NorthWestNet

User Services Internet Resource Guide (NUSIRG)

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Section 4: Knowledge At Your Fingertips

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How To Get NUSIRG

THE NORTHWESTNET USER SERVICES INTERNET RESOURCE GUIDE

You can either get NUSIRG at no charge by the Internet "File Transfer Protocol" (FTP), or you can purchase a bound copy from NorthWestNet. If you have a connection to the Internet, you are encouraged to follow these instructions for using FTP to obtain NUSIRG. If you can't use FTP (or don't know how yet!), instructions on how to order a printed and bound copy from NorthWestNet are included on the next page.

Free Copies of NUSIRG By File Transfer Protocol (FTP)

NUSIRG is available at no charge, by FTP, as text-only or PostScript files. The text-only files are in a simple format which can be printed by most kinds of printers or viewed on-screen with most text editors. The PostScript files produce output which is essentially identical to the bound version of NUSIRG.

If you have access to a computer connected to the Internet, all you have to do is follow the simple instructions below.

Note: commands you type are shown in the left hand column in lower case (don't type the #'s!); UPPER CASE and ">" indicates prompts from the computer that will appear on your screen.

What you type (or what you'll see)	Explanation
1) ftp ftphost.nwnet.net	Connect to the NorthWestNet FTP host.
2) LOGIN: anonymous	At the "LOGIN:" prompt enter "anonymous".
3) PASSWORD: your-user-id@address	At the "PASSWORD:" prompt, please enter your user-id@your.full.internet.address (e.g., robessin@uwvvd.derrg.edu).
4) FTP> cd nic/nwnet/user-guide	Change directories (cd) to the directory containing FTP copies of NUSIRG.
5) FTP> get README.nusirg	Use the "get" command followed by a filename from the list on the next page to copy a file; get "README.nusirg" first, which contains the most up-to-date information about NUSIRG files.
6) FTP> ls	The "ls" command will produce a listing of the names of the files in the NUSIRG directory (see below).
7) FTP> quit	The "quit" command will end your FTP session.

The file "README.nusirg" contains more detailed information about the files in the NUSIRG directory.

Files in the NUSIRG directory	Description of file's contents
README.nusirg	A detailed description of NUSIRG files.
nusirg,Index.ps	Index for all of NUSIRG
nusirg.Index.txt	
nusirg.about.nwnet.and.aup.ps	NWNET & NSFNET backbone information and policies
nusirg.about.nwnet.and.aup.ps	
nusirg.beginner.overview.ps	Overview of NUSIRG and the Internet.
nusirg.beginner.overview.txt	
nusirg.email.ftp.telnet.ps	Basic Internet tools: e-mail, FTP, TELNET and Archie
nusirg.email.ftp.telnet.txt	
nusirg.listserv.usenet.ps	Using USENET and LISTSERV.
nusirg.listserv.usenet.txt	
nusirg.online.info.resources.ps	On-line books, libraries, databases, WAIS, and directory services
nusirg.online.info.resources.txt	
nusirg.supercomputers.ps	Supercomputer use and access information.
nusirg.supercomputers.txt	
nusirg.teach.k-12.ps	The Internet and K-12 education.
nusirg.teach.k-12.txt	
nusirg.whole-guide.ps.tar.Z	All of NUSIRG in compressed and archived format.
nusirg.whole-guide.txt.tar.Z	

Notice that the file names above occur in pairs differing only in the last parts of their names. Files ending with "ps" are in PostScript format and cannot be printed unless you have access to a PostScript printer. You should not copy the files whose names end with "tar.Z" unless you know how to handle compressed and archived files, which is explained in the file "README.nusirg".

Printed Copies From NorthWestNet

If you would prefer to purchase an already printed and bound copy (or if you are unable to use FTP), NUSIRG is available for $20.00 per copy from NorthWestNet.

postal mail:	NorthWestNet NUSIRG Orders 15400 SE 30th Place, Suite 202 Bellevue, WA 98007
e-mail:	nusirg-orders@nwnet.net
phone:	(206) 562-3000
fax:	(206) 562-4822

Please make your check or money order payable to NorthWestNet.

If you have questions, comments, or suggestions about NUSIRG, please send e-mail to nusirg@nwnet.net

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Unix is a registered trademark of AT&T Bell Laboratories.

Word Perfect is a trademark of the Word Perfect Corporation.

Xerox is a registered trademark of Xerox Corporation

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Information Services on the Internet

By now, you are probably aware that many of the services mentioned in Sections 2 and 3 of NUSIRG are tremendous sources of information: FTP file archives contain a wealth of computer programs and documents, and many USENET and LISTSERV groups are filled with useful and informative discussion.

