Special Note: Steve Jobs will be the keynote speaker at Unix Expo, Javits Center, Oct. 30

GUN Gotham Users of NeXT

BULLETin

Gotham Users of NeXT: *the New York NeXT users group*

Customizing Librarian

Or, The Layman's Guide to Indexing Anything

One of the Great Things about NeXT computers is the Digital Librarian. Of course, everyone knows that DL (as we who rely on it daily lovingly call it) can index text and nroff files on the NeXT. What most people may not know is that users can customize HOW DL performs its indexing tasks.

For example, it's possible to instruct DL to display different descriptive information about files. This information is displayed when one performs a search: each "found" file returns a descriptive phrase to DL, which lists it in the main DL window. By default, this information includes the filename and the first line of text. In NeXTAnswers, for example, where each filename is a number, NeXT has put keywords into the first line of each file, which appear in DL (often truncated, unhappily) and assist somewhat in describing the file's topic.

Unfortunately, for other files, this is often not sufficient information to identify what the file contains. A good example is Usenet news files: these are stored in the Unix file system as numbered filenames, but worse (from DL's perspective), the first line of each file usually contains the network path by which it arrived at the local computer. This is, of course, useless for learning what the file is about.

Because one can customize DL, this is a surmountable problem.

How DL indexes

DL actually relies on a set of Unix utilities to perform indexing for it. These utilities can be called invisibly by DL, or manually by the user in the Shell. Most important among these is "ixBuild", which does what it looks like it would do: build an index. ixBuild in turn relies on a few auxiliary files to tell it how to index: a filetype table, a keyword generator program, and a description generator program.

When ixBuild is executed on a directory tree of files, it calls each of the auxiliary programs in turn and passes to it the filename of the current index target file. In other words, if ixBuild is asked to index NeXTanswers, for each file in the NeXTanswers directory it employs the filetype table, keyword generator, and description generator to fully build the index entry.

A filetype table is used to define a new filetype for use internally by ixBuild. This definition is achieved by assigning to each new filetype certain file features that ixBuild should look for. The default filetype table from NeXT looks like this:

#type	**pattern**	**format**	**offset**	**filename**
ps	**%!PS-Adobe**			
rtf	**{\rtf0**			

The first column, "type", corresponds to the new filetype that you want to define. The other four columns contain the defining information. "Pattern" is a string that all files of the specified type contain (often called a "magic string" in Unix); "format" describes the kind of data the pattern is (default is character string, but can also be byte, regular expression, etc.), and "offset" tells where in the file the pattern is to be found (default is at the beginning). Alternatively, "filename" can contain a regular expression describing the filename pattern for all files of this type.

From the default above, one sees that Postscript files are referred to by ixBuild as "ps" files, and contain the character string "%!PS-Adobe" at the beginning of the file. Similarly, rich text files are called "rtf" and contain "{\rtf0" at the beginning.

Description generator programs are short shell scripts or C programs that scan the contents of each file in the directory tree and return to the standard output a descriptive phrase. For example, if one created a shell script called "descriptor" with the following text:

sed '1 q' $1

and then typed "descriptor <filename>" in the Shell, it would return just the first line of <filename> (like the default description generator).

Customizing DL for Usenet News

NeXT supplies default auxiliary files, but the user can easily override them by creating his own and placing them in the .index directory at the root of the indexed directory tree. This is especially useful for Usenet news archives, which are generally directory trees of news files. Each file is named with a number, so the filename is not descriptive.

A way around this problem is to define a "news" file type. Further, one can write a special description generator that finds the "Subject:" line within the news file, for display by DL.

The filetype table could look like this:

#type	**pattern**	**format**	**offset**	**filename**
news	**Newsgroups:**			**[0-9]***
news	**Path:**			
news	**Xref:**			

This table tells ixBuild that the "news" file type is defined by a text file with a filename consisting only of numbers ([0-9]*), OR if the first string that it contains is "Newsgroups:", "Path:", or "Xref:". This table should be placed in a file called (you guessed it) "fileTypeTable" in the .index directory.

