12-08-24

Two tracks : learning part by nehru, projects by Praveen

Daily assignments are given and need to be done by EOD.

DATA types:

Number, special numbers – infinity, -infinity, NaN, strings, Boolean , Empty values – null , undefined.  
  
Operators:

Arithmetic, unary, logical, terinary,

Automatic type conversion

Assignment:   
write 5 examples for each data types and operators, automatic type conversion

Sure! Here's a properly documented version of the text for your reference:

**Detailed Notes on Data Types and Operators**

**1. Data Types**

**a. Number**

* **Definition**: Represents both integer and floating-point numbers.
* **Examples**:
  + 42 (Integer)
  + 3.14 (Floating-point number)
  + -7 (Negative integer)

**b. Special Numbers**

* **Infinity**:
  + Represents a value greater than any finite number.
  + **Example**:

javascript

Copy code

console.log(1 / 0); // Output: Infinity

* **-Infinity**:
  + Represents a value smaller than any negative finite number.
  + **Example**:

javascript

Copy code

console.log(-1 / 0); // Output: -Infinity

* **NaN (Not-a-Number)**:
  + Represents a value that is not a valid number, usually the result of an undefined or erroneous mathematical operation.
  + **Example**:

javascript

Copy code

console.log("a" \* 2); // Output: NaN

**c. String**

* **Definition**: Represents a sequence of characters enclosed in single ('), double ("), or backticks (`).
* **Examples**:
  + "Hello, World!"
  + 'JavaScript'
  + `Template Literal`

**d. Boolean**

* **Definition**: Represents one of two values: true or false.
* **Examples**:
  + true (Logical truth)
  + false (Logical falsehood)

**e. Empty Values**

* **null**:
  + Represents the intentional absence of any object value.
  + **Example**:

javascript

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let person = null;

* **undefined**:
  + Represents a variable that has been declared but has not been assigned a value.
  + **Example**:

javascript

Copy code

let x;

console.log(x); // Output: undefined

**2. Operators**

**a. Arithmetic Operators**

* **Definition**: Used to perform mathematical operations.
* **Examples**:
  + **Addition (+)**: Adds two numbers.

javascript

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let sum = 5 + 3; // sum = 8

* + **Subtraction (-)**: Subtracts one number from another.

javascript

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let difference = 9 - 4; // difference = 5

* + **Multiplication (\*)**: Multiplies two numbers.

javascript

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let product = 7 \* 6; // product = 42

* + **Division (/)**: Divides one number by another.

javascript

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let quotient = 10 / 2; // quotient = 5

* + **Modulus (%)**: Returns the remainder of a division.

javascript

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let remainder = 10 % 3; // remainder = 1

**b. Unary Operators**

* **Definition**: Operates on a single operand to produce a result.
* **Examples**:
  + **Unary Plus (+)**: Converts its operand to a number.

javascript

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let x = +"5"; // x = 5 (number)

* + **Unary Minus (-)**: Negates the value of its operand.

javascript

Copy code

let y = -10; // y = -10

* + **Increment (++)**: Increases the value of its operand by 1.

javascript

Copy code

let z = 5;

z++; // z = 6

* + **Decrement (--)**: Decreases the value of its operand by 1.

javascript

Copy code

let w = 3;

w--; // w = 2

**c. Logical Operators**

* **Definition**: Used to perform logical operations, often in conjunction with Boolean values.
* **Examples**:
  + **AND (&&)**: Returns true if both operands are true.

javascript

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let result = true && false; // result = false

* + **OR (||)**: Returns true if at least one of the operands is true.

javascript

Copy code

let result = true || false; // result = true

* + **NOT (!)**: Inverts the Boolean value of its operand.

javascript

Copy code

let result = !true; // result = false

**d. Ternary Operator**

* **Definition**: A shorthand for an if-else statement that takes three operands: a condition, a value if true, and a value if false.
* **Syntax**:

javascript

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condition ? value\_if\_true : value\_if\_false

* **Example**:

javascript

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let age = 18;

let canVote = (age >= 18) ? "Yes" : "No";

console.log(canVote); // Output: "Yes"

**3. Automatic Type Conversion**

* **Definition**: The process where JavaScript automatically converts a value from one data type to another as needed by the context of the operation.
* **Examples**:
  + **String to Number**:

javascript

Copy code

console.log("5" \* 2); // Output: 10

Here, the string "5" is automatically converted to the number 5 for multiplication.

* + **Number to String**:

javascript

Copy code

console.log(5 + " apples"); // Output: "5 apples"

In this case, the number 5 is converted to the string "5" for concatenation with " apples".

* + **Boolean to Number**:

javascript

Copy code

console.log(true + 1); // Output: 2

true is converted to 1 when added to another number.

* + **null to Number**:

javascript

Copy code

console.log(8 \* null); // Output: 0

null is converted to 0 during the multiplication.

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