Section 4, however, is devoted to more formal and highly structured sources of information, such as library catalogs and databases.

ELECTRONIC JOURNALS

Electronic journals are essentially like printed magazines, except they are distributed as computer files in a network.

ELECTRONIC BOOKS

Electronic books, or e-texts, are essentially the electronic equivalents of regular printed books.

ONLINE PUBLIC ACCESS CATALOGS (OPACS)

OPACs are network accessible library catalogs which you can browse from your own computer.

ONLINE DATABASES AND BIBLIOGRAPHIES

These services allow you to access databases which you can use for research or education.

WIDE AREA INFORMATION SERVER (WAIS)

WAIS is an example of a "database of databases" which can pull together diverse information services available on a network into one easy-to-use service. Applications like WAIS are likely to become essential tools for quick and easy access to the wealth of information stored in computer networks.

NETWORK DIRECTORY SERVICES

These services allow you to locate people and computers on a network, much like you would use "white pages" or "yellow pages" to find the phone numbers of people and services.

Chapter 9: Electronic Journals

WHAT ARE ELECTRONIC JOURNALS?

"Electronic journals" are the computer network equivalent of printed magazines in form and function. They usually feature submitted articles, which are screened and edited to a common format, and often deal with a relatively broad topic. "Electronic newsletters" are usually shorter, more specific, and, as the name would suggest, more oriented towards news and announcements.

WHAT KINDS OF ELECTRONIC JOURNALS ARE AVAILABLE?

There are a wide variety of electronic journals and newsletters which, just like printed magazines, range from the mainstream to the esoteric.

Some electronic journals are nearly indistinguishable from formal and scholarly printed journals of learned societies. These journals are published only after rigorous "peer review" and articles accepted for publication focus on the leading concerns of established academic disciplines. Other journals are considerably more informal and contain a wide variety of articles of general interest.

The documents listed in the "For More Information Section" provide comprehensive and up-to-date listings of the many electronic journals and newsletters which are available.

HOW TO SUBSCRIBE TO ELECTRONIC JOURNALS

To get regular printed magazines, you can subscribe and have each issue sent to you by mail, or you can go to a newsstand to pick up each issue individually.

Obtaining electronic journals works in essentially the same way, except everything is done from a computer on the Internet.

1. You can send a subscription request and receive each issue via electronic mail

2. You can obtain current or old issues via FTP, LISTSERVers, or mail-servers

Here's an example of how to subscribe to an electronic journal known as "The Electronic Journal of Communication / La Revue Electronique de Communication," a bilingual, quarterly journal devoted to communication theory, research, practice and policy.

Address an e-mail message to:

comserve@vm.ecs.rpi.edu

containing the message:

join ejcrec your full name

e.g.:

join ejcrec Jane Q. Public

Note that this subscription request, as is the case with many subscription requests, will be processed by an electronic mail server - a computer program which only understands a certain limited and specific set of commands (for more information on electronic mail servers, refer to Chapter 3 of NUSIRG).

The information you will need to subscribe to or obtain back issues of most available electronic journals are provided in the documents listed below.

FOR MORE INFORMATION ABOUT ELECTRONIC JOURNALS

If you want to subscribe to electronic journals, you should get a copy of the document entitled "Directory of Electronic Journals, Newsletters, and Scholarly Discussion Lists," published by the Association of Research Libraries.

This directory currently lists over 500 scholarly lists, about 30 journals, over 60 newsletters, and 15 "other" titles including some newsletter-digests and specific instructions for obtaining each publication by mail or via FTP.

Electronic copies of this directory are currently available from the following LISTSERVers:

listserv@brownvm.brown.edu
listserv%uottawa@vm.utcs.utoronto.ca

Filenames (notice the spellings!):

ejournl1 directry
ejournl2 directry

Example Syntax:

mail:	listserv%uottawa@vm.utcs.utoronto.ca
subject:	(none necessary)
message:	get ejournl1 directry

If you want to purchase a bound book version of this information, contact:

Office of Scientific & Academic Publishing
Association of Research Libraries
1527 New Hampshire Avenue, NW
Washington, DC 20036 USA

e-mail:	arlhq%umdc@
phone:	(202) 232-2466 or 462-7849

Chapter 10: Electronic Books

WHAT ARE ELECTRONIC BOOKS?

In the broadest sense, an electronic book is any document which is lengthy enough to be considered a book, and which is stored on a diskette, a hard drive, a magnetic tape, or a compact disk (CD).

