

Introduction to C Plus Plus

Module 3 - Tokens in C Plus Plus



CBSE

Tokens in C++

Tokens are the smallest individual units in a C++ program. Just like words are the building blocks of a sentence, tokens are the building blocks of a program. The C++ compiler uses tokens to understand the code and perform operations.



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C++ has the following tokens.

1. Keywords
2. Identifiers
3. Constants
4. Strings
5. Operators



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- These are reserved words in C++ that have a specific meaning.
- You cannot use them as identifiers (like variable names or function names).
- Examples:

int, float, if, else, return, class, public, private, double, new, switch, Auto, else, operator, template, break, enum, this, case, extern, protected, throw, catch, char, register, typedef, friend, union

Example:

```
int number; // 'int' is a keyword that indicates the data type.
```

Keywords

Identifiers

- Names used to identify variables, functions, arrays, or classes in a program.
- They must follow specific rules:

Only alphabetic chars, digits and under score are permitted.

1. The name can't start with a digit.
2. Upper case and lower case letters are distinct.
3. A declared keyword can't be used as a variable name

In ANSI C the maximum length of a variable is 32 chars but in c++ there is no bar.

Example:

```
int age; // 'age' is an identifier.  
float salary; // 'salary' is another identifier.
```



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Constants

- Similar to literals but are defined using the const keyword or #define.
- Once defined, their values cannot change.

Example:

const float PI = 3.14; // 'PI' is a constant.

Strings

- Sequences of characters enclosed in double quotes ("").
- Treated as arrays of characters in C++.

Example:

string greeting = "Hello, World!";

Operators

- Symbols that perform operations on variables or values.

• Types:

- **Arithmetic Operators:** +, -, *, /, %.
- **Relational Operators:** <, >, ==, !=, <=, >=.
- **Logical Operators:** &&, ||, !.
- **Assignment Operators:** =, +=, -=, *=, /=.
- **Bitwise Operators:** &, |, ^, ~, <<, >>.

Example:

int sum = 5 + 10; // '+' is an arithmetic operator.
if (x > 5) { } // '>' is a relational operator.

Literals

- Fixed values directly used in the program.
- Types of literals:
 - **Integer Literals:** Numbers like 10, 25, 100.
 - **Floating-Point Literals:** Numbers with decimals like 3.14, 0.5.
 - **Character Literals:** Single characters enclosed in single quotes like 'A', '9'.
 - **String Literals:** Sequences of characters enclosed in double quotes like "Hello".
 - **Boolean Literals:** true, false.

Punctuation Symbols (Separators)

- Symbols used to separate code elements and organize them.

• Examples:

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- o ; (semicolon): Ends a statement.
- o { } (curly braces): Used to define blocks of code.
- o , (comma): Separates multiple items in a statement.
- o () (parentheses): Used in function calls or conditions.
- o [] (square brackets): Used in arrays.

Assignment

Ques 1; Write a C++ program that declares a **variable** to store the **age** of a person and then prints the value using the cout statement.

- Use appropriate **keywords** for the variable declaration.
- Use **identifiers** for naming the variable.

Ques 2: Write a C++ program that calculates the **area** of a circle.

- Use a constant for the value of **PI**.
- The formula for the area of a circle is: $\text{Area} = \text{PI} * \text{radius} * \text{radius}$.

Ques 3: Write a C++ program that takes two integer inputs from the user and performs the following operations:

- Add them.
 - Subtract them.
 - Multiply them.
 - Divide them.
 - Find the remainder when the first number is divided by the second number.
- Display the results of all these operations.

Ques 4: Write a C++ program that takes a **name** and **age** as input from the user and then prints a message like:

- "Hello [name], you are [age] years old."

Make sure to use string literals in your message.

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