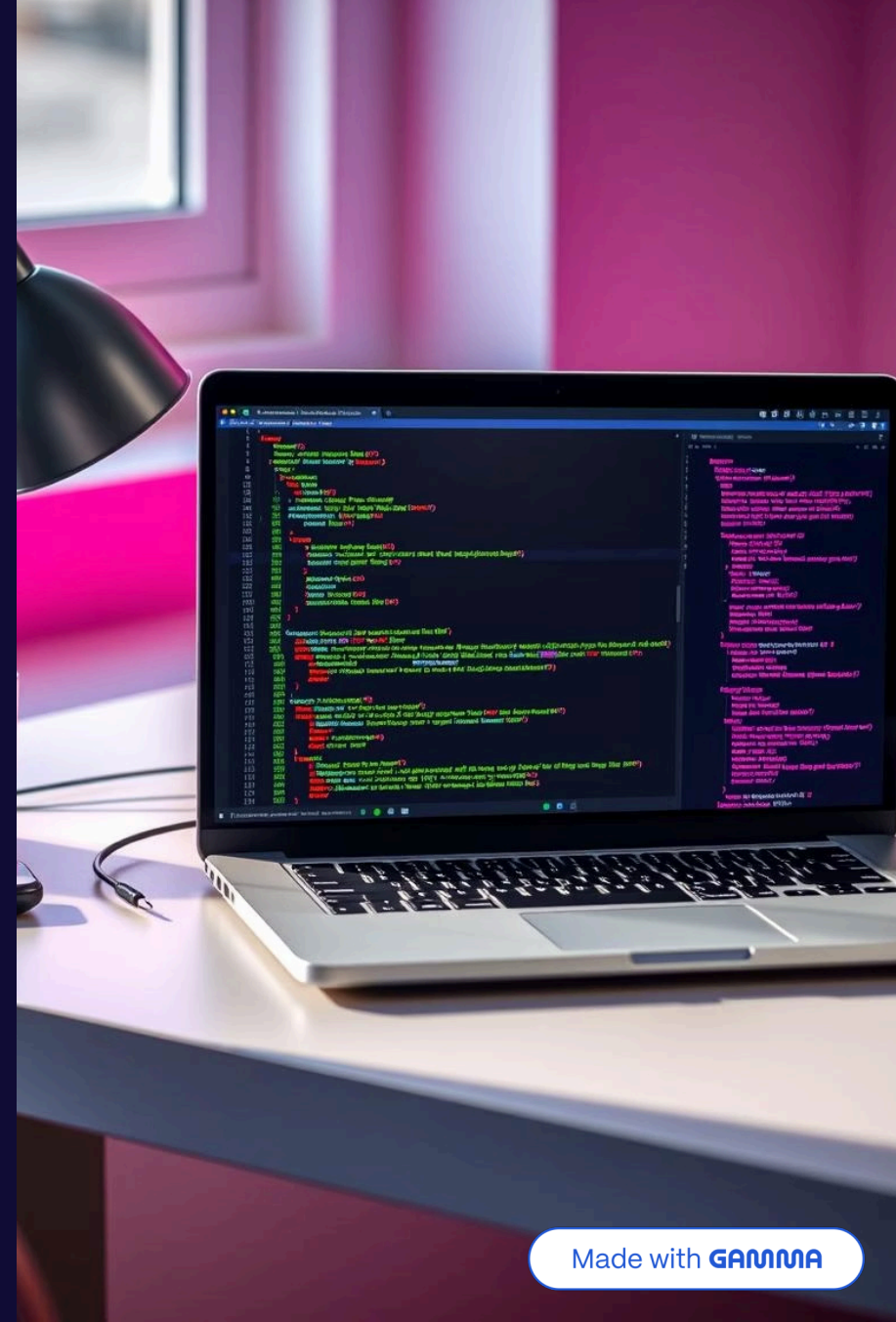# C++ Basics: Control Flow, Data & I/O

Learn essential C++ concepts to control program flow, work with data, and interact with users effectively. This session covers data types, input & output, and conditional logic fundamentals.

# Data Types in C++

## Integer (int)

Whole numbers like **30**. Range: -2B to 2B.

## Floating Point (float, double)

Decimal numbers. **float** uses less memory than **double**.
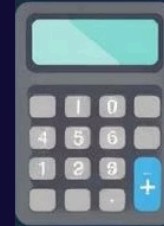
## Character & Boolean

**char** stores single letters; **bool** holds true or false.

## String

A sequence of characters for text, like **"Alice"**.