By this definition, you are currently reading part of an electronic book, since the NUSIRG is available, in its entirety, as files from the NorthWestNet FTP archives. And, by this definition, the many computer-related manuals which are available by FTP can also be thought of as electronic books, sometimes referred to as "e-texts."

But this chapter will focus on a special class of electronic books, "classical texts" of world literature such as The Declaration of Independence, The Great Gatsby, the Bible and the Koran, the Oxford English Dictionary, or even "Hikayat Indraputra," the notable Malay romance.

HOW DO YOU USE ELECTRONIC BOOKS?

Electronic books are stored as computer files. You can read electronic books at your computer screen, print them out in plain text, and if you have access to the right hardware and software, you can often print elegantly formatted output on a laser printer.

The rest of this chapter describes each of the three current major providers of electronic books: Project Gutenberg and The Advantage Foundation, which concentrate on "popular" classics in the English language; and The Oxford Text Archives, which is a repository for hundreds of e-texts of special interest to literary scholars. The Oxford Text Archive service also features an information service to tell you about the source of many other e-texts throughout the world.

PROJECT GUTENBERG

Project Gutenberg is a not-for-profit organization whose goal is to prepare electronic editions of more than 10,000 books by the year 2001. All documents are available as text-only files, but many can also be obtained in fancy PostScript or troff formats.

As of September, 1991, the following e-texts are being distributed by Project Gutenberg:

Alice in Wonderland
As You Like It
Declaration of Independence
The Federalist Papers
The Holy Koran
Through the Looking Glass
Moby Dick
The Book of Mormon
The Hunting of the Snark
U.S. Constitution
The World Fact Book
The Night Before Christmas

Many other documents are currently being prepared by Project Gutenberg, including The Oxford English Dictionary, Paradise Lost, Peter Pan, and even the 11th Edition of the Encyclopedia Britannica.

How to Obtain Project Gutenberg E-Texts

Electronic books from Project Gutenberg can be obtained most easily by FTP or mail-server. If you don't have access to the Internet, you can purchase floppy disk versions by postal mail, but mail orders will be considerably slower for you, and more time consuming for Project Gutenberg.

FTP Hosts for Project Gutenberg E-Texts

As of September 1991, Project Gutenberg files could be retrieved from the following FTP Hosts:

1. FTP Host: quake.think.com
   directory: pub/etext
   filenames: alice27a.txt
   as-you-like-it.text
   ...etc.

2. FTP Host: mrcnext.cso.uiuc.edu
   directory: etext
   filenames: alice26a.txt
   lglass16.txt
   ...etc.

3. FTP Host: oes.orst.edu
   directory: pub/almanac/guten
   filenames: alice27a+.ms.Z (Note that most files
   alice27a.txt.Z in this FTP Host are
   ...etc. in compression format.)

Almanac Mail Server for Project Gutenberg E-Texts

You can also order copies of Project Gutenberg documents by sending an e-mail message to the Oregon Extension Service's Almanac Information Server:

mail: almanac@oes.orst.edu
subject: (none needed)
send guten FILENAME

where "FILENAME" is one of the following filenames

alice	as-you-like-it	dec-of-ind	feder
koran	lglass	moby	mormon
snark	us-const	world	xmas

For more information on the Almanac Information Server (which provides many other services as well), send the following e-mail message:

mail: almanac@oes.orst.edu

subject: (none needed)
message: send guide

For More Information About Project Gutenberg

Project Gutenberg is a not-for-profit effort which relies on volunteer assistance for submission and proofing of electronic texts, and legal issues concerning copyright law. For more information, contact:

Michael S. Hart, Director Project Gutenberg
405 West Elm St.
Urbana, IL 61801
hart@vmd.cso.uiuc.edu

THE ADVANTAGE FOUNDATION

Like Project Gutenberg, the Advantage Foundation is a not-for-profit organization concentrating on English language literature.

As of September, 1991, the following e-texts were available from The Advantage Foundation:

Common Sense
Adventures of Sherlock Holmes (Part 1)
Sherlock Holmes: A Study in Scarlet
The Adventures of Tom Sawyer
U.S. Constitution
War of the Worlds

How to Obtain Advantage Foundation E-Texts

The Advantage Foundation is not yet connected to the Internet. Files can be downloaded from an easy-to-use Bulletin Board Service (BBS) in Houston, TX, accessed via a modem call to (713) 977-9505.

Files at the Advantage Foundation are stored in compressed format (ZIP). For information on how to download and handle "zipped files," consult the passage in Chapter 4 of NUSIRG entitled "The ABC's Of Handling Special Files."

