

Frontend Training - Day 4: JavaScript Basics

1. JavaScript Introduction

JavaScript is a scripting language used to create dynamic content on web pages.

It runs in the browser and allows interaction with HTML/CSS.

2. Variables

Variables store data. Declared using let, const, or var.

- let: block-scoped, can be reassigned
- const: block-scoped, cannot be reassigned
- var: function-scoped (older, avoid using)

Example:

```
let name = "Alice";
```

```
const pi = 3.14;
```

```
var age = 25;
```

3. Functions

Functions are reusable blocks of code.

Types:

- Function Declaration:

```
function greet() {  
  console.log("Hello!");  
}
```

- Function Expression:

```
const greet = function() {  
  console.log("Hi!");  
};
```

- Arrow Function:

```
const greet = () => console.log("Hey!");
```

Parameters and Return:

```
function add(a, b) {  
  return a + b;  
}
```

4. Arrays

Arrays store multiple values in a single variable.

Example:

```
let fruits = ["apple", "banana", "cherry"];
```

Accessing:

```
fruits[0] => "apple"
```

Array Methods:

- push(): adds item
- pop(): removes last item
- shift(): removes first item
- unshift(): adds item to start
- forEach(), map(), filter(), reduce()

Example:

```
fruits.push("mango"); // adds mango
```

```
fruits.map(f => f.toUpperCase());
```

5. Objects

Objects store data as key-value pairs.

Example:

```
const person = {  
  name: "John",  
  age: 30,  
  greet: function() {  
    console.log("Hello, I'm " + this.name);  
  }  
};
```

Access:

```
person.name => "John"
```

```
person["age"] => 30
```

Nested Objects:

```
const user = {  
  name: "Sara",  
  address: {  
    city: "Delhi",  
    pin: 110001  
  }  
};
```

Access nested:

```
user.address.city => "Delhi"
```

Looping Objects:

```
for (let key in person) {  
  console.log(key, person[key]);  
}
```

6. Hands-on Tip

Try building a small program that:

- Declares a variable for user name
- Has a function that returns greeting
- Stores favorite items in an array
- Creates a user object with age and address