used while defining function.

```
function getName(){
    var name = prompt('Enter Name')
    console.log(name)
}
getName()
```

```
function getDetail(str){
    value = prompt('Enter '+str)
    console.log(value)
}
getDetail('roll')
```

```
function getDetail(str){
    value = Number(prompt('Enter
'+str))
    return value
}
var roll = getDetail('roll')
console.log(roll, typeof roll)
```

Conditional Statement

- If-else are similar to other programming languages like C/C++/JAVA.

```
if (condition) {
    statements;
} else if (condition) {
    statements;
} else {
    statements;
}
```

Loops

- for

```
for (initialization; condition; update) {
    statements;
}
```

- while

```
while (condition) {
    statements;
}
```

- do while

```
do {
statements;
} while (condition);
```

Strings

`length` property gives then size (number of character) of the string.

```
var sup = ‘I am Ironman;
console.log(sup);
console(sup.length);
```

String Indexing,

```
console.log(sup[0]);
console.log(sup[sup.length-1]);
```

Explore following string methods,

`charAt, charCodeAt, fromCharCode, indexOf, lastIndexOf, replace, split, substring, toLowerCase, toUpperCase`

Arrays

An array is a type of data-type that holds an ordered list of values, of any type.

```
var arrayName = [ele0, ele1, ...];
var stud = [‘Peter’, 123, ‘Spiderman’]
console.log(stud)
```

`length` property gives the size of array

```
console.log(stud.length)
```

Array indexing

```
console.log(stud[0]);
console.log(stud[stud.length-1]);
```

Array

Explore following array methods,

`concat, join, pop, push, reverse, shift, slice, sort, splice, toString, unshift`

Adding/Modifying elements in an array,

```
stud[4] = 'Team Ironman'
```

Objects

- Objects are data types that lets us store collection of properties and methods.
- Similar to class.

```
var aboutMe = {
  degree: 'PhD',
  department: 'CSE',
  University: 'IIT G'
};
var myDegree = aboutMe.degree
console.log(myDegree)
var myDegree = aboutMe['degree']
console.log(myDegree)
```

- Non-existing property will return undefined.
- Can change values of existing properties.
- Can add new properties
- Can delete existing property using **`delete`**.

Objects: Methods

- Object properties can also be functions. Object functions are called "methods".

```
var aboutMe = {
  degree: 'PhD',
  department: 'CSE',
  University: 'IIT G',
  name : function() {
    name = prompt('Input Name: ');
    return name;
  }
};
console.log(aboutMe)
console.log(aboutMe.name)
```

- To list all the properties of an object

```
Object.keys(aboutme)
```

- Explore built-in Objects (Date, Math, Array, String).

References

- https://developer.mozilla.org/en-US/docs/Web/JavaScript/Guide
- https://www.w3schools.com/js/default.asp