Abaco: A Web Browser for Plan 9

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ABSTRACT

Abaco is a multi-page graphical web browser for Plan 9 intended to retrieve and display web pages while trying to be as congruent as possible with the system. It is a multi-threaded and modest-sized program.

Introduction

Frustrated by the lack of an usable web browser for Plan 9[Pike90], in 2005 I started to enhance Aki Nyrhinen's *webpage*. Soon I realized that a new model was needed. So I rewrote it using *thread(2)* and with a new user interface inspired in Acme[Pike94] making its use more comfortable.

Abaco supports most of the HTML 4.1 standard, including frames, tables and other tags.

User Interface

The user interface (Figure 1), inspired on Acme[Pike94], has a main *tag* and columns that hold Abaco windows.

Abaco windows are created and manipulated in the same way as Acme[Pike94] windows and consist of four parts: a *body* and three *tags*. These parts are vertically arranged: the *command tag* contains built-in commands; the *URL tag* contains the current page's URL, the *Return* key in this tag has the same effect as the built-in command `Get`; the *body* holds the current page's content and two scrollbars (one horizontal and other vertical); and the *status tag* holds dynamic information for the user.

Each Abaco window has its own 'history' which can be accessed via `Back` and `Next` commands.

The left button selects text or opens URLs in the current window if pressed on an hyperlink on the page content. The middle button on *tags* executes built-in commands such as `Back` and `Next` tag. The right button plumbs the text.

As Acme[Pike94], Abaco binds some actions like `Cut` and `Paste` to chords of mouse buttons speeding these operations.

Plan 9 and Abaco

Abaco uses *webfs(4)* presents a file system interface to the parsing and retrieving of URLs and also handles cookies. Abaco uses it to fetch URLs, to find their content type and to get the actual URL if a redirection has occurred.

If the *plumber(4)* is running, plumb messages are received and sent to it. This allows a better integration with the rest system making possible to open URLs by just plumbing them in acme[Pike94] or a *rio(1)* window, plumbed URLs are opened in a new window.

To support a variety of character sets Abaco relies on *tcs(1)* to do the conversion to

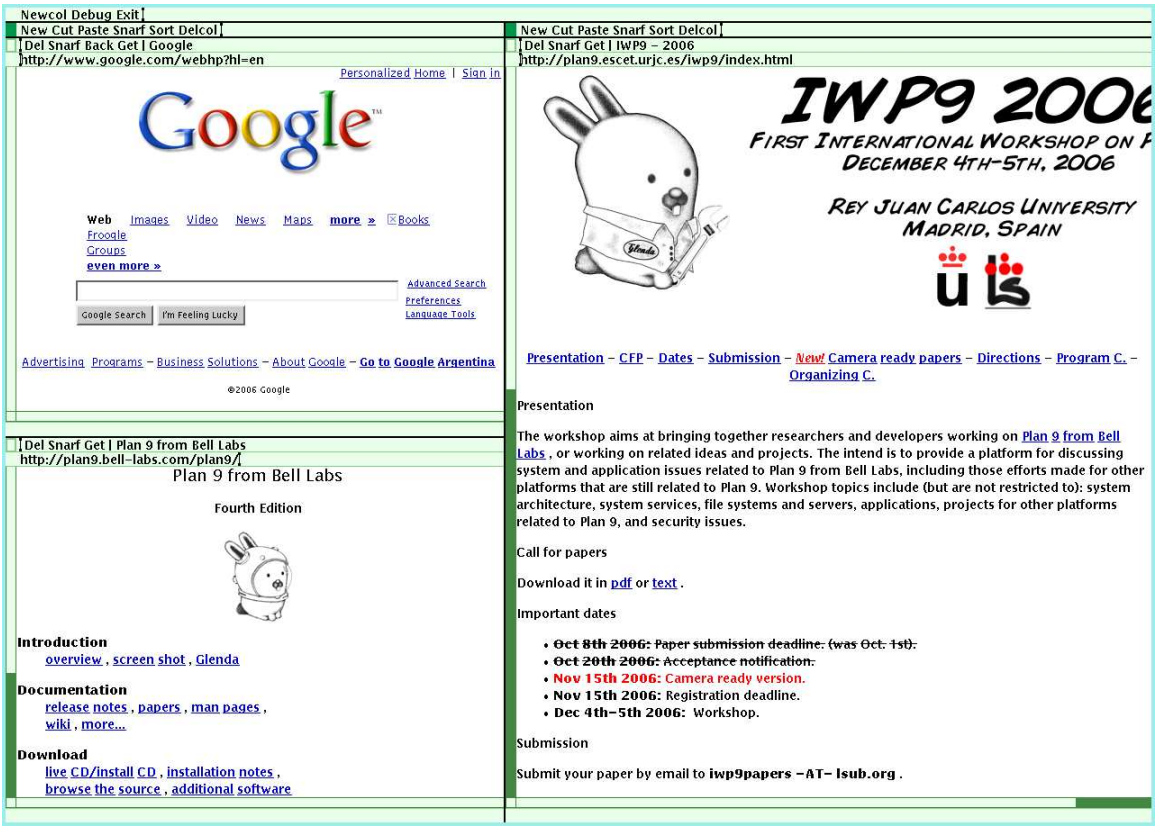

Figure 1. A small Abaco with three windows displaying different web pages, two in the left column and one in the right one.

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the character set that Plan 9 uses[Pike93]. In order to display images, *jpg(1)* and the other image tools are used to convert the various image formats to Plan 9 images.

Implementation

Abaco is written completely in C and the program source is small, currently consists of less than eight thousand lines of code. It avoids code duplication by interacting with set of existing Plan 9 utilities and a file server.

Abaco is constructed by a set of corroutines, two threads and two processes. There is a thread for mouse and another for the keyboard. There is also a process that awaits for messages from the plumber and another process used as a timer. These coroutines use channels to communicate with each other.

Status

As of 2006, even it's not a full featured web browser, Abaco is used daily by used the author and other users all over the globe.

Abaco is still in development. It would be nice to support CSS, JavaScript, Text search and other functionalities supported by most moderns browsers. A new HTML

parser was written to a future DOM implementation. The next step to follow would be writing a CSS parser and make Abaco use them.

Conclusion

In conclusion, Abaco demonstrates that, although it is required a huge amount of work, it is possible to write a web browser interacts well with Plan 9[Pike90]. And that this kind of application doesn't need to be large or complicated.

Acknowledgements

Abaco would not exist without the work of Aki Nyrhinen with *webpage*, Howard Trickey with *Charon* and *html(2)*, Rob Pike with *acme(2)* and without the work of the authors of uncountable Plan 9 utilities. I would like to thank the helpful comments of my friends and to the users that still suffer using Abaco.

References

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