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UNIT- 03 (BCS-502)

- Introduction of Javascript
- Document , Forms , Statements [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 → O and IT

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 .

Statement In JS :-

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

Ex:- let x,y,z // Statement 1

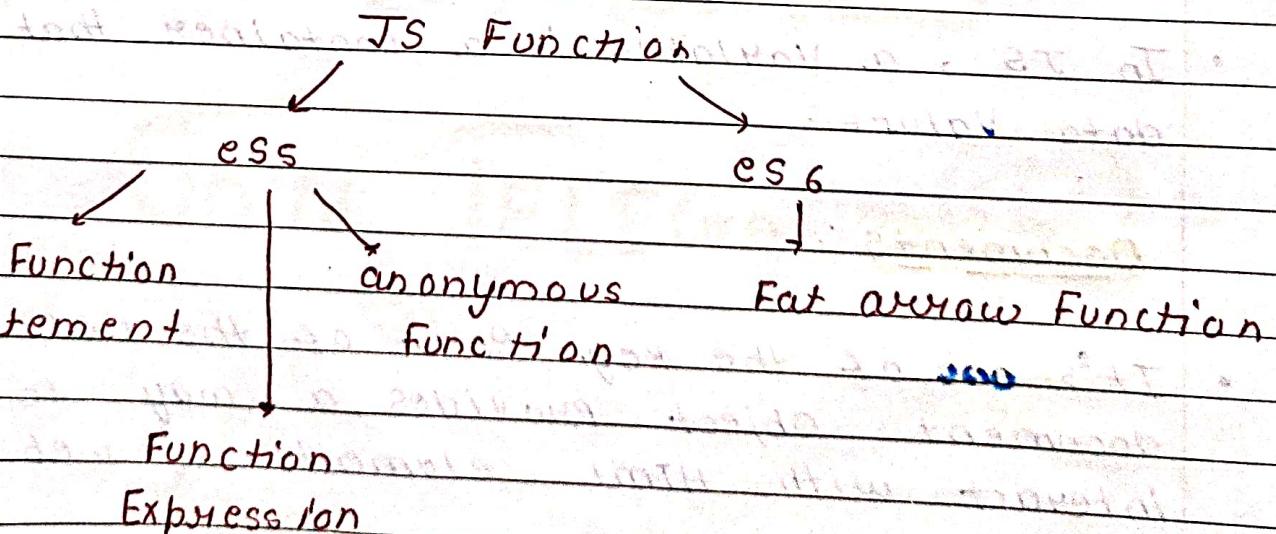
x = 5; // Statement 2

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 :-

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 = function (Parameters) {

}

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

Const FunctionName = () => {

}

Example :- function ^{Name}
Function myFunction (P₁, P₂) {
 return P₁ * P₂;

Ques-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 server.

2. DOM manipulation: The Document Object Model (DOM) represents the structure of HTML documents as a tree structure.

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).

⑥ Function to check if textbox is empty or not.

Function isTextBoxEmpty (textBox) of parameter

```

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

```

To Points :-

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

Go

M

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 :-

Qn-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 set of existing technologies

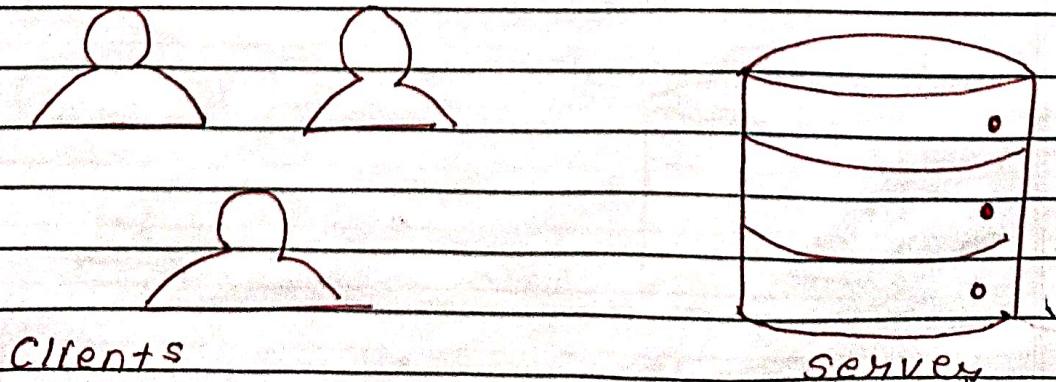
- AJAX helps in fetching data asynchronously without interfacing with the existing page.
- No page reload/refresh.
- Modern website use JSON instead of XML for data transfer