# C++ Data Types

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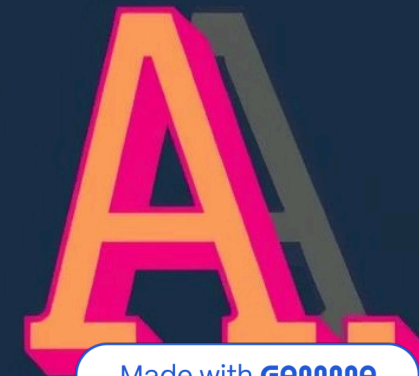
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char (light switch)
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# Input/Output (I/O) in C++

## Output with **cout**

Display messages or variables to the console.

Example: **cout << "Hello, world!";**

## Input with **cin**

Read user input from the keyboard.

Example: cin >> age;
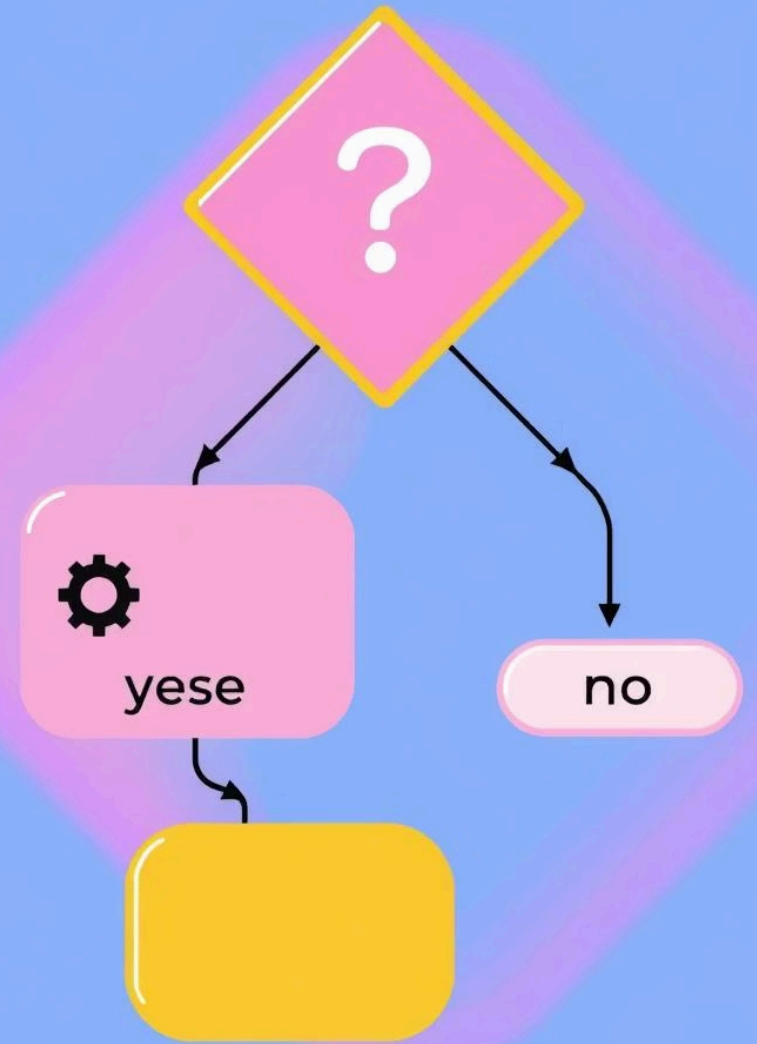
# If/Else Statements

**Basic Syntax**

Runs code blocks based on conditions.

**Example**

Checks if number is positive or negative.

**Conditional Execution**

Only one block runs depending on condition.

# Nested If/Else Statements

**1**

**Multiple Conditions**

Allows checking more detailed scenarios.

**2**

**Example Use**

Assign grades like A, B based on scores.

**3**

**Complex Decisions**

Improves program logic clarity and flow.

# Switch Statement

### Syntax

Switch chooses actions based on an expression's value.

### Example

Displays day name using a number.

### When to Use

Best for fixed values, simpler than multiple if/else.

# Combining Concepts in a Program

### Input Number

Use **cin** to get user input.

### Logic Check

Determine even or odd with **if**.

### Output Result

Display message using **cout**.

# Summary and Next Steps

### Key Points Recap

Data types, I/O, control flow with if/else & switch.

### Practice

Try exercises to reinforce concepts.

### Further Learning

Explore advanced C++ features and projects.