

Strings

Terms

C String	Escape sequences
C++ String	Raw string
Character literal	String literal
Concatenate	Substring

Summary

- A *C-string* (also called *C-style String*) is an array of characters terminated with the null terminator (`\0`).
- C-strings cannot be copied, compared, or concatenated (combined). That's why you should avoid them in new code and prefer to use C++ strings.
- C++ strings are represented using the **string** class in the STL. This class internally uses a character array to hold a string. But it hides away all the complexity around C-strings. It dynamically resizes the array when needed and provides useful methods for working with strings.
- A *string literal* is a sequence of characters enclosed with double quotation marks.
- A *character literal* is a character enclosed with single quotation marks.
- We use escape sequences to represent special characters within string and character literals. Examples of escape sequences are `\\`, `\"`, `\'`, `\n` and `\t`.
- In *raw strings*, escape sequences are not processed.

```
// Working with C-strings
char name[5] = "Mosh";
char copy[5];

cout << strlen(name);

strcpy(copy, name);

if (strcmp(name, copy) == 0)
    cout << "Equal";

// Working with C++ strings
string name = "Mosh";

cout << name.length();

string copy = name;

if (name == copy)
    cout << "Equal";

// Modifying strings
string name = "Mosh";
name.append(" Hamedani");
name.insert(0, "I am ");
name.erase(0, 2);
name.clear();
name.replace(0, 2, "**");
```

```
// Searching strings
string name = "Mosh";
int index;
index = name.find('a');
index = name.rfind('a');
index = name.find_first_of(",.;" );
index = name.find_last_of(",.;" );
index = name.find_first_not_of(",.;" );
```

```
// Extracting substrings
string name = "Mosh Hamedani";
string substr;
substr = name.substr();
substr = name.substr(3);
substr = name.substr(3, 5);
```

```
// Working with characters
string name = "Mosh Hamedani";
bool b;
b = isupper(name[0]);
b = islower(name[0]);
b = isdigit(name[0]);
b = isalpha(name[0]);
```

```
name[0] = toupper(name[0]);
name[0] = tolower(name[0]);
```

```
// Conversions
string str = "10";
int i = stoi(str);
double d = stod(str);
string s = to_string(10);

// Escape sequences
string message = "Hello\nWorld";
string columns = "first\tlast";
string path = "c:\\folder\\file.txt";

// Raw strings
string path = R"(c:\folder\file.txt)";
```