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# UNIT- 03 (BCS-502)

- Introduction of Javascript
- Document , Forms , Statement [AKTU-22-23]
- Functions [AKTU-18-19]
- Types of Function
- Objects
- Introduction to AJAX [AKTU-21-22]

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## Javascript :.

- It is also known as the Scripting language for webpages.
- JS is a Programming Language ; we use it to give instructions to the computer.
- JS can be used for client-side development and as well as Server side development

Input → Computer → output

English → Translator → 0 and 1

## Variable :-

- In JS , a Variable is a Container that stores data Values.

## Documents :

- It's one of the key Part of the DOM. The document Object provides a way to interact with HTML elements of web Page.
- An Object that give access to and manipulate the currently loaded HTML document.

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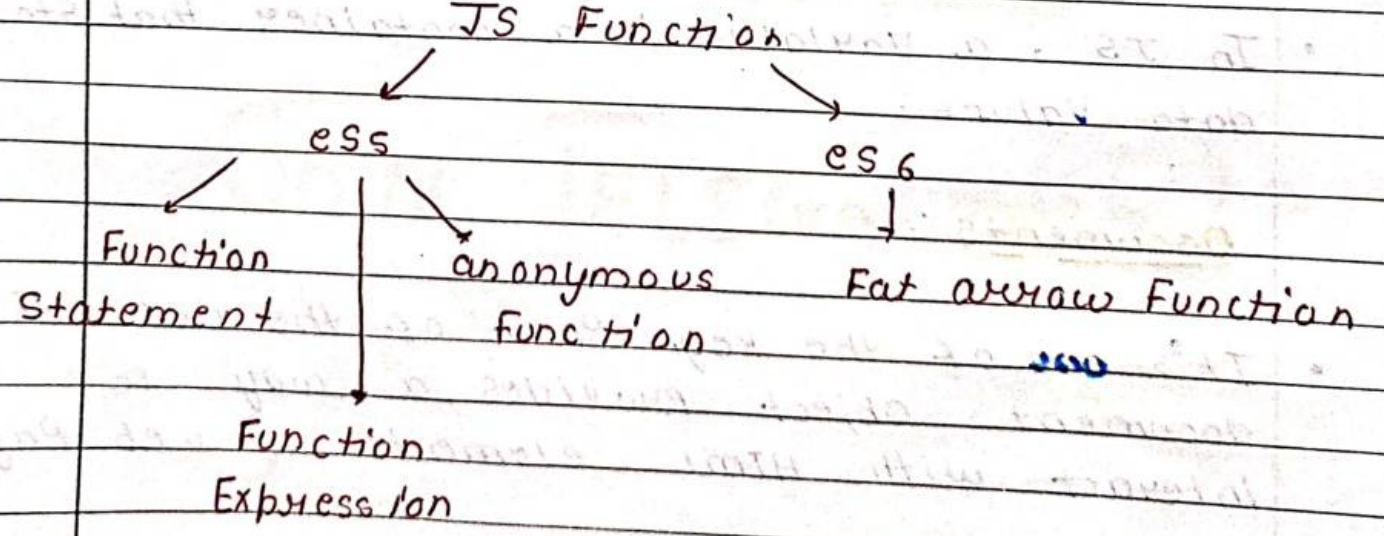
## Statement In JS :-

- Javascript Statement are Composed of Values, Operator, Expressions, keywords and comments

Ex :-
```
let x, y, z        // Statement 1
x = 5;             // Statement 2
y = 6;             // Statement 3
z = x + y;         // Statement 4
```

## Functions In JS :-

- A JS Function is a block of code designed to perform a particular task.




Example :-

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```
Function myFunction (P1, P2) {
    return P1 * P2;
}
```

## Types of Function in JS

1. **Named Function** :- These are standard Function defined using the Function keyword with a specific name.

```
Function Functionname (Parameters) {
    // code
};
```

2. **Anonymous Function** :- These are Functions that do not have a name and usually assigned to Variables.

```
Var myFunction = Fuction (Parameters) {
};
```

3. **Arrow Function** :- Arrow Function are more Concise Syntax.

