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JavaScript Basics: Variables, Data Types, and Operators, JavaScript Control Flow: Conditional Statements and Loops in human language

JavaScript Basics: Variables, Data Types, and Operators:

1. **Variables:**
   - Variables are like containers that store data. In JavaScript, you can create a variable using the let, const, or var keyword.
   - let is used when you want to change the value of the variable later.
   - const is used for variables whose values won't change.
   - var is older and generally avoided in modern JavaScript, as it has some quirks.

   Example: (javascript)

```
let age = 25;  // age is a variable that stores the value 25
const name = "Alice";  // name is a constant that stores the value "Alice"
```

2. **Data Types: JavaScript has several types of data:**
   - **Numbers:** Can be integers (e.g., 10) or floating point numbers (e.g., 3.14).
   - **Strings:** A sequence of characters (e.g., "hello", 'world').
   - **Booleans:** Only two values: true or false.
   - **Arrays:** A list of items, which can be different types of data (e.g., [1, 2, 3] or ["apple", "banana"]).
   - **Objects:** A collection of key-value pairs, like a dictionary (e.g., {name: "Alice", age: 25}).
   - **Null:** Represents an empty or unknown value.
   - **Undefined:** Represents a variable that has been declared but not assigned a value yet.

   Example:

```
let number = 10;  // number is a Number
let greeting = "Hello, World!";  // greeting is a String
let isActive = true;  // isActive is a Boolean
```

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3. **Operators: Operators are symbols used to perform operations on variables or values.**
    - Arithmetic Operators: Used for mathematical operations (+, -, *, /, %).
    - Assignment Operators: Used to assign values to variables (=, +=, -=, *=, etc.).
    - Comparison Operators: Used to compare two values (==, !=, >, <, >=, <=).
    - Logical Operators: Used to combine multiple conditions (&&, ||, !).

    Example:

```
let sum = 5 + 3;  // sum is 8
let isEqual = (5 == 5);  // isEqual is true
let result = (true && false);  // result is false
```

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JavaScript Control Flow: Conditional Statements and Loops

1. **Conditional Statements**: **Conditional statements allow you to make decisions in your code based on certain conditions.**
    - **If Statement:** Runs a block of code if the condition is true

```
if (age >= 18) {
  console.log("You are an adult.");
}
```

    - **If...Else Statement:** Runs one block of code if the condition is true, and another block if it's false.

```
if (age >= 18) {
  console.log("You are an adult.");
} else {
  console.log("You are a minor.");
}
```

    - **Else If Statement:** Used to test multiple conditions.

```
if (age < 13) {
  console.log("You are a child.");
} else if (age >= 13 && age <= 19) {
  console.log("You are a teenager.");
} else {
  console.log("You are an adult.");
}
```

2. **Loops**: Loops are used to repeat a block of code multiple times.
    - **For Loop:** Used when you know how many times you want to repeat something.

```
for (let i = 0; i < 5; i++) {
  console.log(i);  // Prints 0, 1, 2, 3, 4
}
```

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- **While Loop**: Repeats as long as a certain condition is true.

```
let count = 0;
while (count < 5) {
  console.log(count);  // Prints 0, 1, 2, 3, 4
  count++;
}
```

- **Do...While Loop:** Similar to a while loop, but it always runs at least once before checking the condition.

```
let count = 0;
do {
  console.log(count);  // Prints 0, 1, 2, 3, 4
  count++;
} while (count < 5);
```

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Example that combines variables, data types, operators, conditional statements, and loops in JavaScript.

A program that checks whether a person is **eligible to vote** based on their **age** and prints a message for each person in an array.

```
// Step 1: Define an array of people with their names and ages
const people = [
  { name: "Het", age: 20},
  { name: "Dhruv", age: 24},
  { name: "Raj", age: 15},
  { name: "Deep", age: 17 }
 ];

 // Step 2: Loop through each person in the array
 for (let i = 0; i < people.length; i++) {
  // Step 3: Get the current person's name and age
  let person = people[i];  // The current person object
  let name = person.name;  // Extract the name of the person
  let age = person.age;    // Extract the age of the person

  // Step 4: Check if the person is eligible to vote (age >= 18)
  if (age >= 18) {
   // If the person's age is 18 or greater, they are eligible to vote
   console.log(name + " is eligible to vote.");
  } else {
   // If the person's age is less than 18, they are not eligible to vote
   console.log(name + " is not eligible to vote.");
  }
 }
 // Bonus: You can also add a separate counter for the number of eligible voters
 let eligibleVotersCount = 0;

 // Step 5: Loop again to count eligible voters
 for (let i = 0; i < people.length; i++) {
  let person = people[i];
  if (person.age >= 18) {
   eligibleVotersCount++;  // Increase count if eligible
  }
 }
 // Step 6: Print out the total number of eligible voters
 console.log("Total eligible voters: " + eligibleVotersCount);
```