



Tishk International University
Faculty of Applied Science
Information Technology Department

Introduction to JavaScript

Lecture 7

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Course Code: IT240

Grade 2

Islam Abdulazeez

islam.abdulaziz@tiu.edu.iq

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Web Design

- ✓ Introduction to JavaScript
- ✓ JavaScript Basics
- ✓ Variables and Operators
- ✓ Control Statements
- ✓ Functions and Alerts
- ✓ DOM Manipulation

- **At the end of today's session, you will be able to:**
 - ✓ Explain the role of JavaScript in web development.
 - ✓ Use variables, operators, and control statements in JavaScript.
 - ✓ Differentiate between internal and external JavaScript code.
 - ✓ Create a basic web page using HTML and JavaScript.

What is JavaScript?

- ✓ JavaScript is a high-level, interpreted programming language that enables interactive web pages.
- ✓ It is one of the core technologies of the World Wide Web, alongside HTML and CSS.



Why JavaScript?



Applications of JavaScript



- Client-side validation
- Dynamic drop-down menus
- Displaying date and time
- Displaying pop-up windows and dialog boxes
- Displaying clocks

Department :

- ✓ All Departments
- Civil Engineering
- Highway & Bridges Engineering
- Mechanic and Energy Engineering
- Information Systems Engineering

Here's a message!

It's pretty, isn't it?

OK

Sign Up

Username:

js

Username must be between 3 and 25 characters.

Email:

hello@example.com

Password:

...

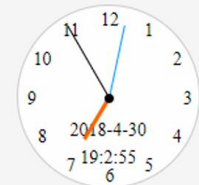
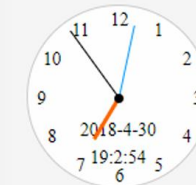
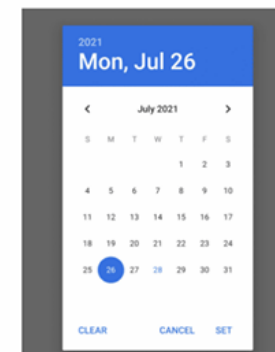
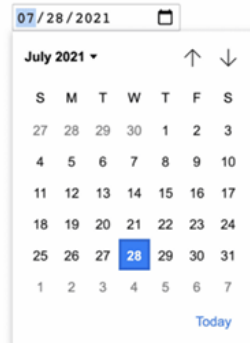
Password must have at least 8 characters that include at least 1 lowercase character, 1 uppercase character, 1 number, and 1 special character in (!@#%&^&.*)

Confirm Password:

Reenter your password

Please enter the password again

SIGN UP



JavaScript Structure



~~<script type="text/javascript">~~

~~Statements ..~~

~~</script>~~



<script>

Statements ..

</script>



```
<script>  
    document.write("Hello world!")  
</script>
```



Places to Put JavaScript Code



1. Between the body tag of html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
</head>
<body>
  <script>
    document.write("TIU");
  </script>
</body>
</html>
```

2. Between the head tag of html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script>
    document.write("TIU");
  </script>
</head>
<body>

</body>
</html>
```

3. In .js file (external JavaScript)

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <meta name="viewport" content="width=device-width, initial-scale=1.0">
  <title>Document</title>
  <script src="filename.js"></script>
</head>
<body>

</body>
</html>
```

filename.js

```
document.write('TIU');
```

Single Line Comment

```
<script>  
    // It's a single line comment  
    document.write('TIU');  
</script>
```

Multiline Comment

```
<script>  
    /* It's a multiline comment  
       It will not be displayed */  
    document.write('TIU');  
</script>
```

Simple Comparison Table

Feature	var	let
Scope	Function scoped	Block scoped
Redeclaration	Allowed	Not allowed
Use before declaration	Works (undefined)	Error
Modern usage	Old style	Recommended

Variables



//Code	//Output
<pre><script> var dep = "IT" var age = 21 var gpa = 3.2 document.write(dep) document.write(age) document.write(gpa) </script></pre>	IT213.2

//Code	//Output
<pre><script> var dep = "IT" var age = 21 var gpa = 3.2 document.write(dep + "
") document.write(age + "
") document.write(gpa + "
") </script></pre>	IT 21 3.2

Variables (var & let)



```
<script>
  var x = 10;
  if (true) {
    // same variable, overwritten
    var x = 20;
  }
  document.write(x); // 20
</script>
```

```
<script>
let y = 10;
if (true) {
  let y = 20; // different variable
  document.write(y); // 20
}
document.write(y); // 10
<script>
```

Variables and Rules of Naming



- ✓ First character must be a letter or an underscore (`_`)
- ✓ The rest of the variable can be any letter, number, or underscore
- ✓ Variable names are case sensitive (`age`, `Age`, `AGE` would all be different variable names)
- ✓ You cannot use JavaScript reserved words for variable names

Ex) `var var = 10;` // Since `var` is used to declare a variable, you can't use `var` as a variable name

Valid and Invalid Variable Names



Valid ✓

_myVar	abcd2025
_var	test_10
name1	num
thisisalongvariablename	myString
a	

Invalid ✗

1test	/* Starts with a number
test 1	there is a space in the name
t\$est	non alphanumeric character
var	reserved word */

