Day 16

Understanding Control Structures in JavaScript

Control structures in JavaScript are fundamental for managing the flow of a program. They allow you to make decisions and execute different blocks of code based on certain conditions or to repeat actions. Here's an overview of the primary control structures used in JavaScript: conditional statements and loops.

1. Conditional Statements:

- **Purpose:** Allow the program to make decisions and execute different code blocks based on whether certain conditions are true or false.
- **Types:**
    - **if Statement:** Executes a block of code if a specified condition evaluates to true. It is the most basic form of conditional statement.
    - **else Statement:** Provides an alternative block of code that executes if the if condition is false. It pairs with the if statement to handle multiple cases.
    - **switch Statement:** Allows for more complex decision-making by evaluating an expression against multiple possible values. Each value (or case) has its own block of code that executes if there's a match. It is useful when you have many conditions based on the same variable.

2. Loops:

- **Purpose:** Enable you to execute a block of code repeatedly, which is useful for tasks that need to be performed multiple times or when dealing with collections of data.
- **Types:**
    - for Loop: Iterates over a block of code a specific number of times. It is commonly used when the number of iterations is known beforehand, such as iterating through an array.
    - while Loop: Repeats a block of code as long as a specified condition remains true. It is useful when the number of iterations is not known in advance and depends on a condition.
    - do...while Loop: Similar to the while loop but guarantees that the block of code is executed at least once before checking the condition. This is useful when the initial execution of code is required before any condition is evaluated.

Practical Exercise: Writing Control Structures for Various Conditions

1. **Use Conditional Statements:**

- Develop logic using if, else, and switch statements to handle various scenarios, such as checking user input, handling different states, or making decisions based on data values.

2. **Implement Loops:**
   - Utilize for, while, and do...while loops to repeat actions, process arrays, or perform tasks until a specific condition is met. For instance, iterate through a list of items, execute a task until a condition changes, or perform an action a set number of times.