

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 charT, 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;
```



```

// 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;

}

```



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++`.