For More Information About the Advantage Foundation

The Advantage Foundation
P.O. Box 773425
Houston, TX 77215
(713) 977-1719 (Fax/Voice Mail)
(713) 977-9505 (Bulletin Board Service)

THE OXFORD TEXT ARCHIVES

Unlike Project Gutenberg and The Advantage Foundation, the Oxford Text Archives is oriented towards e-texts of special interest to literary scholars. It contains hundreds of e-texts in many different languages. Many of the e-texts contained in this archive either have to be purchased, or have restrictions on their distribution and use.

Nonetheless, this is a truly extraordinary resource which deserves your interest. Here is a very brief excerpt from The Oxford Text Archives' large holdings to give you a feeling of the wealth and variety of materials that are available from this source:

A la Recherche du Temps Perdu
Arabic Prose Samples.
Aristotle, Complete Works (in Greek)
Beowulf
Blues Lyric Poetry: An Anthology
British Columbian Indian Myths
Chinese Telegraphic Code Character Set
Das Nibelungenlied
Etymological Dictionary of the Gaelic Language
Genji Monogatari
Hamlet
Hikayat Indraputra (a Malay Romance)
Homer, Complete Works (in Greek)
Hyckerscorner. Wynkyn de Worde
Il paradiso, Il purgatorio, L'Inferno
Llyr gwyn Rhydderch: Ronabwy
MRC Psycholinguistic Database
Orwell's "1984" (in Croatian)
Plato, Collected Works (in Greek)
The Aeneid
The Origin of Species

Another extraordinarily valuable service of The Oxford Text Archives is a database of information about e-texts available from other archives around the world!

How To Access The Oxford Text Archives

Direct network access to The Oxford Text Archives is currently only possible from within England via the JANET Network:

FTP Host:	uk.ac.ox.vax
file:	[archive].snapshot.lis

Access from the Internet in the United States via the Internet-Janet Gateway (TELNET to sun.nsf-relay.ac.uk) may be possible by time you read this guide. For more up-to-date information on this gateway service, send an e-mail message with the following two lines of text in the body of your message:

mail:	info-server@nsfnet-relay.ac.uk
subject:	(none needed)
message:	Request:janetpad

Topic: userguide

For More Information About The Oxford Text Archives

The definitive U.S. FTP host for information about the Oxford archives is:

FTP Host:	ra.msstate.edu	
directory:	pub/docs/history/e-documents	
files:	oxford.text.archives	(general description)
	oxford.text.order.form	(how to get e-texts)

You can also contact the archives by postal mail or e-mail. E-mail inquiries will, in general, be processed much more quickly.

Oxford Text Archive
Oxford University Computing Service
13 Banbury Road, Oxford OX2 6NN, UK
e-mail: archive@vax.ox.ac.uk

FOR MORE INFORMATION ABOUT ELECTRONIC BOOKS

This is a rapidly growing area, and by the time you read this, there may be many additional providers of electronic books other than the three discussed in this document:

1. The Oxford Text Archives maintains a database of information about e-texts available from many other archives around the world:

Oxford Text Archive
Oxford University Computing Service
13 Banbury Road, Oxford OX2 6NN, UK
e-mail: archive@vax.ox.ac.uk

2. The following discussion group is currently mostly for and about Project Gutenberg, but it also a forum for discussion about the many issues (legal, pedagogical, etc..) concerning e-texts generally.

Listserv Discussion Group

mail:	listserv%uiucvmd.bitnet@uiucvm.uic.edu
subject:	(none needed)
message:	subscribe gutnberg YOUR-FULL-NAME

USENET Newsgroup (cross-posting of the Listserv Discussion Group)

bit.listserv.gutnberg

Chapter 11: Accessing Library Catalogs Through The Internet

The library was laid out on a plan which has remained obscure...only the librarian has received the secret, and he communicates it, while still alive, to the assistant librarian...only the librarian has, in addition to that knowledge, the right to move through the labyrinth of the books, he alone knows where to find them and where to replace them...The other monks may know the list of the volumes that the library houses; only the librarian knows, from the collocation of the volume, from its degree of inaccessibility, what secrets, what truths or falsehoods, the volume contains...a spiritual labyrinth, it is also a terrestrial labyrinth...

Umberto Eco
The Name of the Rose

Hundreds of the world's best libraries are now accessible to anyone connected to the Internet. Access to most of these libraries is completely free, and usually available any time, day or night, from anywhere in the world.

Over the past decade, many libraries have started putting their card catalogs into computer databases that can be used with "online library catalogs" or "online public access catalogs" ("OPACs").

