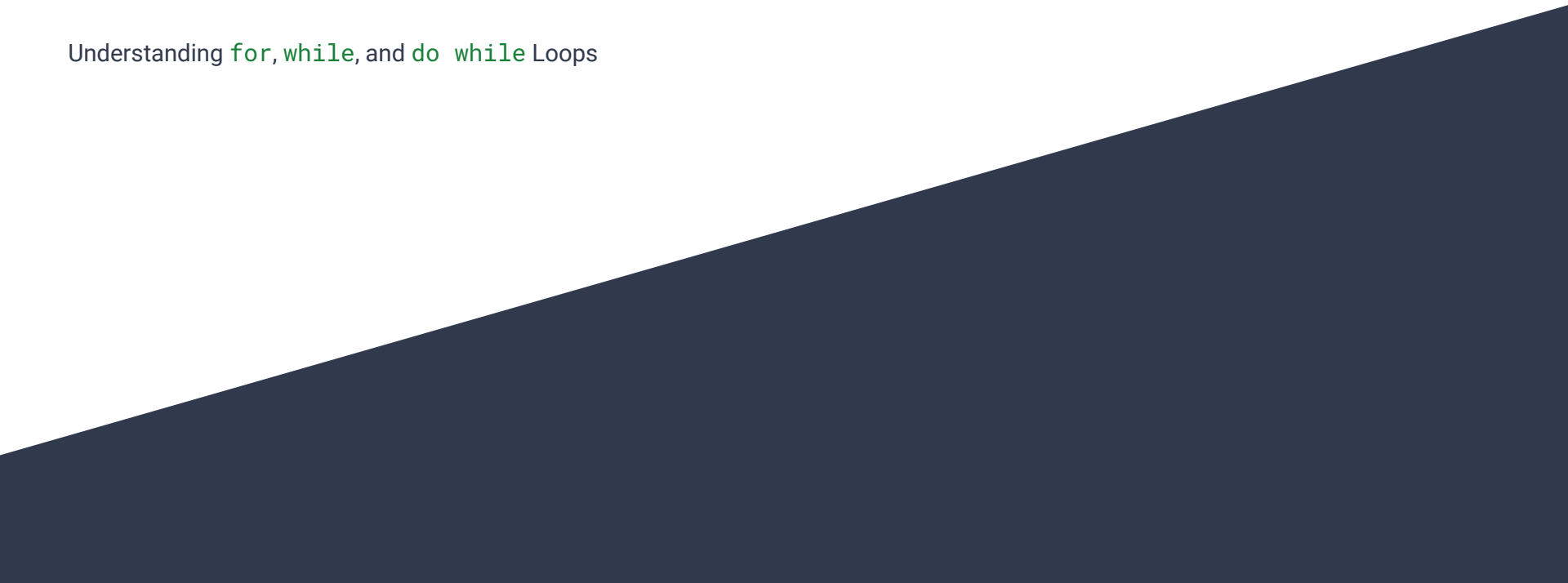


Looping in JavaScript

Understanding `for`, `while`, and `do while` Loops

A large, dark blue, curved shape that starts from the bottom left and extends diagonally upwards towards the right, filling the lower half of the slide.

Introduction to Loops

What are Loops?

- Loops allow the execution of a block of code multiple times based on a condition.

Types of Loops in JavaScript:

- `for` Loop
- `while` Loop
- `do while` Loop

The for Loop

Definition: Executes a block of code a specified number of times.

Syntax :

```
for (initialization; condition; increment/decrement) {  
    // Code to execute in the loop  
}
```

Reasoning with the for Loop

Problem: Print numbers divisible by 3 between 1 and 30.

Code Example:

```
for (let i = 1; i <= 30; i++) {  
  if (i % 3 === 0) {  
    console.log(i);  
  }  
}
```

Explanation:

- The loop runs from 1 to 30.
- Inside the loop, the `if` statement checks if the number is divisible by 3.
- If true, the number is printed.

The while Loop

Definition: Executes a block of code as long as a specified condition is true.

Syntax :

```
while (condition) {  
    // Code to execute in the loop  
}
```

The do while Loop

Definition: Executes a block of code once, then repeats the loop as long as the condition is true.

Syntax :

```
do {  
    // Code to execute in the loop  
} while (condition);
```

Comparison of Looping Structures

for Loop:

- Best for loops with a known number of iterations.

while Loop:

- Best when the number of iterations is not known beforehand.

do while Loop:

- Guarantees the loop runs at least once.

Example Scenario:

- **for** Loop: Iterating over a fixed array.
- **while** Loop: Waiting for user input until valid input is given.
- **do while** Loop: Running a menu-driven program at least once.

Summary of Loops

- **for Loop**: Best for known iterations.
- **while Loop**: Best for unknown iterations.
- **do while Loop**: Ensures at least one iteration.
- **Use Cases**: Iterating over data structures, user input validation, and more.