National University of Computer and Emerging Sciences

Laboratory Manual

for

Web Engineering
(SL3003)

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Section	6C 1,2
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Lab 3: Introduction to JavaScript

Task 1: Understanding JavaScript Variables and Data Types

Instructions:

1. Declare three variables using var, let, and const with different values and data types.
2. Print the values and their types.
3. Change the let variable's value and try modifying the const variable. Explain the results.
4. Declare an object representing a student with properties name, age, and isEnrolled. Access and print each property separately.
5. Declare an array with five different numbers. Print its length and access the first and last elements.
6. Swap the first and last elements without using a temporary variable.

Task 2: JavaScript Operators and Expressions

Instructions:

1. Declare two numeric variables a and b. Apply all arithmetic operators to them and print the results.
2. Compare a and b using all comparison operators and print whether each condition is true or false.
3. Use logical operators (&&, ||, !) in expressions involving a and b. Print the results.
4. Implement a ternary operation that checks if a is a multiple of b. Store the result in a variable and print it.
5. Without using conditional statements (if or switch), write an expression that assigns different values to a variable based on whether a is greater than, less than, or equal to b.

Task 3: Advanced String Manipulation

Instructions:

1. Declare a string with a sentence of at least ten words.
2. Extract the first five characters and the last five characters separately.

3. Replace the third word in the sentence with another word and print the modified string.
4. Convert the entire string to uppercase and lowercase separately.
5. Reverse the string without using built-in reverse functions.
6. Count the number of occurrences of the letter 'a' in the string.
7. Extract the second word without using split().

Task 4: Array Manipulation with Slice and Splice

Instructions:

1. Declare an array containing at least eight different elements.
2. Use slice() to extract a portion of the array starting from index 2 to 6 and print it.
3. Use splice() to remove the third and fourth elements and replace them with three new elements.
4. Print the modified array and compare it with the original.
5. Remove the last two elements using splice() and print the updated array.
6. Insert a new element at the second position without removing any existing elements.
7. Reverse the array without using built-in reverse functions.
8. Extract the middle element(s) of the array dynamically (handle both even and odd-length arrays).