```
Const Functionname = (  ) => {
};
```

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Example :- Function Name / Parameters

Function myFunction (P1, P2) {

return P1 * P2 ;

}

Qw-01 Explain the role of JavaScript to develop a web Page. Write a Javascript function to check a textbox is either empty or not : **[AKTU-2018-19]**

Ans Javascript plays a crucial role in developing dynamic and interactive web pages. Here's a breakdown of its main functions:

1. Client-Side Interactivity:
Javascript runs on the client's browser, enabling interactivity without needing to communicate with the servers.

2. DOM manipulation:
The Document Object model represent the structure of HTML documents as a tree-structure.

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3. Event Handling :-
Javascript enables developers to define actions that occur in response to user interaction (such as clicks, mouse movement).

4 Framework and Libraries :
Javascript has a rich ecosystem of Frameworks and libraries (such as React, Angular etc)

⊙ Function to checkbox textbox is empty or not.

Function isTextBoxEmpty (textBox) {
                          ↳ Parameter
if (textBox.value.trim() === '') {
    return true; // textbox is empty
}
else {
    return false; // textbox is not empty
}
}

Points :-

→ .textbox.value → retrieves the value of the textbox.
→ .trim() → This ensures that an input containing only space or tabs is

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## Objects in Javascript:

- In Javascript, objects are king. If you understand Objects, you understand Javascript
- An Object is a Collection of Properties.

Syntax of objects in JS :-

```
Const obj = {
    // Code
};
```

AJAX :-

Qw-02 Explain the working of AJAX along with its application. Mention a suitable example. **[AKTU · 2021-22]**

AJAX :-

- AJAX Stands for Asynchronous Javascript and XML
