Search

In this lesson, we'll examine the different search features available in the string class.

C++ offers many ways to search in a string. Each way exists in various overloaded forms.

i Search is called find

It seems a bit odd but the algorithms for searching in a string start with the prefix "find". If the search was successful, we get an index of type std::string::size_type, if not, we get the constant std::string::npos. The first character has the index 0.

The find algorithms support:

- searching for a character from a C or C++ string.
- searching forward and backward.
- searching for the presence or lack of characters in a C or C++ string.
- starting the search at an arbitrary position in the string.

The arguments of all six variations of the find function follow a similar pattern. The first argument is the text we are searching for. The second argument holds the start position of the search, and the third represents for the number of characters starting from the second argument.

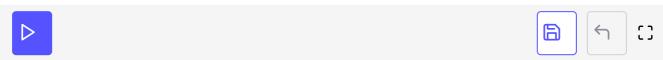
Here are the six variations:

Methods	Description
<pre>str.find()</pre>	Returns the first position of a character, a C or C++ string in str.

```
Returns the last position of a
      str.rfind(...)
                                    character, a C or C++ string in str.
                                       Returns the first position of a
                                    character from a C or C++ string in
  str.find_first_of(...)
                                                    str.
                                       Returns the last position of a
                                    character from a C or C++ string in
  str.find_last_of(...)
                                                    str.
                                       Returns the first position of a
                                    character in str, which is not from
str.find_first_not_of(...)
                                             a C or C++ string.
                                       Returns the last position of a
                                   character in str, which is not from
str.find_last_not_of(...)
                                             a C or C++ string.
```

Find variations of the string

```
#include <iostream>
                                                                                                6
#include <string>
int main(){
  std::string str;
  auto idx= str.find("no");
  if (idx == std::string::npos) std::cout << "not found"; // not found</pre>
  str= {"dkeu84kf8k48kdj39kdj74945du942"};
  std::string str2{"84"};
  std::cout << str.find('8') << std::endl;</pre>
                                                                               // 4
  std::cout << str.rfind('8') << std::endl;</pre>
                                                                               // 11
  std::cout << str.find('8', 10) << std::endl;</pre>
                                                                               // 11
  std::cout << str.find(str2) << std::endl;</pre>
                                                                               // 4
  std::cout << str.rfind(str2) << std::endl;</pre>
                                                                               // 4
  std::cout << str.find(str2, 10) << std::endl;</pre>
                                                                               // 184467440737095516
str2="0123456789";
                                                                              // 4
std::cout << str.find_first_of("678") << std::endl;</pre>
std::cout << str.find_last_of("678") << std::endl;</pre>
                                                                              // 20
std::cout << str.find_first_of("678", 10) << std::endl;</pre>
                                                                              // 11
std::cout << str.find_first_of(str2) << std::endl;</pre>
                                                                              // 4
std::cout << str.find last of(str2) << std::endl:</pre>
                                                                              // 29
```



Find(search) in a string

The call std::find(str2, 10) returns std::string::npos. The value for this, on this platform, is 18446744073709551615.

To build upon our understanding of this concept, we'll solve an exercise.