Once a filetype is defined, ixBuild uses it to decide which description generator to look for. For example, for files of type "news", ixBuild will look for a description generator program named "news-desc". This could be a simple shell script or a compiled program in C or Lisp.

One example of a shell script that returns the "Subject:" line from a file is:

```
/bin/grep Subject: $1 | /bin/sed 's/Subject: //'1
```

where the "grep" command finds the "Subject" line, and the "sed" command eliminates the word "Subject" from the returned string.

(The description generator program needs to be made executable, so generally it's a good idea to put

```
#!          /bin/sh
```

as the first line of the file, so that the Shell knows it's a script.)

Put "fileTypeTable" and "news-desc" into .index, go to the Shell, cd to the directory you want to index, and run ixBuild -v (for "verbose"). You should see output similar to the following:

```
# ixBuild -v
news  1
_textError: 102, directoryApply: cannot stat '//Apps'
   "NeXTweek: Rochester Area NeXT Users"
   desc: /usr/local/lib/news-archive/comp/sys/next/announce/
.index/news-desc "1"
news  2
   "FAQ-1/3: Answers to Frequently Asked"
   desc: /usr/local/lib/news-archive/comp/sys/next/announce/
.index/news-desc "2"
news  3
   "FAQ-2/3: Answers to Frequently Asked"
   desc: /usr/local/lib/news-archive/comp/sys/next/announce/
.index/news-desc "3"
news  4
   "FAQ-3/3: Answers to Frequently Asked"
   desc: /usr/local/lib/news-archive/comp/sys/next/announce/
.index/news-desc "4"
```

The "_textError" line can be ignored. After that, each file is listed as it is indexed, with the file type ("news"), the filename ("1", "2", etc.), the descriptive line ("NeXTweek: Rochester Area NeXT Users"), and the name of the description generator program used ("/usr/local/lib/news-archive/comp/sys/next/announce/.index/news-desc"). This all confirms that the indexing process is proceeding as designed!

You can, if you wish, abort the indexing from the Shell, delete the index generated so far (.index/index.ixif) since DL won't properly update in this release, and instead drag the directory into DL and index it from there. Or you can let ixBuild continue its work from the Shell. Either way, the next time you search for files in this directory using DL, the subject lines will appear as the file descriptions.

– Robb Aley Allan

NeXT in the News

Collected by Eric Rosenthal of UniForum

Arthur C. Clarke, "The Ghost From the Grand Banks", Bantam Books, 1990, p. 55. Describing a character's activities in 2007, the noted science fiction author wrote: "Presently he sat up, switched off the music module, and swung his seat around to one of his half-dozen keyboards. The NeXT Mark 4 which stored most of his files and information was hardly the last word in computers, but Bradley's business had grown up with it and he had resisted all updates, on the sound principle 'If it works, don't fix it.'" Readers of other editions can find the quotation in Chapter 10.

John Markoff, NeXTstation's Future Hinges on Software, New York Times, August 11, 1991, Section C, p. 8. There is industry skepticism about NeXT, although the company has found a niche selling to education and risk–taking businesses and the hardware has some "dazzling" specifications. Jobs's preference for totally new rather than ported applications has not yielded many products and NeXT's isolation from industry alliances also fails to attract software developers. The NeXTstation is "one of the best deals in computing" whose features others try to copy. Although Lotus announced a spreadsheet and WordPerfect a word processor, database and communications software are missing. The NeXTstation can only be customized with powerful Unix tools which are harder to use than those of operating systems, because third-party utilities are not available. The NeXTdimension was shipped without the promised compression chip. The 88000 RISC chip which future systems were to use now has a questionable future. These other problems are solvable, but NeXT requires more software to do well.

Don Crabb, Your NeXT Step Should Be To This Integrated OOP, InfoWorld, August 12, 1991, pp. 71, 73. Review of NeXTStep 2.1 emphasizes changes from release 1.0 and 1.0A which set "a new standard for ease of learning and ease of use in Unix-based workstation programming environments."

John Dunkle, N-e-x-t Spells Relief For IS, Computerworld, August 26, 1991, pp. 35, 39. NeXT already "deliver[s] information to the desktop that has been developed and stored on multiple architectures throughout the network." Financial and banking IS professionals are adopting NeXT because of its technical advantages.