Using an OPAC is essentially just like using a card catalog. The only difference is that instead of pulling drawers and riffling through cards, you login to an OPAC from a computer, and search the catalog by typing the key words on which you want to base your search. No matter how small your local or institutional library is, information about tens of millions of books and articles is now at your fingertips. Thus, it's easy to understand why OPACs are a significant and extremely powerful development in access to information.

WHAT YOU CAN DO WITH ALL OPACS

- ❏ Search for books by subject, title, or author.
- ❏ Obtain detailed bibliographic information about the books found by your search.
- ❏ If you are accessing an OPAC from your own mainframe account or a personal computer, you can save the on-screen results of your searches to your own computer for local use. (For example, the program, 'script' in UNIX will save what appears as output to your screen to a file. Type "man script" to get more information.)

ADDITIONAL SPECIAL FEATURES OF SOME OPACS

In addition to the basic subject/title/author searches, many OPACs allow you to do one or more (or even all) of the following:

- ❏ read brief summaries of books or articles,
- ❏ search for articles from newspapers and/or journals,

- ❏ search catalogs of special collections: CDs, videos, movies, photographs, maps, microfilm, and phonographs,
- ❏ search special databases,
- ❏ do searches by other variables, such as "keywords,"
- ❏ construct pin-point searches with the logical operators AND, OR, and NOT, or other specialized searching functions,
- ❏ determine if a book is currently checked out,
- ❏ set up inter-library loans,
- ❏ if there are multiple copies of a book in various branch libraries served by the OPAC, find the location of the nearest copy, and
- ❏ record results of your search and send them instantaneously (or by e-mail) to your own computer for local use.

WHAT YOU CAN'T DO (YET) WITH OPACS

- ❏ read the actual text of documents or
- ❏ browse randomly through the library's shelves, encountering books, that by chance, may turn out to be tremendously interesting for current or unanticipated interests. (Thus OPACs currently do not foster the "serendipity effect.")

ESSENTIAL GUIDES FOR USING OPACS

If you are planning to use OPACs through the Internet, you will find the following two documents very useful. These documents provide detailed access and descriptive information about the rapidly growing number of OPACs you can access through the Internet. Both of these sources are available from many FTP hosts throughout the Internet; the hosts listed are the definitive repositories for these documents, and will always have the most up-to-date editions.

1. "Internet Accessible Library Catalogs & Databases," by Art St. George and Ron Larsen.

FTP Host:	nic.cerf.net	
Directory:	cerfnet/cerfnet_info	
Files:	internet-catalogs-08-91.txt	(text only)
	internet-catalogs-04-91_apl.ps	(Apple PostScript)

Note that the filename contains the date the file was most recently updated. This may be different by the time you FTP from this archive.

2) "University of North Texas' Accessing Online Bibliographic Databases," by Billy Barron.

FTP Host:	vaxb.acs.unt.edu	
Directory:	library	(this directory contains many other useful files on OPACs)
Files:	libraries.ps	(PostScript version)
	libraries.txt	(ASCII, text only version)
	libraries.wp	(Word Perfect 5.0 version)

Run--do not walk--to your terminal, and FTP one or both of these essential resources.

EFFECTIVE USE OF ONLINE-CATALOGS (OR, "HOW TO THINK LIKE AN OPAC")

If you've never used the card catalog of a large library, you're in for a big surprise. Searches through OPACs can yield hundreds or even thousands of citations for what you might think are highly specialized topics. Searches for individual authors tend to yield manageable results. But subject searches, especially if the subject is not chosen carefully, may deposit many screen-fulls of information to your terminal.

For example, most American OPACs use Library of Congress Subject Headings which are very precise and highly structured. Subject headings which are intuitively sensible to you may not yield ANY search results, if they do not correspond precisely to an entry in the OPAC's list of subject headings. Although some OPACs will display available subjects on your terminal, it is sometimes useful to consult the "Library of Congress Subject Headings" book before beginning a large scale OPAC search. This reference is available at most libraries. There is also a "Medical Subject Headings" volume useful for services like Medline.

There are a number of things to keep in mind which will make it easier to find what you're looking for when using an OPAC.

- ❏ Start with a very specific search.
- ❏ Use special search tools, such as the logical operators AND, OR, and NOT, or wildcard symbols, if they are available.
- ❏ When you find an entry which seems to be very close to what you need, examine its subject, title, author, and keyword fields. This can help you narrow or broaden your search, and may lead you to other appropriate entries by suggesting search terms you might not have considered ahead of time.
- ❏ If one OPAC doesn't give you the reference(s) you want, try another, or consult the Barron or St. George list to see if a particular OPAC is very strong in the subject you are researching.

GETTING STARTED WITH INTERNET ACCESS OF OPACS

Here is a list of a few Internet accessible OPACs in the United States and Canada to try out.