- AJAX is not a Programming language. Rather, It's a Set of existing technologies

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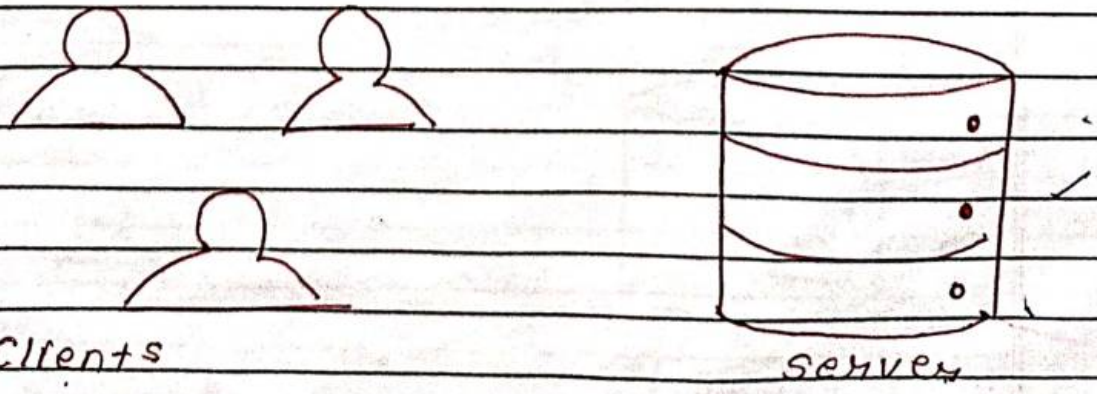
- AJAX helps in Fetching data Asynchron-ously without interfacing with the existing Page.
- No Page reload/ refresh.
- Modern website use JSON instead of XML for data transfer

Why Use AJAX
- No Page reload/ refresh
- Better user experience
- Very Interactive.

How It Works :-

- AJAX uses XML HttpRequest Object (also called Xhr Object) to achieve this
- Modern Websites uses JSON instead of XML for data transfer
- Data can be transferred in any Format and Protocol (Not always https necessarily).



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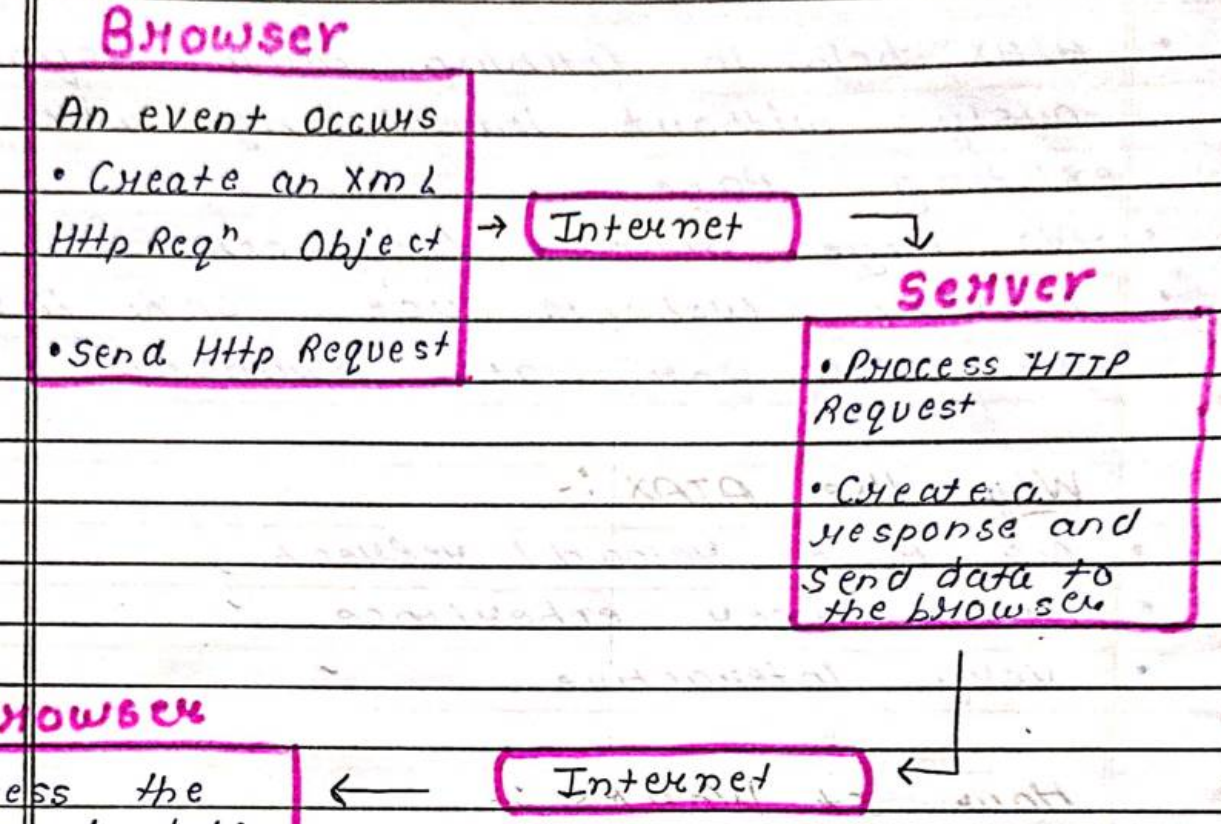


1. An event occurs in a webPage (the Page is loaded, a button is clicked)
2. An XML Http Request Object is created by Javascript
3. The XML Http Request Object sends a request to a web Server
4. The Server Processes the request

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5. The Server sends a response back to the web page.

6. The response is ready by JS

7 Proper action is performed.

Application of AJAX :-

- Updating a webpage without reloading the page.
- Requesting data from the server after the page has been loaded.
- Sending data to the server in the background without distrubing UI or other Processes

Examples of AJAX :-

- Request Xml Files
- Retrieve Server Data with PHP
- Retrieve Database Information

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## Date in Javascript:

Date objects encapsulate an integral number that represents milliseconds since the midnight at the beginning of January 1, 1970.

**Qw-03** Design a Javascript program to display the current day and time in the following format

Today is : Monday

Current time is : 11 AM : 50 : 58

**[AKTU - 2021-22]**

**Sol^n**