Brenton R. Schlender, Jobs and Gates Together, Fortune, August 26, 1991, pp. 50-51, 54. This joint interview on the occasion of the tenth anniversary of the IBM PC is the cover story. "Beneath the conviviality, Jobs and Gates each had a business objective. Jobs lobbied for Gates to develop software for the NeXT computer. And Gates, whose company is being sued by Apple for allegedly pirating Macintosh software features, was hoping to learn more about the product's origin."

Tom Yager, The NeXT Illustrator, BYTE, September 1991, p. 52. "Adobe Illustrator 3.0 for the NeXT is everything it is on the Mac—and then some.… The availability of Illustrator 3.0 for the NeXT is another clear sign that the NeXT is not only competing as a Unix workstation, but has the potential to woo away high-end Mac users as well."

FORTRAN Compiler for NeXT, BYTE, September 1991, p. 78. Product announcement for Absoft Corp.'s Object-Oriented FORTRAN 77 for NeXT.

Guy Kawasaki, Sleeping with the Enemy, MacUser, September 1991, pp. 29-30. "Apple is afraid of the inroads NeXT is making in higher education." The enemy mentioned in the title is Microsoft.

Mark J. Minasi, Improv: Users happy, but others are unsure, Computerworld, September 2, 1991, p. 70. Users of Lotus Development's Improv like its data pivoting, but competitors do not seem worried.

NeXT unbundles WriteNow as third-party apps pick up (item in Pipeline), InfoWorld, September 2, 1991, p. 34. The new bundled version of the WriteNow word processor will only read documents.

Eduardo H. Sulit, The NeXT Book of Jobs (letter), InfoWorld, September 9, 1991, p. 54. Response to the theological allegory in Tom Quinlan's August 19 column.

Lisa Picarille, Sun gambles with Solaris product, InfoWorld, September 9, 1991, p. 134. Sun's decision to sell versions of its operating system for Intel processors is compared to NeXT's porting NeXTStep to Macintoshes or Sun workstations.

Don Crabb, Objects of Curiosity, InfoWorld, September 16, 1991, pp. 53-55. The movement toward hardware-independent, object-oriented operating systems is analyzed. "About the only existing object-based system, although it does not conform to the above definition, is NeXT Inc.'s NeXTStep operating environment."

Robert X. Cringely, Objectively Speaking (item in Notes from the Field), InfoWorld, September 16, 1991, p. 113. "I'm told that Microsoft spent two years looking at Objective C before rejecting it as too proprietary (which it is)."

John W. Verity and Evan I. Schwartz, Software Made Simple: Will Object-Oriented Programming Transform the Computer Industry?, Business Week, September 30, 1991, pp. 92-95, 98, 100. This cover story on object-oriented programming opens by comparing traditional C programming with NeXT programming at Objective Technologies. Object programming "is the first real technological shift we've had in the industry since the Macintosh" according to Steven P. Jobs. NeXT's workstations, which come with an object-oriented programming language and a library of objects has become a favorite of developers. Brad Cox, the creator of Objective-C, compares object technology to the use of interchangeable parts in manufacturing.

Paul Krill and Philip Gill, An Industry Guru, A Top User & The Firing Line, UNIX Today, September 30, 1991, pp. 13, 72. "For the industry celebrity, Unix Expo turns to Steven Jobs, president/CEO of NeXT, as the keynote speaker. While Jobs rarely decides what he will speak about ¨ntil he reaches the podium, he said in a recent interview that he'll likely talk about object-oriented programming, and how, through superior software, NeXT is establishing itself as a true contender in the workstation derby. Jobs contends that NeXT, which he says has turned slightly profitable, is actually moving more Unix workstations out the door than any Unix vendor other than Sun Microsystems and Digital Equipment—and he says NeXT has basically tied with DEC. But the head of the privately held company refused to release specific sales figures. 'Every time we get a chance to suit up against Sun, we're winning,' Jobs said, adding NeXT does not always get that chance. While he belittles the differences between today's RISC and CISC architectures, Jobs will likely tease the audience with a promise of RISC workstations from NeXT for 1992."

