# 17.6 — std::string appending

BY ALEX ON JULY 18TH, 2010 | LAST MODIFIED BY ALEX ON NOVEMBER 17TH, 2017

## **Appending**

Appending strings to the end of an existing string is easy using either operator+=, append(), or push\_back() function.

```
string& string::operator+= (const string& str)
string& string::append (const string& str)
```

- Both functions append the characters of str to the string.
- Both function return \*this so they can be "chained".
- Both functions throw a length\_error exception if the result exceeds the maximum number of characters.

## Sample code:

```
string sString("one");

sstring += string(" two");

string sThree(" three");
sstring.append(sThree);

cout << sString << endl;

Output:

one two three</pre>
```

There's also a flavor of append() that can append a substring:

## string& string::append (const string& str, size\_type index, size\_type num)

- This function appends num characters from str, starting at index, to the string.
- · Returns \*this so it can be "chained".
- Throws an out\_of\_range if index is out of bounds
- Throws a length\_error exception if the result exceeds the maximum number of characters.

#### Sample code:

```
string sString("one ");

const string sTemp("twothreefour");
sString.append(sTemp, 3, 5); // append substring of sTemp starting at index 3 of length 5
cout << sString << endl;

Output:
one three</pre>
```

Operator+= and append() also have versions that work on C-style strings:

```
string& string::operator+= (const char* str)
string& string::append (const char* str)
```

- Both functions append the characters of str to the string.
- Both function return \*this so they can be "chained".

- Both functions throw a length\_error exception if the result exceeds the maximum number of characters.
- str should not be NULL.

```
Sample code:
```

```
string sString("one");

sString += " two";
sString.append(" three");
cout << sString << endl;

Output:
one two three</pre>
```

There is an additional flavor of append() that works on C-style strings:

```
string& string::append (const char* str, size_type len)
```

- · Appends the first len characters of str to the string.
- · Returns \*this so they can be "chained".
- Throw a length\_error exception if the result exceeds the maximum number of characters.
- Ignores special characters (including ")

## Sample code:

```
string sString("one ");

sString.append("threefour", 5);
cout << sString << endl;</pre>
```

#### Output:

one three

This function is dangerous and its use is not recommended.

There is also a set of functions that append characters. Note that the name of the non-operator function to append a character is push back(), not append()!

```
string& string::operator+= (char c)
void string::push_back (char c)
```

- Both functions append the character c to the string.
- Operator += returns \*this so it can be "chained".
- Both functions throw a length error exception if the result exceeds the maximum number of characters.

## Sample code:

```
string sString("one");

sString += ' ';
sString.push_back('2');
cout << sString << endl;

Output:</pre>
```

one 2

Now you might be wondering why the name of the function is push\_back() and not append(). This follows a naming convention used for stacks, where push\_back() is the function that adds a single item to the end of the stack. If you envision a string as a stack of characters, using push\_back() to add a single character to the end makes sense. However, the lack of an append() function is inconsistent in my view!

It turns out there is an append() function for characters, that looks like this:

```
string& string::append (size_type num, char c)
Adds num occurrences of the character c to the string
Returns *this so it can be "chained".
```

• Throws a length error exception if the result exceeds the maximum number of characters.

```
Sample code:
```

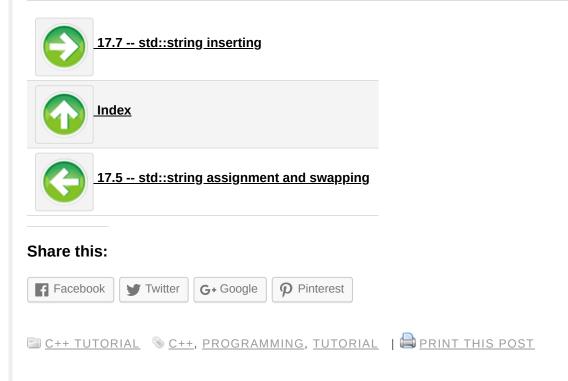
```
string sString("aaa");
sString.append(4, 'b');
cout << sString << endl;
Output:</pre>
```

aaabbbb

There's one final flavor of append() that you won't understand unless you know what iterators are. If you're not familiar with iterators, you can ignore this function.

## string& string::append (InputIterator start, InputIterator end)

- Appends all characters from the range [start, end) (including start up to but not including end)
- Returns \*this so it can be "chained".
- Throws a length\_error exception if the result exceeds the maximum number of characters.



## 14 comments to 17.6 — std::string appending

## **AMG**