

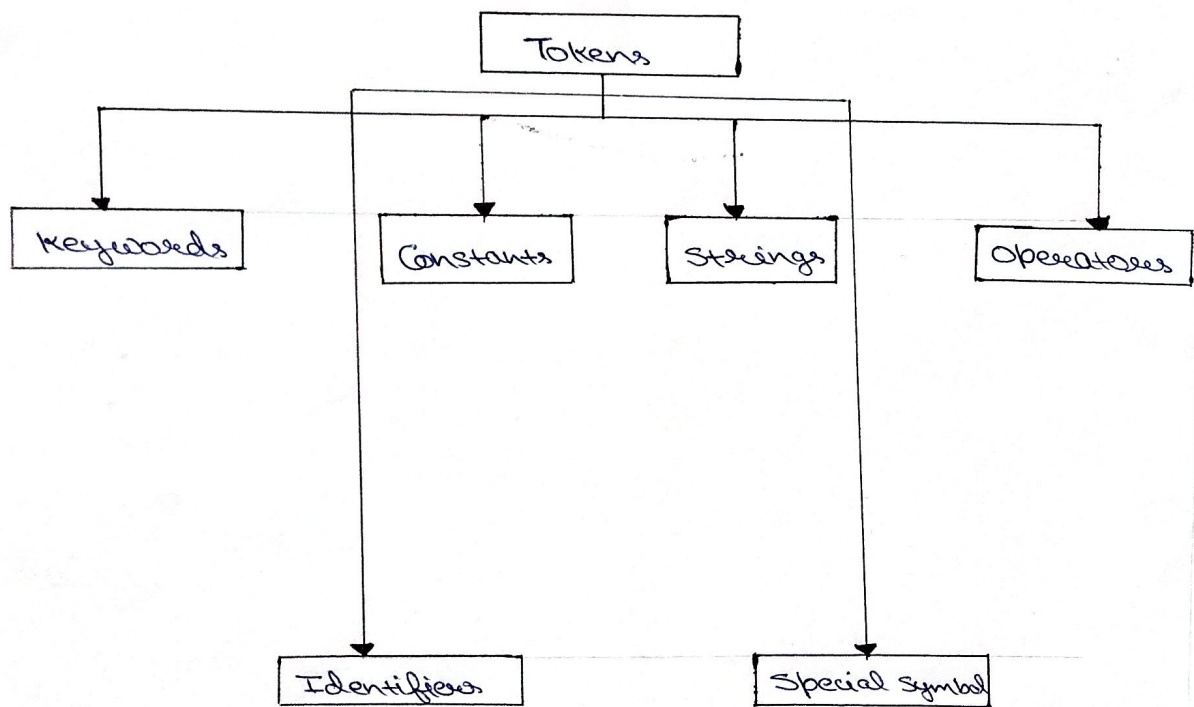
Q1 What is token? What are different type of tokens?

Ans:⇒

- Definition ⇒ Token are the smallest individual units in a program.
- When the compiler is processing the source code of a C++ program, each group of characters separated by white space is called token.

Types of Tokens

- 1) Keywords
- 2) Identifiers
- 3) Constants
- 4) Operators
- 5) Strings
- 6) Special characters



1) Keywords:-

- These are the reserved words that have special meaning in the language are called keywords.
- Keywords are always written in lower case.
- Keywords are the words that the language uses for a special purpose such as:- void, int, public, char etc.

2) Identifiers:-

- It refers to the name of variables, functions, array, classes, etc.
- They are the fundamental requirement of any language.

Rules for naming identifiers

- Identifier name cannot start with a digit or any special character.
- An identifier can only have alphanumeric character - i.e. (a-z), (A-Z), (0-9) and underscore symbol (_).
- The name cannot start with digit.
- Identifier are case sensitive.
- A keyword cannot be used as an identifier name.

For e.g.:-

```
int class_Roll;  
double Marks;
```

3) Constants:-

- Constants refer to fixed values that the program may not alter and they are called constant.

- Constant are also known as literals.
- There can be any types of constants like integer, float, octal, hexadecimal etc.
- They are fixed values in program.
- For e.g. $\Rightarrow$ 1, 2.5, "Book" etc.

4) Strings $\Rightarrow$

- Strings is a collection of characters.
- Strings are enclosed with double quotes.
- Strings are the object that represent sequence of characters.
- The class is called `std::string`.
- We can perform many operations on string such as concatenation, comparison, conversion etc.
- For e.g. $\Rightarrow$ "hello world", "Good morning" etc.

5) Operators $\Rightarrow$

- Operator is a symbol that tells the compiler to perform specific mathematical or logical manipulation.
- Thus the functionality of C/C++ programming language is incomplete without the use of operators.
- For example: `c = a + b;`
- Here, '+' is the operator known as addition operator and 'a' and 'b' are operands. The addition operator tell the compiler to add both of the operand 'a' and 'b'.

6) Special symbol / character :-

- A special character is that is not considered a number or letter.
- Special character only contain symbol, accent marks, punctuation.
- Each special symbol has a specific meaning to the C++ compiler.

Here is the table of special characters

Special Symbol	Trivial name	Function
1) <code>[]</code>	Square brackets	The opening and closing brackets of an array
2) <code>()</code>	Simple bracket - 2	The opening and closing brackets represent function declaration and call, used in print stmt.
3) <code>{ }</code>	Curly braces	The opening and closing curly brackets to denote start and end of a particular program.
4) <code>#</code>	Hash/Pound/Preprocessor	The hash symbol represents the preprocessor used for denoting the use of a header file
5) <code>*</code>	Asterisk	Asterisk symbol used to declare pointers, used in operand for multiplication. - on.