Evan Schuman, Antivirus Program Scans Unix, PCs & Macs, UNIX Today, September 30, 1991, p. 13. CyberSoft's Vfind virus scanner for many platforms, including NeXT.

LuAnn Vitalis, New in the Resource Center, BCS Update, October 1991, p. 22. Boston Computer Society Resource Center has Insignia Solutions's Soft PC for NeXT Computers 2.05.

Tracy Robnett Licklider, The View from the BCS, BCS Update, October 1991, pp. 23-24. "The BCS NeXT Group's August meeting celebrated Macworld by showing a soon-to-be-released public-domain program that lets NeXT machines run Macintosh software."

David Wilson, Three More Inexpensive Workstations, UNIX Review, October 1991, pp. 49-50, 52, 54, 58, 60, 62. Review of the Amiga 3000, HP 9000/425E, and NeXTstation. "We rate the NeXTstation as good overall, with an outstanding rating for installation and average ratings for support and expandability. We find the system substantially more to our liking than the previous NeXT Cube product we reviewed, and the 68040 processor provides enough performance to make it a reasonable workstation. We still would like a NeXT-supported X11 for interoperability reasons and have concerns about the support (hardware and software) available for the system. We like the inexpensive laser printer and especially like the selection of popularly priced software for the system."

Witold Rybczynski, The Death of Leisure, New York Times, October 8, 1991, p. A25. "Just look at the exalted tradition of the individual, untutored inventor. The popular admiration bestowed upon figures from Thomas Edison to Steve Jobs reflects a national fondness for self-improvement. And, of course, a delight in technical achievement, whether it's going to the moon or devising a lighter surfboard."

M. Keith Thompson, NetWare 3.11: Revising the Standard, PC Magazine, October 15, 1991, pp. 323-325, 328, 330, 334, 343-346, 349. Some of the networks used as examples include NeXT computers.

Nicholas Baran, This Way to 1992, BYTE, Special Edition OUTLOOK '91, pp. 16-20, 22, 24. NeXT asked developers to support foreign languages because it expects 30% of its sales in Europe. The introduction to the special issue mentions that Tom Yager predicts NeXT "may finally start to make some big sales in 1992."

Andy Reinhardt, Getting to Know You, BYTE, Special Edition OUTLOOK '91, pp. 32-33. Mentions NeXTStep as one of the graphical user interfaces which have simplified Unix.

Barry Nance, The Future of Software Technology, BYTE, Special Edition OUTLOOK '91, pp. 69-72, 74, 76. David Nanian, one of the authors of the Brief editor, calls Lotus Improv a product "where the approach is rethought, rather than just adding a new function or feature." Patrick Wood, coauthor of several UNIX books, is skeptical of multimedia despite statements by Jobs and Gates. David Nanian calls Interface Builder "a terrific program."

*Nicholas Baran, Operating Systems Now and Beyond, BYTE, Special Edition OUTLOOK '91, pp. 93-95, 97-98. P*ito Salas, the architect of Lotus Improv, thinks NeXTStep's development tools surpass the competition's. Mark Linton, author of the dbx debugger, agrees NeXTStep is ahead but expects other Unix platforms to offer similar C++-based tools. "The problem with NeXT, says Linton, 'is that they have a kind of an Apple mentality—they don't care about portability or standards." NeXT's market penetration does not match the acknowledged superiority of its software. Robert Carr, vice president of the Go Corporation, says "NeXT is doomed to be a niche market. They're fighting an entrenched desktop market."