Internet Address	Institutional Affiliation	Login Information
bootes.unm.edu	University of New Mexico	login: STUDENT1
bull.utulsa.edu	University of Tulsa	login: LIAS,TU
cts.merit.edu	University of Michigan	none
develnet.ucalgary.ca	University of Calgary	Request: library
melvyl.ucop.edu	University of California	none
nls.adp.wisc.edu	University of Wisconsin	none
pac.carl.org	Colorado Alliance of Research Libraries	none

There are hundreds of other OPACs available, so don't make these your default sites. If you decide you are going to use OPACs for teaching or research, be sure to get a copy of either or both the Barron or St. George/Larsen catalogs so you can learn about other OPACs that may be closer geographically and in areas of specialization.

A Sample OPAC Session

There are many different software packages for OPACs. To further complicate matters, some of the most widely used packages can be modified heavily by particular sites, and some sites use home grown packages which may have very peculiar features and behaviors, especially when used from remote locations via TELNET.

However, there are enough similarities between OPACs that a sample session from one should give you a fair indication of what using most other OPACs is like.

This section presents a session using the University of California's MELVYL System. Note that this session has been edited slightly to make it easier to read on a page.

This session illustrates the essential steps you'd want to take when using most any OPAC:

Step 1. TELNET to the OPAC of your choice. For OPACs using IBM based systems, use a TELNET capable of 3270 emulation (e.g. tn3270).
Step 2. Enter a terminal type. (vt100 is usually a safe bet.)
Step 3. Use online help. (Repeat as necessary.)
Step 4. Select a database within the OPAC.
Step 5. Select the degree of prompting you want from the system while doing your search (e.g., be led by the hand, or plow right through.)
Step 6. Select a search type (typically, Author, Subject, Title).
Step 7. Enter a value for the search. (NOTE: Steps 6 and 7 are often a single step in other OPACS, e.g., "SU=ENDANGERED SPECIES.")
Step 8. If necessary, redefine and/or refine your search.
Step 9. Repeat steps 3-9, in any order, for additional searches.
Step 10. Logoff and end your TELNET session.

Throughout the session, lines on which the user is prompted by the OPAC begin with a "U>". Words printed by the OPAC on the prompt line are in all uppercase. Responses typed by the user appear in lower case. As always, <RETURN> means press the RETURN key on your keyboard (or, in some cases, the ENTER key).

Note that this OPAC session is rather long - intentionally.

It would have been easy to present a quick and easy session which immediately produced references to thousands of citations. But as you probably know from your experience with regular card catalogs, effective use of a library system often requires careful consideration and reconsideration of how to define your literature search.

This OPAC session is meant to reflect this reality: the first search in this example yields no results, but by modifying the search slightly, and following suggestions from MELVYL, a very similar search yields more than 500 citations!

Step 1. TELNET to the OPAC.

To get started, TELNET into MELVYL, and then you will be prompted to provide some information about the computer from which you are working.

```
U> telnet melvyl.ucop.edu

22:13:22  Type START and press RETURN key to begin session

U> <RETURN>

Please Enter Your Terminal Type Code or Type HELP for a List of Codes.

U> TERMINAL? help

Please enter the Terminal Type Code for your terminal.

Supported Terminal Types and their character codes are:

CODE        TERMINAL                  CODE        TERMINAL

TTY33       Teletype 33 (TTY)         BANTAM      Perkin Elmer Bantam
ESPRIT      Hazeltine Esprit          ADM3A       ADM 3a
PE1100      Perkin Elmer 1100         HAZ1500     Hazeltine 1500
HARDCOPY    Decwriter/Gencom          HAZ2000     Hazeltine 2000
IBMPC       IBM Personal Computer     HEATH       Heathkit H19
KERMIT      KERMIT Emulation          VT100       Dec VT100
ACT5A       Microterm Act5a           ADDS        ADDS/NCR
HP2621      Hewlett Packard HP2621    BITGRAPH    BBN Bitgraph
TI700       TI Silent 700             TTY40       Teletype 40 (TTY)
TELE920     Televideo 910, 912, 920   DISPLAY     IBM Displaywriter
TANDEM      Tandem 635X               OTHER       All Others

Please Enter Your Terminal Type Code or Type HELP for List of Codes.
```

Step 2. Enter a terminal code.

"Terminal type" does not mean "is your computer a Macintosh or an IBM mainframe?" but rather "what kind of terminal can your computer 'emulate'?" Any particular computer can, depending upon installed software, emulate one or more terminal types.

