

# JavaScript Functions

## 1. What is a Function?

A **function** in JavaScript is a block of code designed to perform a particular task. Functions help:

- Reuse code (write once, use many times)  
Organize programs into modular, manageable pieces  
Encapsulate logic and state

A function is an object of type `Function`, which means it can be:

- Assigned to a variable  
Passed as an argument  
Returned from another function

```
function greet(name) {  
  
  return "Hello, " + name;  
  
}
```

**function:** Keyword to define a function  
**greet:** Function name  
**name:** Parameter (acts as a placeholder)  
**return:** Sends back a result to the caller

## Arrow Functions (ES6+)

```
const square = x => x * x;
```

## IIFE (Immediately Invoked Function Expression)

Function that runs immediately after being defined  
Often used to create a private scope

```
(function() {  
  console.log("Runs immediately");  
})();
```

## Async Functions & Promises (Advanced Topic)

Used for handling asynchronous operations.

```
async function fetchData() {  
  
  const response = await fetch('url');  
  
  const data = await response.json();  
  
  return data;  
}
```

```
}
```

## JavaScript Constructor

In JavaScript, a **constructor** is a special function used to **create and initialize objects** when using the **new** keyword.

```
function Person(name, age) {  
  this.name = name;  
  this.age = age;  
}
```

```
const user1 = new Person("Alice", 30);  
console.log(user1.name); // "Alice"
```

this. - Refers to the newly created object

**new** keyword - Creates an empty object, sets this, links prototype, and returns object  
Constructor function. -Function that initializes the object