Tom Yager, Unix: Status and Speculation, BYTE, Special Edition OUTLOOK '91, pp. 161-164, 168. "The other workstation vendor to watch is NeXT. It's left the sluggish, disappointing cube in the dust in favor of a fast, sleek design. The new unit (the NeXTstation) has speed, a much improved operating system, and, at long last, color. While everyone else is figuring out how to build ease of use into their systems, NeXT will be filling orders. I see the NeXTstation as the only workstation that can, starting now, draw users away from Windows-based PCs and the Mac. The other thing that the NeXTstation has going for it isn't so obvious: Developers positively love it. Every NeXTstation comes with a complete set of development tools, and there is simply no better environment for building graphical applications. Even if a company cannot define a clear NeXTstation market for its new product, chances are that the development staff will browbeat management into letting it build something on the NeXT. People who are now using the NeXT are nothing short of gaga over it, and their lust is justified. I think 1992 will be the year that NeXT lands solidly on the map, and it'll be leading a pack of workstation vendors that will make trouble for PCs and Macs."

Subrata N. Chakravarty and Kathleen K. Wiegner, Business plans for the millennium, Forbes, October 21, 1991, pp. 86, 88-89, 92, 95-96. "Eight entrepreneurs who've earned their way onto The Forbes Four Hundred talk about the opportunities they see in the years ahead." Steve Jobs believes in the future of computers with better graphics, sound, and video. "For $250 you can buy a CD player that produces better sound than any computer except NeXT. Why should a $300 VCR outperform a several-thousand-dollar computer? There is something wrong with that." He also pushes "interpersonal computing," linking groups of people working together. "I am convinced that [interpersonal computing] is the third big thing in desktop computing, spreadsheets being the first and desktop publishing the second."

Steven Paul Jobs, Forbes, October 21, 1991, pp. 253-254. Entry in The Forbes Four Hundred states Jobs founded NeXT Computer, Inc. in 1985 with $7 million, "trying to get it right."

Brad Nelson, PC Intrigues (letter), MacUser, November 1991, p. 16. "I'm aware that there's pain in progress—adapting to new operating systems, hardware, and so on—but if Apple continues to kludge up the Mac's elegant simplicity with giant leaps of incompatibility instead of thoughtful, gradual improvement, I will surely pause to consider what's NeXT."

Aileen Abernathy, FontMonger and Metamorphosis Professional, MacUser, November 1991, pp. 81-83, 85-86. This review of two font conversion utilities mentions that Altsys Corp.'s Metamorphosis Professional, which runs on Macintoshes, can produce PostScript fonts for the NeXT.

Jeff Duntemann, Nuthin' Plus Nuthin', PC Techniques, October/November 1991, p. 6. "I expect the machine [from Apple and IBM] to strongly resemble the technologically admirable NeXT—which after three years has accrued so little market share as to be down in the noise."

David Gerrold, Beetles and Laptops, PC Techniques, October/November 1991, pp. 15-16, 18, 20. Mentions that Playroom Software's OSFrame can make Windows 3.0 look like Macintosh, NeXT, or Motif.

ABOUT GUN

The group

GUN is a non-profit organization dedicated to exploring and promoting the use of NeXT computers in academia, business, and the arts. Many of our members are developers, musicians, and corporate users. We enjoy substantial assistance from NeXT Computer, Inc. and from local dealers and VARs who share our vision of the NeXT as the best computer on the market.

Board

Robb Aley Allan, *founder* [Robb_Allan@gun.com]
Tim Reed, *founder* [Tim_Reed@gun.com]
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Email

The main email address for GUN is gun-members@uunet.uu.net!gun.com or gun-board@uunet.uu.net!gun.com. Individual members (if they have access to email) can be reached by addressing mail to them using the following format: First_Last@gun.com.

Call for volunteers

GUN needs the benefit of volunteers to help prepare this newsletter, arrange special events, present topics at meetings, etc. The group can give only as much as it receives! If you have solved UNIX or NeXT system problems or coded a particularly interesting program, the group would probably like to hear about it.

Contact me (Robb Allan) at 212/ 605-0135, or call Paul Murphy at 718/ 260-9848 and let us know what you'd like to do. Whatever it is, we'd appreciate it.

Meetings

The next GUN meeting will be held Wed, November 13, at 6:30pm.

GUN meetings are (usually) held the second Wednesday of each month at Electronic Directions, 220 East 23rd Street (between 2nd and 3rd Aves.), Room 503, in New York City. "Schmooze" time begins at 6:30pm, and actual presentations run from 7:00pm to (around) 9pm. No entrance fees are charged at this time.