

Strings

Strings are used for storing text/characters.

For example, "Hello World" is a string.

A `string` variable contains a collection of characters surrounded by double quotes:

Example

Create a variable of type `string` and assign it a value:

```
string greeting = "Hello";
```

A string is a sequence of characters, such as letters, digits, and symbols.

In programming, strings are used to represent text and are typically enclosed in quotes. For example, "Hello, World!" is a string.

Characteristics of Strings

1. Sequence of Characters:

- A string is essentially a list of characters stored in a particular order.

2. Immutable (in some languages):

- In many programming languages (like Python), strings are immutable, meaning once a string is created, it cannot be changed. However, in C++, strings can be modified.

3. Null-Terminated in C/C++:

- In C and C++, strings are often implemented as arrays of characters terminated by a null character (`\0`), indicating the end of the string.

Strings in C++

In C++, strings can be handled using two primary ways:

1. C-style Strings:

- These are arrays of characters terminated by a null character.

- Example: `char str[] = "Hello";`
2. C++ string:
 - C++ provides the `string` class, which is part of the standard library, to make string handling easier and more powerful.
 - Example: `string str = "Hello";`

Basic Operations on Strings

1. Creating a String:

```
string str = "Hello, World!";
```

2. Accessing Characters:

```
char ch = str[1]; // 'e'
```

3. Concatenation:

```
string str1 = "Hello";  
string str2 = "World";  
string str3 = str1 + " " + str2; // "Hello World"
```

4. Finding Substrings:

```
size_t pos = str.find("World"); // Returns position of "World"
```

5. Getting Length:

```
size_t len = str.length(); // Returns the length of the string
```

Example in C++

Here's a simple example demonstrating some basic string operations in C++:

```
#include <iostream>  
#include <string>  
  
int main() {  
    string greeting = "Hello, World!";
```

```

// Print the string
    cout << greeting << endl; // Output: Hello, World!

// Access and print a character
    cout << "First character: " << greeting[0] <<
endl; // Output: H

// Find and print the position of a substring
    size_t pos = greeting.find("World");
    if (pos != string::npos) {
        cout << "'World' found at position: " << pos <<
endl; // Output: 7
    }

// Get and print the length of the string
    cout << "Length of the string: " <<
greeting.length() << endl; // Output: 13

// Concatenate and print strings
    string farewell = greeting + " Goodbye!";
    cout << farewell << endl; // Output: Hello, World! Goodbye!

    return 0;
}

```

Summary:

In summary, a string is a sequence of characters used to represent text. In C++, the `string` class from the standard library provides a flexible and easy way to handle strings.