

In this exercise we study C++ string handling.

Start by downloading the program `xml_read.cpp` and xml-file `day-ahead-prices.xml` from the workspace. The program `xml_read.cpp` reads the whole xml-file into a single string object.

Your task is to modify the main function so that it asks user which element user wants to find from the xml. If user enters "stop" then program stops otherwise program calls function `find_first_element` (Exercise A) or `find_all_elements` (Exercise 2B) and prints the result that function returns. If the returned value is a vector program must print both vector elements and the length of the vector. Then program repeats the question.

Exercise A (2p) Using string class member functions

Write a function that finds the first element with the given name.

```
string find_first_element(const string &xml, string tag_name);
```

The function takes an xml-string and the name of the tag as a parameter and returns the text from between the start tag and end tags. If either start or end tag is not found the function must return "not found". Note that when you search for the tag you must search for the whole tag (including angle brackets) not just the tag name that was given as parameter.

For example, if you wanted to print "businessType"

```
cout << "businessType: " << find_field(page, "businessType") << endl;
```

The program would print:

```
businessType: A62
```

For example, if you wanted to print "brokerIdentifier"

```
cout << "brokerIdentifier: " << find_field(page, "brokerIdentifier ") << endl;
```

The program would print:

```
brokerIdentifier: not found
```

Exercise B (2p) Vector of strings

Write a function that finds all elements with the given name and returns a vector of strings that contains the element values.

```
vector<string> find_all_elements(const string &xml, string tag_name)
```

For example, if you search for “position” from the example xml-file the returned vector will contain 24 strings: “1”, “2”, “3”, ... “24”.

If you search for “temperature” from the example xml-file the function returns an empty vector.