The Monthly GNU Column

Brave GNU World

Welcome to another issue of the Brave GNU World, where we take a look at two projects to avoid neglecting the technical side of Community affairs.

This column looks into projects and current affairs in the world of free software from the perspective of the GNU Project and the FSF. In this issue, we will be focusing on: Jaxodraw, Mom and coin slots in hotel rooms. **BY GEORG C.F. GREVE**

Jaxodraw

Thomas Theußl drew my attention to a program called Jaxodraw by mailing me at the usual address [1]. Jaxodraw [5] is a program that allows users to create Feynman diagrams interactively.

Richard Feynman was one of the most influential physicists of the 20th century. He and his fellow-researchers, Sin-Itiro Tomonaga and Julian Schwinger, were awarded the Nobel Prize in 1965 for their work on quantum electrodynamics. His "Feynman Lectures on Physics" are the first (and best) read for many students. Feynman diagrams are time/space diagrams that describe the interaction of elements in space, where the x-axis represents space, and the y-axis time.

Jaxodraw provides a GUI using the Axodraw package [6] by J.A.M. Vermaseren to do so. This allows users to create diagrams with a mouse. Details can be then added using the keyboard. The diagrams use the XML format, and can be output either as (encapsulated) PostScript or Latex code.
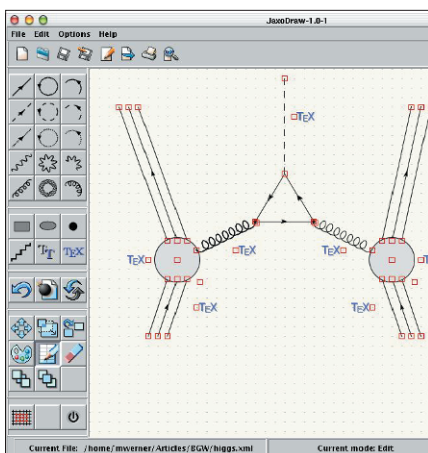

Figure 1: Jaxodraw is a scientific program that allows users to create Feynman diagrams. It provides a graphical interface and can produce various output formats.

Latex formatted output was one of the Jaxodraw authors' (Daniele Binosi and Lukas Theussl) major motivations, as they were looking for a way to embed diagrams in scientific publications with a minimum of effort. The Latex publishing System has been popular for many years now on account of its flexibility and efficiency. However, it was hard to achieve the desired results without a WYSIWYG display.

As the name suggests, Jaxodraw was programmed in Java. This makes the program platform independent to a large extent. But unfortunately, it will only run correctly on the Sun Java implementation. Quite a few issues arose with IBM's Runtime Environment. Refer to [7] for more details. Jaxodraw itself was released under the GPL. The developers have published the Jaxodraw manual as a scientific paper at [8], and ask users of the program to refer to this page in their own work. This allows the authors to more closely monitor how many people are actually use Jaxodraw.

There is an extremely interesting correlation between this and the discussion in issue #37 ([9]) of Brave GNU World on free software and its influence on science. It clearly demonstrates how free software itself can form the basis of a scientific publication.
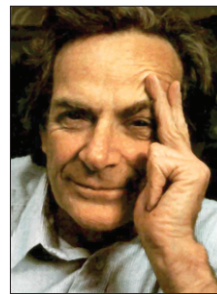

Figure 2: The winner of the Nobel Prize for Physics, Richard Feynman – a firm proponent of describing complex processes in a way that non-experts could understand.

Mom

The next project, which is a very much an insider tip at present, also has something to do with text layout, but is definitely not aimed at scientists. Most GNU/Linux users are familiar with GNU Troff (Groff, [10]), mostly from reading its numerous manpages (you can type *man command* to view formatted pages describing the commands of Unix-type Systems). Few are aware that Groff is a fully-fledged text layout system like Latex or Lout that allows users to create PostScript documents.

Groff needs only a fraction of the resources that Latex requires. It will run without fuss on a 386 with 8MB RAM and a 250MB hard disk. The careful use of resources that GNU/Linux and Groff display is what made the Canadian author, Peter Schaffter, opt for this combination. Just like many of his fellow-authors, Peter is not well off. He uses computers that people give to him, and this may mean that they are a whole generation behind state-of-the-art machines – as he puts it himself, they are "resource challenged".

Groff may not be easy to use, as the commands are typically quite terse and not always intuitive. This is why Peter Schaffter starting working on Mom [11]. In a similar fashion to the way Latex is built on Tex, Mom is a set of macros for Groff that provides a simple syntax. At the same time, it allows highly granular control over the generated documents, which can easily hold sway with other DTP solutions, without requiring indepth knowledge of Groff's somewhat cryptic syntax.

Figure 3: GNU Troff (Groff) is the GNU version of the well-known Unix tool troff.

Mom is aimed at users who need a lay-out program, but have not felt up to tackling Groff's syntax, authors who need to layout their work quickly and without any fuss, and newcomers who value a well-documented solution. Peter Schaffter has put a lot of effort into the manual. He is convinced that good documentation is a major element of program development. The manual was released under the Free Documentation License (FDL), and is available in HTML format.