```
Var today = new Date();
Var day = today.getDay();

Var daylist = ["Sunday", "Monday",
"Tuesday", "Wednesday", "Thursday",
"Friday", "Saturday"];

Consale.log("Today is : " + daylist[day]
            + ".")

Var hour = today.getHours();
Var minute = today.getMinutes();
Var second = today.getSecond();

Var Prepand = (hour >= 12) ? "PM":
              "AM";
```

```
if (hour === 0 && Prepand === "PM") {

if (minute === 0 && second === 0) {
    hour = 12;
    Prepand = "Noon";
}
else {
    hour = 12;
    prepand = "PM";
}
}
if (hour === 0 && Prepand === "AM") {

if (minute === 0 && second === 0) {
    hour = 12;
    Prepand = "midnight";
}
else {
    hour = 12;
    Prepand = "AM";
}
}
```

pm, AM

```
Console.log ("Current time is : " + hour + Prepand +
        " : " + minute + " : " + second);
```

Qu-d Write a Program in Javascript to display digital clock showing HH:mm:ss.

**[AKTU - 2022-23]**

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Qu-04 Discuss about Math and Date Objects in Javascript.

[AKTU - 2022-23]

Sol^n

- The Javascript Math Object allow you to Perform mathematical tasks on numbers
- Unlike other objects, the Math Object has no constructor.
- The math object is static.
- All methods and properties can be used without creating Math object first.

Syntax For any math property is

Math.Property

Examples

Math.E // return Euler's number
Math.PI // return PI value
Math.SQRT2 // return square root of 2
Math.LN2 // return the natural logarithm of 2

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## Date in Javascript :-

- Date Objects are static

## Creating Date Object :-

- Date Objects are created with the new Date() constructor
- new Date() creates a date object with the current date and time
- Javascript stores dates as no of millisecond since January 01, 1970.
- One day (24 hours) is 86,400,000 millisecond

## Internet :-

The Internet is defined as a global network of linked computers, servers, phones and smart application that communicate with each other using the Transmission control protocol standard to enable the fast exchange of information and files, along with other type of services.

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## Internet Addressing :

- **IP Address :-**

→ IP Address Stands for Internet Protocol Address

→ It is an identifying number that is associated with a specific computer or computer network

→ When connected to the internet, the IP address allow the computer to send and receive information

## Types of IP Addres. :

1. IPV4
2. IPV6

## Inet Address :-

→ The java.net.Inet Address class Provides method to get the IP address of any hostname. An IP address is represented by 32 bit or 128 bit unsigned number

→ Inet Address Can handle both

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IPv4 and IPv6 addresses

Types

1. Unicast - An identifier for a single Interface
2. Multicast - An identifier for a set of interfaces

Factory methods :-

- The Inet Address class is used to encapsulate both, the numerical IP address and the domain name for that address
- The Inet Address class has no visible Constructors.
- Factory methods are static methods in a class that return an object of that class

## TCP / IP Client Sockets : [AKTU-2018-19]

- TCP/IP socket are used to implement reliable, bidirectional, persistent, point-to-point, stream-based connections between hosts on the Internet

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- A Socket can be used to connect Java I/O System to other programs that may reside either on the local machine or on any other machine on the Internet.

- There are two kinds of TCP Sockets in Java. One is for servers, and the other is for clients.

- Thus, ServerSocket is for servers The Socket class is for clients

Two constructors used to create client socket:

- Socket (String hostName, int PortI)
- Socket (Inet Address, IpAddr, int PortI)

URL :-

- URL Stands for Uniform Resource Locator.

- It points to a resource on the World Wide Web. For example.

https://www.multiatom.com/wt-tutorial

https → Protocol
multiatom.com → Address
wt-tutorial → file

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## A URL contains many information:

- **Protocol**: In this case, http is the Protocol.
- **Server name or IP Address**: In this case, www.javapoint.com
- **Port number**:- It is an optional attribute. If we write http://www.multiatom.com:80/wtfile1, 80 is the Port number. If Port no is not mentioned in the URL it return -1.
- **File Name or directory name**:- In this case, index.jsp is the file name

## Datagram :-

- Datagram are collection of information sent from one device to another device via the established network
- When the datagram is sent to the targeted device, there is no assurance that it will reach to the target device safely and completely
- The UDP Protocol is used to implement the datagrams in Java.

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Qu -5 Java Socket Programming?
[AKTU - 2022 - 23, AKTU - 2018 - 19]

Sol^n
- Java Socket Programming is used for communication between the applications running on different JRE (Java Runtime environment).
- Java Socket Programming can be Connection Oriented or Connection less.
- To connect to another machine we need a Socket ~~machine~~. Connection A Socket Connection means the two machines have information about each other network location (IP address) and TCP port.
- Then Server makes a new Socket to communicate with the Client.
- A socket is simply an endpoint for communications between the machines. The Socket class can be used to create a Socket.

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Qu:6 Create a Java Program to find out the IP Address of your machine
[AKTU - 2021-22]

Sol^n
```
import java.net.InetAddress;
import java.net.UnknownHostException;

public class IPAddressFinder {
    public static void main(String[] args) {
        try {
            // Get the local host
            InetAddress localhost = InetAddress.getLocalHost();

            System.out.println("Local host IP Address: " +
                localhost.getHostAddress());

            // Get all IP address associated with the
            Local host

            InetAddress[] allLocalAddresses = InetAddress.
                getAllByName(localhost.ger
                CanonicalHostName()); [ ]

            System.out.println("All IP Addresses associated
                with LocalHost");
                ]

            for (InetAddress address: allLocalAddresses) {
                System.out.println(address.getHostAddress());
            }
```

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```
}

catch (UnknownHostException e) {
//Handle the case where Host is Unknown
    e.printStackTrace();

}
```

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