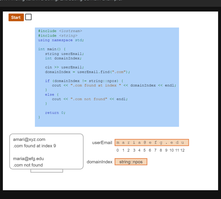
3.15 Character operations

3.16 Finding, inserting, and replacing text in a string

Finding text in a string

A programmer often needs to find and work with text inside another string. The **find()** function is used to find a string or character inside a string. Ex: Given a string s1, s1.find(textToFind) returns the index of the first occurrence of textToFind within s1, or string.npos if not found. textToFind can be a string or character. **string::npos** is a special value representing "no position".

PARTICIPATION ACTIVITY 3.16.1: Finding text in a string. Extracting domain example.



Captions

Feedback?

PARTICIPATION ACTIVITY 3.16.2: Using find() to find text in a string.

Given userText is assigned with 'chicken', what does each statement return?

1) `userText.find("ken");`
- 3
- 2
- 5

2) `userText.find('l');`
- 1
- 2
- The statement does not compile.

3) `userText.find('c');`
- 0
- 2
- 0, 3

4) `userText.find("k");`
- 0
- string::npos
- The statement does not compile.

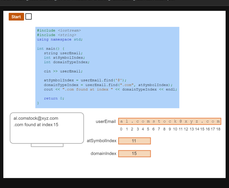
Feedback?

Finding text starting from the middle of a string

Sometimes, a programmer needs to find text starting from a specific location inside a string instead of from the beginning of the string. find(textToFind, startIndex) returns the index of the first occurrence of textToFind starting at index startIndex instead of index 0.

The following animation shows a program that finds '.com' in an email address only after the '@' character.

PARTICIPATION ACTIVITY 3.16.3: Finding text starting in the middle of a string. Extracting domain example.



Captions

Feedback?

PARTICIPATION ACTIVITY 3.16.4: Using find() starting from the middle of a string.

Given userAdjective is assigned with "sassy", what does each statement return?

1) `userAdjective.find('s', 1);`
- 0
- 2
- 3

2) `userAdjective.find('s', 2);`
- 2
- 3
- string::npos

3) `userAdjective.find('s', 4);`
- 0
- 3
- string::npos

Feedback?

Getting a substring

A **substring** is a contiguous part of a string. Ex: "world" is a substring of "Hello world", but "wrld" is not.

The **substr()** function is used to get a substring of a string. Ex: Given a string s1, s1.substr(startIndex, numCharacters) returns the substring of s1 starting from index startIndex and having numCharacters characters. When used without the length parameter, s1.substr(startIndex) returns the substring of s1 starting from index startIndex to the end of the string.

The following animation shows a program that uses substr() to get the username and domain of an email address.

PARTICIPATION ACTIVITY 3.16.5: Getting a substring. Extracting username and domain example.

Captions

Feedback?

PARTICIPATION ACTIVITY 3.16.6: Using substr() to get a substring.

Given albumTitle is assigned with 'evermore', what does each statement return?

1) `albumTitle.substr(0, 4);`
- om
- over
- more

2) `albumTitle.substr(2, 4);`
- ermo
- over
- er

3) `albumTitle.substr(6);`
- re
- over
- more

4) `albumTitle.substr(albumTitle.find("r"));`
- 1
- ermore
- An exception is thrown.

5) `albumTitle.substr(albumTitle.size() - 3);`
- ore
- more
- overm

Feedback?

Inserting and replacing text in a string

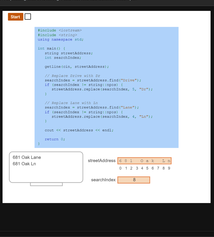
A common task after finding text in a string is to insert new text or replace the found text.

Given a string s1:

- The **insert()** function inserts text into a string. Ex: s1.insert(startIndex, newText) inserts newText into s1 before the character at index startIndex.
- The **replace()** function replaces text in a string. Ex: s1.replace(startIndex, numCharacters, newText) replaces the substring of s1 starting at index startIndex and having numCharacters characters with newText.

The following animation shows a program that uses replace() to replace street labels in a postal address with standardized abbreviations.

PARTICIPATION ACTIVITY 3.16.7: Replacing text in a string. Address standardization example.



Captions

Feedback?

PARTICIPATION ACTIVITY 3.16.8: Using insert() and replace().

1) Given userAddress is assigned with "789 Oak Ave", which statement changes userAddress to "789 E Oak Ave"?
- `userAddress.insert(3, "E ");`
- `userAddress.insert(4, "E");`
- `userAddress.insert(4, "E ");`

2) Given userAddress is assigned with "123 Oak Ave", which statement changes userAddress to "456 Oak Ave"?
- `userAddress.replace(0, 3, "456");`
- `userAddress.replace("123", 3, "456");`
- `userAddress.replace("123", "456");`

3) Given userAddress is assigned with "123 Oak Ave", which statement changes userAddress to "123 Maple Ave"?
- `userAddress.replace(4, 3, "Maple");`
- `userAddress.replace(4, 3, "Maple ");`
- `userAddress.replace(3, 4, "Avenue ");`

4) Given userAddress is assigned with "123 Oak Ave", which statement changes userAddress to "123 Pine Ave"?
- `userAddress.replace(userAddress.find("Pine"), 3, "Oak");`
- `userAddress.replace(userAddress.find("Oak"), 3, "Pine");`
- `userAddress.replace(userAddress.find("Oak"), 4, "Pine");`

5) Given userAddress is assigned with "123 Maple St". findString is assigned with "Maple", and replaceString is assigned with "Oak". which statement correctly replaces findString with replaceString?
- `userAddress.replace(findString, replaceString);`
- `userAddress.replace(userAddress.find(findString), findString.length(), replaceString);`
- `userAddress.replace(userAddress.find(findString), replaceString.length(), replaceString);`

Feedback?

CHALLENGE ACTIVITY 3.16.1: Basic string manipulation.

Jump to last action?

Start

Given string stringValue on one line, string str2 on a second line, and integer selectionLen on a third line, replace the first selection in characters in stringValue with the contents of str2.

Ex: If the input is:

```
Shiny koala
Rapp
4
```

then the output is:

```
Rappy koala
```

Note: Using a pre-defined string function, the solution can be just one line of code.

```
#include <iostream>
#include <string>
using namespace std;

int main() {
  string stringValue;
  string str2;
  int selectionLen;

  getline(cin, stringValue);
  getline(cin, str2);
  cin >> selectionLen;

  /* Your code goes here */

  cout << stringValue << endl;

  return 0;
```

1 2 3

Check Next level

Feedback?

How was this section? Provide section feedback

3.17 Conditional expressions