

The C++ LaTeX Library

Alfredo Correa

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Abstract Lorem ipsum dolor sit amet, consectetur adipiscing elit. Ut purus elit, vestibulum ut, placerat ac, adipiscing vitae, felis. Curabitur dictum gravida mauris. Nam arcu libero, nonummy eget, consectetur id, vulputate a, magna. Donec vehicula augue eu neque. Pellentesque habitant morbi tristique senectus et netus et malesuada fames ac turpis egestas. Mauris ut leo. Cras viverra metus rhoncus sem. Nulla et lectus vestibulum urna fringilla ultrices. Phasellus eu tellus sit amet tortor gravida placerat. Integer sapien est, iaculis in, pretium quis, viverra ac, nunc. Praesent eget sem vel leo ultrices bibendum. Aenean faucibus. Morbi dolor nulla, malesuada eu, pulvinar at, mollis ac, nulla. Curabitur auctor semper nulla. Donec varius orci eget risus. Duis nibh mi, congue eu, accumsan eleifend, sagittis quis, diam. Duis eget orci sit amet orci dignissim rutrum.

Getting started

To start writing a LaTeX file that ultimately will be compiled as a PDF, you need to construct an stream object with the name of the destination PDF. Title information of the document can be added optionally.

```
1 #include "latex.hpp"  
  ...  
3 latex::ostream lo("latex.pdf");  
  lo.author = "A. U. Thor";  
5  lo.title = "The C\\!++ LaTeX{} Library";  
  lo << latex::maketitle;
```

The LaTeX output stream can accept any explicit command

```
lo << "\\section{Getting_Started}\\n";
```

or alternatively any of the predefined latex commands and environments

```
lo << latex::section("Getting_Started");
```

The ubiquitous latex namespace specifier can be eliminated by declaring the use of the namespace

```
using namespace latex;  
2 lo << section("Getting_Started");
```

It is called output stream (ostream) because it works similarly to an standard output stream, that is, the PDF is only produced (updated) if the flush and endl sent to the stream or if the stream is destroyed (or goes out of scope). For example

```
1 lo << "Last_line" << endl;
```

will add such line to the document, and end of line character and then will flush the result and generate the PDF. If endl or flush is used too frequently the resulting program will be slow because it will compile the PDF each time. To end a line/paragraph, the string "

n

", newline, or par can be used instead.

Long paragraphs can be define by using the default C++ literal string concatenation. The latex control object par can be used to break paragraphs.

And newline can be used to break lines.

Output of C++ results

Things get interesting we start using the output for dynamical C++ results in a program. For example, the following C++ code

```
1 for (double x = 0.; x < 5.; ++x) lo << "$" << x << "^2=" << x*x << "$, ";
```

Outputs the following line

$$0.^2 = 0., 1.^2 = 1., 2.^2 = 4., 3.^2 = 9., 4.^2 = 16.,$$

Cross References

Crossed reference can be managed by explicitly giving \label/\ref pairs as usual in \LaTeX , alternatively pointer reference to the objects can be used as references. This code

```
1 latex::equation quadratic("x^2");
lo << quadratic << "as_seen_in_previous_equation_" << latex::ref(&quadratic) << ". ";
```

generates this text

$$x^2 \tag{1}$$

as seen in previous equation ??.

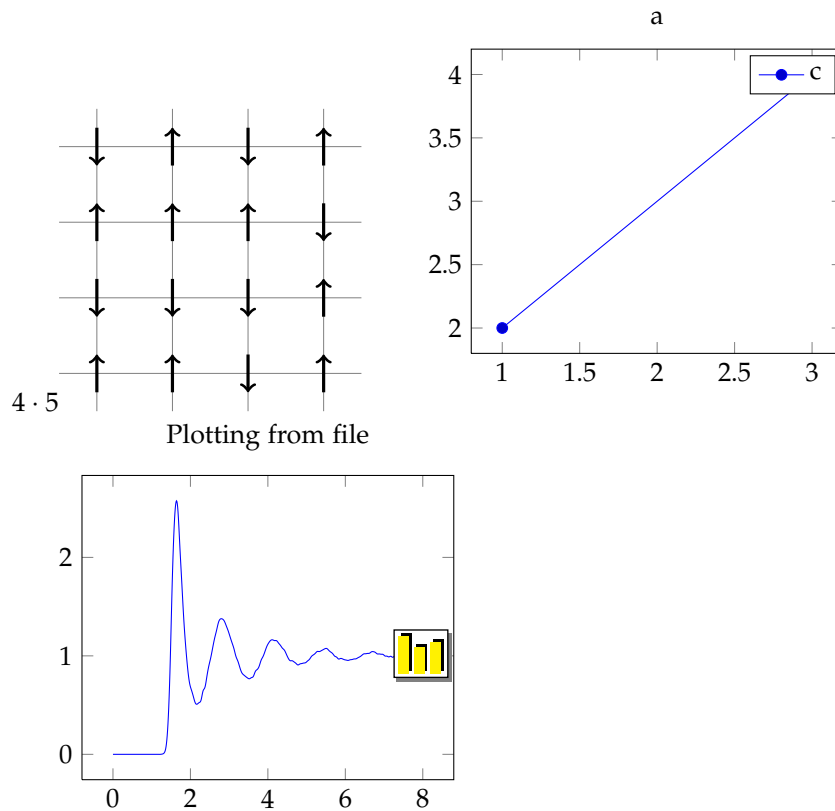
```
1 for(double x = 0.; x<5.; ++x){ lo << x << ",_"; }
```

0., 1., 2., 3., 4.,

23. m

12.

number(4)*number(5) = number(20)



Spell Checker

The library supports spell checking which is implemented by marking misspelled words in the resulting pdf. In the following Wikipedia quote some words have been misspelled. (In order to see the corrections and suggestions you need to open the PDF with Acrobat Reader; to avoid printing the corrections from Acrobat Reader in the pring box select to print Document only, instead of Document and Markup)

Shakespeare was born and raised in *Stratford-upon-Avon*. At the age of 18, he married Anne Hathaway¹, with whom he had three children: Susanna, and twins Hamnet and Judith. Between 1585 and 1592, he began a successful career in London as an actor, writer, and part owner of a playing company called the Lord Chamberlain's Men, later known as the King's Men. He appears to have retired to Stratford around 1613, where he died three years later. Few records of Shakespeare's private life survive, and there has been considerable speculation about such matters as his physical appearance, sexuality, religious beliefs, and whether the works attributed to him were written by others.