Introduction to XML

M2 MIA, Grenoble Université

1 preamble: XML validation

1. Using one of the available tools, check the vadity of the file `tovalidate.xml` given in this directory. What is the result ? Q.0

2. How to change only two characters to make the file valid ? Q.1

2 Introduction

Please uncompres the .zip archive given in this directory, then build and run the application which allows you to create and solve an equation system. The equation system can be described by a size and a set of constraints, as illustrated in Figure 1. In this exercise, we want to add two features to the application:

- saving the description of an equation system to an XML file

- reading the description from an XML file
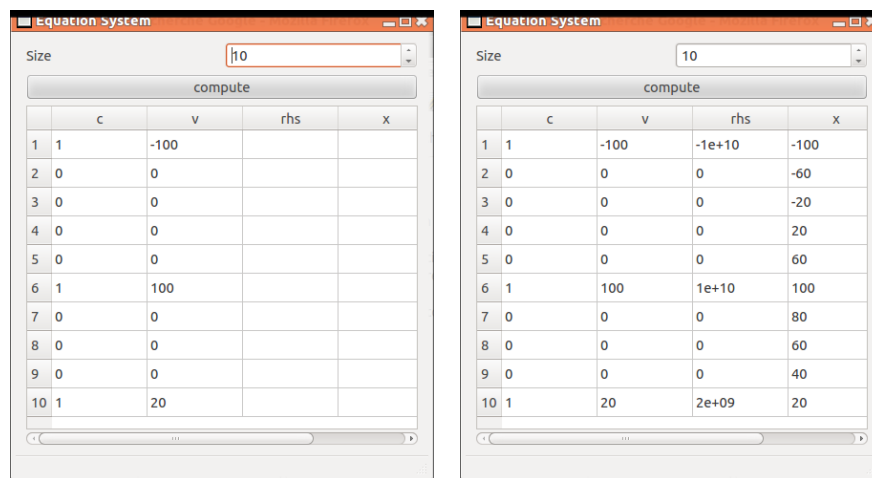
(a) Description (b) Solution

Figure 1: The application. (a):Before solving the system. (b):After.

3 Playing with an example

Looking for XML examples in the QtAssistant program, you can find a commented example called *QXmlStream Bookmarks*. Read the first part of the comments, about the XMLBelWriter implementation.

- write the list of all the member functions of XbelWriter used in the three code snippets, along with your brief guess of what they do.   Q.2

Get the full source code of the example, which is probably installed on your computer. Find the `streambookmarks` directory using the unix command `locate`, and copy it to your working directory. Open the project, compile and run. Thy to open bookmark files, modify and save them.

- Using a breakpoint in the debugger, find and explain by which functions `writeFile` is called. What are the different cases handled in function `qt_static_metacall` ?   Q.3

4 File writing

Using the Action Editor of the graphical ui editor, add an action called `SaveAs` to the application. By adapting the bookmarks example, implement the recording of the equation system description, as illustrated in the following listing.

```xml
<?xml version="1.0" encoding="UTF-8"?>
<xlaplacian version="1.0" size="10">
    <constraint index="0" value="-100"/>
    <constraint index="5" value="100"/>
    <constraint index="9" value="20"/>
</xlaplacian>
```

Tips

- Start without recording the constraints

- Since our data structure is not recursive, you do not need an auxiliary recursive function as in the bookmarks example.

- Look at the `solveEquation` function for examples of how to read/write data in the vectors table

5 File reading

Using the Action Editor of the graphical ui editor, add an action called `Open` to the application. By adapting the bookmarks example, implement the reading of the equation system description. Put the size in the spinbox, then clear and fill two first vectors of the table.

Tips

- Start by simply printing the data on the standard output; once this works fine (it prints all the data), implement the conversion and storage of the data.

- Function `QXmlStreamReader::readNextStartElement` searches elements deeper in the hierarchy. To exit an empty element, use function `skipCurrentElement`.