# Modifying Operations

C++ gives us a variety of tools to modify and manipulate strings.

Strings have many operations to modify them. `str.assign` assigns a new string to the string `str`. With `str.swap` you can swap two strings. To remove a character from a string use `str.pop_back` or `str.erase`. In contrary `str.clear` or `str.erase` deletes the whole string. To append new characters to a string use `+=, std.append` or `str.push_back`. You can use `str.insert` to insert new characters or `str.replace` to replace characters.

| Methods | Description |
| --- | --- |
| `str= str2` | Assigns `str2` to `str`. |
| `str.assign(...)` | Assigns to `str` a new string. |
| `str.swap(str2)` | Swaps `str` and `str2`. |
| `str.pop_back()` | Removes the last character from `str`. |
| `str.erase(...)` | Removes characters from `str`. |
| `str.clear()` | Clears the `str`. |
| `str.append(...)` | Appends characters to `str`. |
| `str.push_back(s)` | Appends the character `s` to `str`. |
| `str.insert(pos, ...)` | Inserts characters in `str` starting at `pos`. |

| | |
|---|---|
| `str.replace(pos, len, ...)` | Replaces the `len` characters from `str` starting at `pos` |

### Methods for modifying a string

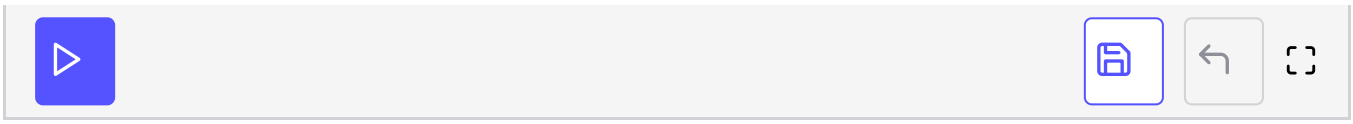
The operations are available in many overloaded versions. The methods `str.assign`, `str.append`, `str.insert` and `str.replace` are very similar. All four can be invoked with C+±strings and substrings, but also characters, C strings, C string arrays, ranges, and initializer lists. `str.erase` can erase a single character, ranges, but also many characters starting at a given position.

The following code snippets show many of the variations. For simplicity reasons only the effects of the strings modifications are displayed:

```
#include <iostream>
#include <string>

int main(){

  std::cout << std::endl;

  std::cout << "ASSIGN: " << std::endl;

  std::string str{"New String"};
  std::string str2{"Other String"};
  std::cout << "str: " << str << std::endl;

  str.assign(str2, 4, std::string::npos);
  std::cout << str << std::endl;

  str.assign(5, '-');
  std::cout << str << std::endl;
  std::cout << std::endl;

  std::cout << "DELETE" << std::endl;

  str={"0123456789"};
  std::cout << "str: " << str << std::endl;
  str.erase(7, 2);
  std::cout << str << std::endl;

  str.erase(str.begin()+2, str.end()-2);
  std::cout << str << std::endl;

  str.erase(str.begin()+2, str.end());
  std::cout << str << std::endl;

  str.pop_back();
  std::cout << str << std::endl;

  str.erase();
```

```
std::cout << str << std::endl;

std::cout << "APPEND" << std::endl;

str="01234";
std::cout << "str: " << str << std::endl;

str+="56";
std::cout << str << std::endl;

str+='7';
std::cout << str << std::endl;

str+={'8', '9'};
std::cout << str << std::endl;

str.append(str);
std::cout << str << std::endl;

str.append(str, 2, 4);
std::cout << str << std::endl;

str.append(10, '0');
std::cout << str << std::endl;

str.append(str, 10, 10);
std::cout << str << std::endl;

str.push_back('9');
std::cout << str << std::endl;

std::cout << std::endl;

std::cout << "INSERT" << std::endl;
str={"345"};
std::cout << "str: " << str << std::endl;

str.insert(3, "6789");
std::cout << str << std::endl;

str.insert(0, "012");
std::cout << str << std::endl;

std::cout << std::endl;

std::cout <<  "REPLACE" << std::endl;
str={"only for testing purpose."};
std::cout << "str: " << str << std::endl;

str.replace(0, 0, "O");
std::cout <<  str << std::endl;

str.replace(0, 5, "Only", 0, 4);
std::cout << str << std::endl;

str.replace(16, 8, "");
std::cout << str << std::endl;

str.replace(4, 0, 5, 'y');
std::cout << str << std::endl;

str.replace(str.begin(), str.end(), "Only for testing purpose.");
```

```
  std::cout << str << std::endl;

  str.replace(str.begin()+4, str.end()-8, 10, '#');
  std::cout << str << std::endl;

  std::cout << std::endl;

}
```



Modifying strings