**JAVASCRIPT**

In programming, **variables** are used to store data, and each variable has a **data type** that defines what kind of value it holds. Here are three common data types:

### **1. Numeric**

Used to store **numbers**.  
Examples:

* **Integer** (whole numbers): 10, -5
* **Float/Decimal** (decimal numbers): 3.14, -0.5

In different languages:

let age = 25; // Integer

let price = 99.99; // Float

### **2. String**

Used to store **text**. Strings are written inside **quotes**.  
Examples: "Hello", '123', "name@example.com"

let name = "Akio";

let message = 'Hello, world!';

### **3. Boolean**

Used to store **true/false** values (yes/no logic).  
Examples: true, false

let isLoggedIn = true;

let isAdmin = false;

These data types help computers **understand how to store and work** with your data.

### **JavaScript Keyword, Variable name naming convention**

* **No keyword in variable name**
  + var false = 45;
  + var var = 50;
* **No space or gap in variable name**
* var is happy = false;
* **No quote**
* var “address” = “amjhupi”;
* **Can not start with a number, but number other than the first** latter is allowed
* var 3money = 88;
* var money2 = 55;
* var money = 44;
* **Name is case sensitive**
* adress
* Address
* ADDRESS
* addRess
* ADDress

These all will count as different names for variable name.

* **How to write a long variable name**
* my current home adress = “Amjhupi Meherpur”;
* my current home adress = “Amjhupi Meherpur”; [hard to read]
* my\_current\_home\_adress = “Amjhupi Meherpur”; [snake case]
* myCurrentHomeAdress = “Amjhupi Meherpur”; [camel case]
* MyCurrentHomeAdress = “Amjhupi Meherpur”; [Pascal case]
* **Comparison in Javascript**

1. bigger: >
2. less: <
3. equal: ==
4. greater than or equal: >=
5. less than or equal: <=
6. not equal: !=
7. and: &&
8. or: ||

**FOR LOOP**

In JavaScript, a **for loop** is used to **repeat a block of code a specific number of times**.

Basic Syntax:

**for (initialization; condition; increment/decrement) {**

**// code to repeat**

**}**

Example 1: Count 1 to 5

**for (let i = 1; i <= 5; i++) {**

**console.log(i);**

**}**

**output:**

**1**

**2**

**3**

**4**

**5**

Example 2: Print even numbers 0 to 10

**for (let i = 0; i <= 10; i += 2) {**

**console.log(i);**

### **}**

### How it works:

1. **Initialization**: let i = 0 — runs once before loop starts.
2. **Condition**: i <= 10 — loop runs **while this is true**.
3. **Increment**: i++ — runs **after** each loop iteration.

Example 3: Loop through an array

let fruits = ["Apple", "Banana", "Mango"];

for (let i = 0; i < fruits.length; i++) {

console.log(fruits[i]);

}

**WHILE LOOP**

A while loop **repeats code as long as a condition is true**.

Basic Syntax:

**while (condition) {**

**// code to run repeatedly**

**}**

Example 1: Count from 1 to 5

**let i = 1;**

**while (i <= 5) {**

**console.log(i);**

**i++;**

**}**

**Output:**

**1**

**2**

**3**

**4**

**5**

**DO WHILE LOOP**

**FOR OF LOOP (for Array & String)**

**FOR OF LOOP (for Object)**

**STRING**

In **JavaScript** (and most programming languages), a **string** is a **sequence of characters** used to represent **text**.

**Example:**

const country = 'Bangladesh';

const division = "Khulna";

const district = `Meherpur`;

const PS = new String('Meherpur Sadar');

### **Strings can contain:**

* Letters → "abc"
* Numbers → "123" (still a string!)
* Symbols → "@#\*!"
* Even empty → ""

**Common string operations:**

let msg = "Hello";

msg.length;           // 5

msg.toUpperCase();    // "HELLO"

msg.toLowerCase();    // "hello"

msg[0];               // "H"

msg + " World";       // "Hello World"

**String is immutable; We can’t change the index value of a string.**

**Trim:**

const drink = " water ";

const liquid = " water";

// "trim" remove the start and end white spaces from string

if(drink.trim === liquid.trim){

    console.log("panir opor nam jibon");

}

else{

    console.log("somudre pani ace khaite pari na");

}

**Slice:**

// Slice a part from a string.

const adress  = "Meherpur";

const part = adress.slice(5,8);

// console.log(part);

**Split:**

// Split in parts and convert it into a arry.

const sentence = "I am a good and hardworking person";

console.log(sentence.split()) // full sentence

console.log(sentence.split("")) // by letters

console.log(sentence.split(" ")) // by space

console.log(sentence.split("a")) // by a specific letter

const friendsStr = "Rohim, Korim, Fahim, Labib, Habib";

const friends = friendsStr.split(",");

console.log(friends);

// by comma ","

**Join:**

// Marge a arry in string using "join"

const realFriends = [ 'Rohim', 'Korim', 'Fahim', 'Labib', 'Habib' ];

console.log(realFriends.join());

console.log(realFriends.join("|"));

console.log(realFriends.join("-"));

**OBJECT**

In **JavaScript**, an **object** is a special data type used to **store collections of key-value pairs**.

### Think of an object like a **real-world item** with properties:

Example: A **car** has properties like color, model, and speed.

let car = {

  color: "red",

  model: "Toyota",

  speed: 120

};

* color, model, and speed are **keys** (also called **properties**).
* "red", "Toyota", and 120 are their **values**.