Florian Cramer, who drew my attention to Mom, quotes three main reasons for using Mom:

• a unique combination of structured document processing with excellent manual layout control facilities
• frugal resource requirements
• less complex than Latex, which facilitates individual modifications

One of the program's limitations is the fact that it is not suited to scientific publication – in contrast to Latex – as it cannot handle cross-references, indices, or numbered illustrations. The choice of output formats is also limited. Mom is designed to produce Post-Script output. The commands *grotty* and *gro-html* also allow cleartext and HTML output, but they were not part of Peter's original game plan.

Alternatives to Tex

Originally programmed by a Canadian author for his own use, Mom offers exactly what many users need: a simple, but feature-rich text layout tool. Florian Cramer goes one step further and asks why XML/SGML sys-tems only use Tex, rather than Groff for printed output. Groff would provide an excellent output format for XML-based documents, as O'Reilly has already demonstrated with its combination of Doc-book SGML and Groff in "Programming Perl".

In Florian Cramer's opinion, Peter Schaffter is one of the unsung heroes of free software. Florian was particularly impressed at how well Peter Schaffter received his suggestion (concerning automatic creation of a table of contents), and at the speed with which this suggestion was implemented. If you want to contact Peter Schaffter, make sure that the subject line of your message includes either the word "Groff" or "Mom", as his spam filter will ditch any other email messages.

Even if the program will need a few minor functions adding at some stage, it is stable, and Schaffter intends to leave it up to the users to decide exactly which add-ons make sense. The decision to release Mom as a free software tool under the GPL was a conscious decision taken by Peter Schaffter that not only reflects his gratitude to the Community, but also his commitment to underlying social implications of free software.

Coin Slots in Hotel Rooms?

Finally, let's expose a new trend which is on the increase: wireless Internet access, but at absurdly high prices. Installing wireless Internet hotspots in hotel lob-bies, or at airports in Europe cannot possibly cost more than an initial investment of about £350 (500 Euros, $640) and monthly charges of about £21 (30 Euros, $38) for a broadband flat-rate.

The charge rate for this access is typically between £2 – £7 (3-10 Euros, $4-13) for half an hour. It is quite common for providers to require the use of prepaid cards, which are usually sold out. If you happen to find the right card, you might think you would be up and running, but unfortunately the providers seem incapable of designing stable websites that will work with arbitrary browsers.

When you consider how little it actually costs to install and run wireless Internet hotspots, in comparison with water and sanitary installations, for example, users can expect to find coin slots in hotel showers and bathrooms any day now. We have been living in the plumbing age for quite a while now, the information age seems to be far distant in the face of developments like this.

That's all for this month. As usual, I would like everyone to get in touch with comments, questions, and ideas to the usual address [1]. ∎
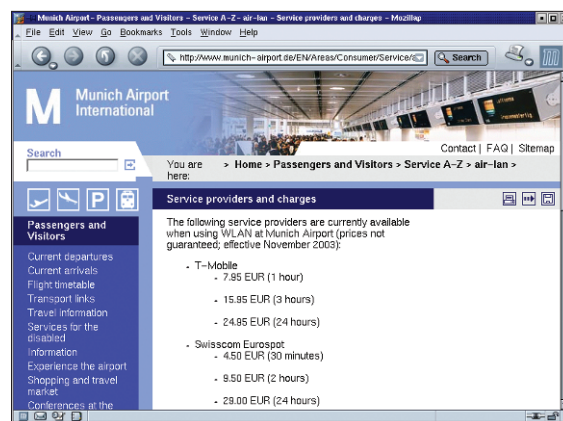

Figure 4: Internet Wireless LAN hotspots, such as the one at Munich airport, are on the increase. However, the asking price in no way reflects the effort put in by service providers.

INFO

[1] Send ideas, comments, and questions to: *column@brave-gnu-world.org*

[2] Homepage of GNU-Projects: *http://www.gnu.org/*

[3] Georg's Brave GNU World homepage: *http://brave-gnu-world.org*

[4] "We run GNU¯Initiative": *http://www.gnu.org/brave-gnu-world/rungnu/rungnu.html*

[5] Jaxodraw: *http://altair.ific.uv.es/~JaxoDraw/home.html*

[6] Axodraw: *http://www.nikhef.nl/~form/FORMdistribution/axodraw/*

[7] Known bugs in Jaxodraw: *http://altair.ific.uv.es/~JaxoDraw/bugs.html*

[8] Jaxodraw study: *http://arxiv.org/abs/hep-ph/0309015*

[9] Georg C.F. Greve, "Brave GNU World", Linux Magazine, issue 37, p.89

[10] GNU Troff: *http://www.gnu.org/software/groff/groff.html*

[11] Mom Macro set: *http://www.ncf.ca/~df191/mom.html*

[12] The GNU Manifesto: *http://www.gnu.org/gnu/manifesto.html*