```
<script>

var x =15;
let y = 20;
const z = 25;

var result = x + (y / z);
document.write(result); // 15.8

</script>
```

“Short hand” assignment operators

Assignment

`a += b;`

`a -= b;`

`a *= b;`

`a /= b;`

`a %= b;`

`a++;`

`a--;`

Same as:

`a = a + b;`

`a = a - b;`

`a = a * b;`

`a = a / b;`

`a = a % b;`

`a = a + 1;`

`a = a - 1;`

Addition

Subtraction

Multiplication

Division

Modulus

Self Addition

Self subtraction

String variables



```
<script>

  var x = "Hello ";
  var y = "World";
  var z = x + y;
  document.write(z); // s3 = "Hello World"

  var length = z.length;
  document.write("<br> length = " + length); // length = 11

</script>
```

```
<script>

var names = ["Azad", "Sana", "Ahmad", "Vana"];

document.write(names[0]);
document.write("<br>");
document.write(names[1]);

var size = names.length; // 4

document.write(size);

</script>
```

Arrays can mix datatypes



```
var car = ["Saab", "Volvo", "BMW" ];    // Array of Strings
var nums = [ 1, 2, 3, 4, 5 ];          // Array of Numbers
var data = ["EECS1012", 780, "Fall", 2018 ]; // Mix types
```

Control Statements (if Statement)



```
script>  
  
    let age = 18;  
  
    if (age < 18) {  
        document.write("Minor");  
    } else if (age == 18) {  
        document.write("Just became an adult");  
    } else {  
        document.write("Adult");  
    }  
  
</script>
```

Control Statements (switch)



```
<script>

var grade = 'AA';

switch (grade) {
  case 'AA':
    document.write("Excellent");
    break;
  case 'BB':
    document.write("Good");
    break;
  default:
    document.write("Needs Improvement");
}

</script>
```

Control Statements (for-loop)



```
<script>
  // First loop: Iterates 5 times and prints "Iteration" followed by the current value of 'i'
  for (let i = 0; i < 5; i++) {
    |   document.write("Iteration " + i);
  }

  var name = "Tishk International University";

  // Adding a line break
  document.write("<br>");

  // Second loop: Iterates through each character in the 'name' string and prints it on a new line
  for (let i = 0; i < name.length; i++) {
    |   document.write(name[i] + "<br>");
  }

  document.write("<br>");

  // Declaring an array 'myArray' with different fruit names
  var myArray = ["Apple", "Banana", "Orange", "Mango", "Pineapple"];

  // Third loop: Iterates through each element of the 'myArray' array and prints it on a new line
  for (let i = 0; i < myArray.length; i++) {
    |   document.write(myArray[i] + "<br>");
  }
</script>
```

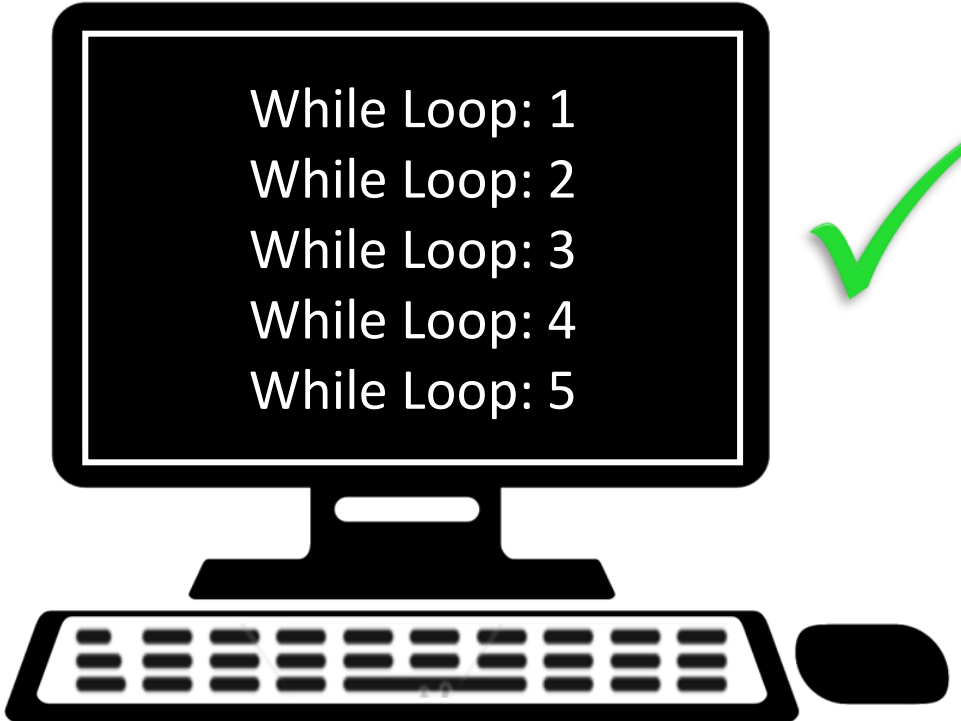
Control Statements (while-loop)