With some TELNET services, you can ask for a display of the terminal types supported by that particular service. The list displayed by MELVYL includes VT100, a kind of "full screen" terminal emulation very frequently included in personal computer and mainframe telecommunication software packages.

If you're not sure what kind of terminal emulation your computer is using, many OPACs and other TELNET services allow you to use a "dumb" terminal type which performs the most basic "teletype" functions. In MELVYL, the dumb terminal type is called "other," which is what we'll use for this sample session.

```
U> TERMINAL? Other

Press RETURN for the MELVYL Catalog U

U> <RETURN>

                    Welcome to the University of California's

                    MELVYL* LIBRARY SYSTEM

                (c)1984. *Registered trademark of The Regents of the University

                                of California.

OPTIONS:  Choose an option, or type any command to enter the CATALOG database.

HELP          For help in getting started.
[return]      Press RETURN to choose a database for searching.
START <db>    Type START <database name> to search a database.
```

Step 3. Investigate the online help.

Notice that at the end of step 2, MELVYL offered help in getting started. You can save a great deal of time and make better use of online resources if you investigate any help that might be offered. In MELVYL, the "help" command can be used to display what options are available at certain points during your session.

```
U> help

The options for proceeding are:

[return]          Press RETURN to see the list of MELVYL system databases.
                  You may then choose a database to search.
START <db>        If you already know the name of the database you want to search, type
                  START and the database name, e.g., START CC.
Any command       By typing any other valid command, e.g., FIND or EXPLAIN, you will
                  enter the CATALOG database.

U> <RETURN>
```

In the last screen we've pressed the RETURN key which yields a display of MELVYL catalogs.

```
                    MELVYL SYSTEM DATABASES

                Select one database from the list below.

Library Databases:

TEN     For faster searches, type TEN;
        Ten-Year MELVYL Catalog; materials published from 1981-1991.
CAT     Full MELVYL Catalog - UC libraries and California State Library.
PE      Periodical Titles - Calif. Academic Libraries List of Serials.

Journal Article Indexes:  (for UC users only; password may be needed)

CC      CURRENT CONTENTS        current articles in all subject areas.
CCT     CURRENT CONTENTS        journal tables of contents in all subjects.
MED     MELVYL MEDLINE          articles in medical and life sciences.

Other Systems:

OTHER       To select other library catalogs and remote information systems.

Shortcut:   type any command to enter the CAT database (e.g., FIND or EXPLAIN)

Type the code for one option (e.g., TEN), HELP, or END to end your session.
```

Step 4. Select a database within the OPAC.

For this session, we'll use the MELVYL Ten-Year database, which only includes materials published in the last 10 years. Notice that MELVYL's holdings for this brief period includes more than 1.5 million distinct titles!

```
U> start ten

Command being issued: START TEN

                Welcome to the MELVYL TEN-YEAR Catalog Database

Contents:   As of 9/8/91, approximately 1,580,596 titles representing 3,578,900
            holdings, for materials in the University of California libraries,
            and the California State Library,
Coverage:   Publication dates 1981 through 1991.
OPTIONS:    Type an option and press RETURN, or type any command.
HELP        For help in getting started.
COMMAND     To use commands and for periodicals; use any time.
LOOKUP      For Lookup Mode--the system leads you through commands.
START       To start over or change databases.
END         To end your session.
```

Step 5. Select what degree of prompting you want from the system.

Many interactive Internet services allow you to tailor sessions to your level of expertise, ranging from step-by-step help for new users, to a nearly blank screen for expert users. The information presented in the previous screen indicates that one can type "lookup" for extensive prompting.

```
U>  TEN -> lookup

                Welcome to Lookup Mode in the TEN-YEAR Catalog Database

You can start searching without learning the command language by following the prompts
below.  You will see the appropriate commands used for your search.

At any time, you can also type:

SET MODE COMMAND        to change to Command Mode.
START CAT               to change to the full CATALOG database.
END                     to end your session.

Press RETURN to begin.

U> TEN -> <return>
```

