Regular Expression Objects

Let's take a look at the various types and grammars which C++ provides for regex objects.

Objects of type regular expression are instances of the class template template class traits= regex_traits chart>> class basic_regex parametrized by their character type and traits class. The traits class defines the interpretation of the properties of the regular grammar. There are two type synonyms in C++:

```
typedef basic_regex<char> regex;
typedef basic_regex<wchar_t> wregex;
```

You can further customise the object of type regular expression. Therefore you can specify the used grammar or adapt the syntax. As said before, C++ supports the basic, extended, awk, grep and egrep grammars. A regular expression qualified by the std::regex_constants::icase flag is case insensitive. If you want to adopt the syntax, you have to specify the grammar explicitly.

```
#include <iostream>
#include <regex>
#include <string>
int main(){

std::cout << std::endl;

std::string theQuestion="C++ or c++, that's the question.";

// regular expression for c++
std::string regExprStr(R"(c\+\+)");

// regular expression object
std::regex rgx(regExprStr);

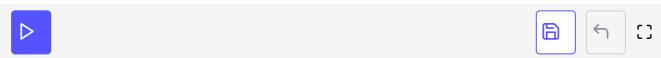
// search result holder
std::smatch smatch;

std::cout << theQuestion << std::endl;</pre>
```

```
// looking for a partial match (case sensitive)
if (std::regex_search(theQuestion, smatch, rgx)){
    std::cout << std::endl;
    std::cout << "The answer is case sensitive: " << smatch[0] << std::endl;
}

// regular expression object (case insensitive)
std::regex rgxIn(regExprStr, std::regex_constants::ECMAScript|std::regex_constants::icase);
// looking for a partial match (case sensitive)
if (std::regex_search(theQuestion, smatch, rgxIn)){
    std::cout << std::endl;
    std::cout << "The answer is case insensitive: " << smatch[0] << std::endl;
}

std::cout << std::endl;
}</pre>
```



Specify the grammar

If you use the case-sensitive regular expression rgx the result of the search in the text theQuestion is c++. That's not the case if your case-insensitive regular expression rgxIn is applied. Now you get the match string C++.