```
<script>

let i = 1;
  while (i <= 5) {
    document.write("While Loop: " + i + "<br>");
    i++;
  }

</script>
```

An illustration of a computer monitor and keyboard. The monitor screen displays the output of the while loop code, and a green checkmark is positioned to the right of the monitor.

While Loop: 1
While Loop: 2
While Loop: 3
While Loop: 4
While Loop: 5

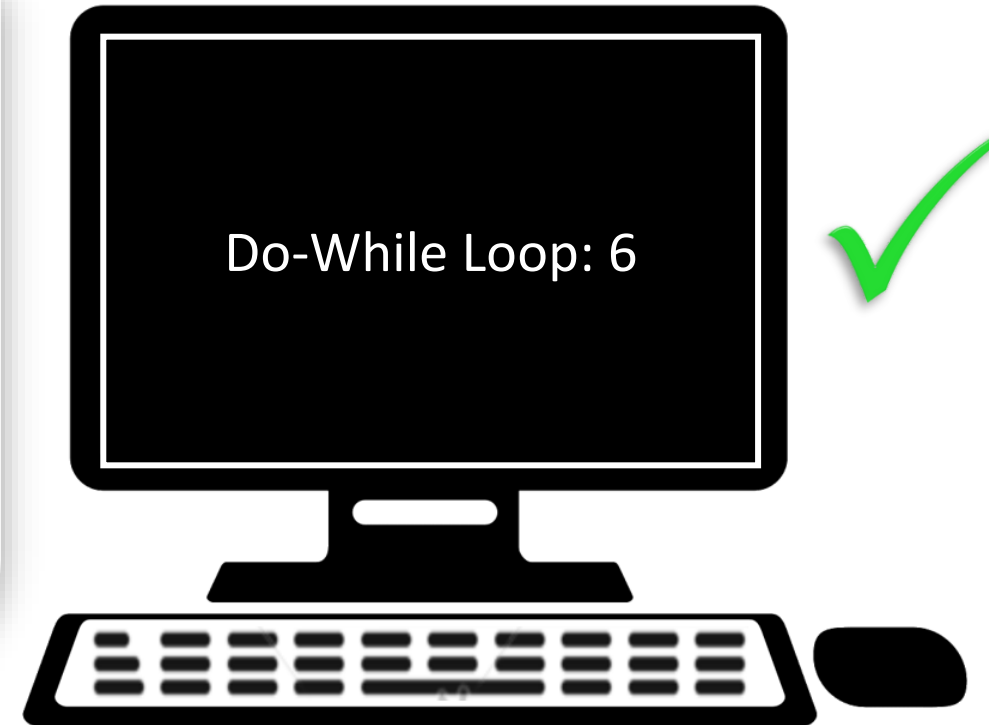
Control Statements (do-while)



```
<script>

let j = 6;
  do {
    document.write("Do-While Loop: " + j + "<br>");
    j++;
  } while (j <= 5);

</script>
```



JavaScript Alert



```
<script>  
    alert("Congrats!");  
</script>
```

This page says

Congrats!

OK



Congrats!

, Your account is created!

OK

OK

```
<script>

  function myFunction() {
    document.write("Hello, World!");
  }
  myFunction();
</script>
```



```
<script>

  function myFunction() {
    alert("IT Department");
  }
  myFunction();

</script>
```

This page says

IT Department

OK

```
<script>  
  
  function myFunction(a,b) {  
    return a*b;  
  }  
  
  document.write(myFunction(2,3));  
  
</script>
```





```
<button onclick="myFunction()">Click Me</button>
```

JavaScript Functions



First Name:

Last Name:

This page says
The form has been submitted.

```
<form onsubmit="myFunction()">
```

- `document.getElementById()`

- `innerHTML`

This property is used to get or change the HTML content (text or HTML code) inside an element.

TIU

Click me

```
<h1 id="uni">Tishk International University</h1>

<button onclick="changeContent()">Click me</button>

<script>

function changeContent() {
    document.getElementById("uni").innerHTML = "TIU";
}

</script>
```

- `style.color`

This property is used to change the text color of an HTML element.

Tishk International University

Click me

Tishk International University

Click me

```
<script>

function changeContent() {
    document.getElementById("uni").style.color = "orange";
}

</script>
```

References



- **Tatroe, K., & MacIntyre, P. (2020). Programming PHP: Creating dynamic web pages (4th ed.). O'Reilly Media.**



Thank You!