Why Use AJAX

- No page reload/refresh
- Better user experience
- Very Interactive.

How It Works :-

- AJAX uses XMLHttpRequest Object (also called XH_Y 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).



Browser

An event occurs

- Create an XML
Http Reqⁿ Object

→ Internet

- Send Http Request

Server

- Process HTTP Request

- Create a response and
Send data to the browser

Browser

- Process the returned data
using Javascript
- Update Page Content

Internet

1. An event occurs in a webpage (the page is loaded, a button is clicked)

2. An XMLHttpRequest object is created by Javascript

3. The XMLHttpRequest object sends a request to a web service

4. The Server processes the request

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 disturbing UI or other processes.

Examples of AJAX :-

- Request XML Files
- Retrieve Server Data with PHP.
- Retrieve Database Information

Date in Javascript:

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

Qn-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]

Solⁿ

Var today = new Date();

Var day = today.getDay();

Var daylist = ["sunday", "monday", "Tuesday", "wednesday", "Thursday", "Friday", "Saturday"];

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

Var hour = today.getHours();

Var minute = today.getMinutes();

Var second = today.getSeconds();

Var Prepared = (hour >= 12) ? "PM", "AM";

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

```
if (minute == 0 && second == 0) {
```

```
hour = 12;
```

```
Prepond = "Noon";
```

```
}
```

```
else {
```

```
hour = 12;
```

```
Prepond = "PM";
```

```
}
```

```
if (hour == 0 && Prepond == "AM") {
```

```
if (minute == 0 && second == 0) {
```

```
hour = 12;
```

```
Prepond = "Midnight";
```

```
}
```

```
else {
```

```
hour = 12;
```

```
Prepond = "AM";
```

```
}
```

```
}
```

PM, AM

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

Ques Write a program in Javascript to display digital clock showing HH:MM:SS.

Qn-04

Discuss about math and Date Objects in Javascript.

[AKTU-2022-23]

Soln

- The Javascript math Object allows 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

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 milliseconds since January 01, 1970.
- One day (24 hours) is 86,400,000 milliseconds.

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.

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 allows the computer to send and receive information.

Types of IP Address:

1. IPv4
2. IPv6

Inet Address:-

- The `java.net.InetAddress` class provides method to get the IP address of any host name. An IP address is represented by 32 bit or 128 bit unsigned number.
- Inet Address Can handle both

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 ~~members~~ ^{methods} in a class that return an object of that class.

② 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.

- 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 port)`
- `Socket (InetAddress ipAddr, int port)`

URL :-

- URL Stands for Uniform Resource Locator.

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

https://www.^{multicolumn}.com/WT-tutorial

Protocol

Address

file..

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.multicart.com:80/indexfile, 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:-

PPP
PPP

- 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.

Qn - 5

Java Socket Programming?

[AKTU-2022-23, AKTU-2018-19]

- Sol • 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 in nature.
- 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.

Ques 6 Create a Java Program to Find out the IP Address of your machine

[AKTU- 2021-22]

```
soln
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.getCanonicalHostName());
                }

            System.out.println("All IP Addresses associated
                with LocalHOST");
                }

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

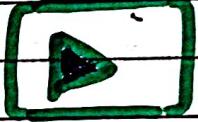
```
3. catch (UnknownHostException e) {
```

```
//Handle the case where Host is unknown
```

```
e.printStackTrace();
```

```
4.
```

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