Now let's go back to the Ten-Year catalog, and continue with step-by-step help.

```
In Lookup Mode, you can search for books at the following libraries:

Code    Library                         Code    Library
ALL     All libraries in MELVYL         CAS     California Academy of Sci.
UCB     Berkeley; includes MOF,         CRL     Center for Res. Libraries
MOF     UCB Moffitt Undergrad. Lib.     CSL     California St. Lib.; incl.
UCD     Davis and UCD NRLF                      Sutro Lib., S.F., CSL NRLF
UCI     Irvine and UCI SRLF             HAS     Hastings Law Library
UCLA    Los Angeles; includes COL       LBL     Lawrence Berkeley Lab
COL     UCLA College Undergrad. Lib.    LAW     UC Law: UCB UCD UCLA HAS
UCR     Riverside                       MED     UC Med. libraries.: UCD
UCSD    San Diego; includes SDU                 UCI, UCLA,UCSD, UCSF
SDU     San Diego Undergrad. Lib.       NOR     North UC libs.: UCB, UCD,
UCSF    San Francisco and UCSF NRLF             UCSC, UCSF, HAS, LBL
UCSB    Santa Barbara                   SOU     South UC libs.: UCI, UCLA,
UCSC    Santa Cruz and UCSC NRLF                UCR, UCSB, UCSD
                                        UC      All, except CAS CRL CSL

Type the code for your library or type ALL for all libraries in the catalog, then press
RETURN. You can type up to 4 codes. Type HELP for more information.
```

We've been asked which library we want to use; in this sample session, we'll search through all of the University of California libraries.

```
U > TEN -> all

Welcome to Lookup mode.

You can search for books by:

-the name of the person who wrote the book                    (Personal Author)
-by the title of the book                                     (Title)
-or by the Subject headings assigned to the book              (Subject)

Type        for one of the following choices:
PA          Personal Author search
SU          Subject search
TI          Title search
HELP        More information on choices
END         End your session.
```

Step 6. Select a search type.

Now we'll indicate that we want to search through the catalog by subjects (type "su"):

```
U> TEN -> su

Type SUBJECT heading words,  or type HELP,  then press RETURN.

U> TEN -> help

You have selected the SU index.

A subject may be a topic, a geographic place, or a person.

Ask a reference librarian for "Library of Congress Subject Headings" or for "Medical Subject
Headings,"   to help identify an official heading to use in your subject search request.

Try to be as specific as possible; otherwise you will retrieve more books than you can look at
easily.  For example, typing the words MARINE BIOLOGY PACIFIC OCEAN is more
specific than typing BIOLOGY.

If you do not find the books you want, try repeating your search as  a title search or ask a
librarian for assistance.

Type SUBJECT heading words, then press RETURN.
```

Step 7. Enter a value for the search.

Now we can enter a subject; let's try "extinction of species" which we'll abbreviate as "extinction species":

```
U> TEN -> extinction species

Command being processed: FIND SU EXTINCTION SPECIES

Search request: FIND SU EXTINCTION SPECIES
Search result:  0 records in the TEN-YEAR Catalog database
Please type HELP for information on zero search results.

Since your Subject search had zero results, you might want to try your search again as a Title
Word (TW) search using 2 or 3 significant words.  Please type HELP for more information on
zero results.

Type choice,  or type END to end session:

TW      Title Word search                PA      New Personal Author search
TI      New Title search                 SU      New Subject search

Or type START CAT LOOK to leave the TEN-YEAR database and try your search in the full
CATALOG database.

U> TEN -> tw
```

No books were found with a request using "extinction species" as our subject. But don't give up yet! MELVYL now allows the option of doing another search by several other fields, including the words in the book's titles (TW). Let's try another search, looking for books which have the words "species" and "extinction" in their titles:

```
Type 2 or 3 important words from the TITLE of the book you want, or type HELP, then press
RETURN.

U> TEN -> extinction species

Command being processed: FIND TW EXTINCTION SPECIES
```

The search string "extinction species," which did not find anything during a subject search, locates 13 relevant titles with a Title Word search.

```
Search request: FIND TW EXTINCTION SPECIES
Search result:  13 records in the TEN-YEAR Catalog database

1. Balancing on the brink of extinction : the Endangered Species Act and lessons for the
future / edited by Kathryn A. Kohm.

Washington, D.C. : Island Press, c1991.
UCB          BioSci       KF5640                .B35        1991
UCD          Main Lib     KF5640                .B35        1991
UCI          Main Lib     KF5640                .B35        1991
UCSC         McHenry      KF5640                 B35        1991
UCSD         Scripps      KF5640 .B35 1991      Floor 3
CAS          Mailliard    KF5640                .B35        1991

Type choice,  or type HELP for help, END to end session:

NS      Next screen of Short display      PA      New Personal Author search
SHO     Different records in Short        SU      New Subject search
LON     Long display                      TI      New Title search
REV     Review display

U> TEN -> ns
```

You can keep browsing through this short display by typing "ns".

```
Search request: FIND TW EXTINCTION SPECIES
Search result:  13 records in the TEN-YEAR Catalog database

2. Cohn, Jeffrey P.
The politics of extinction : [endangered species] / by Jeffrey P. Cohn.
IN:  Government executive. Vol. 22, no. 10 (Oct. 1990)
UCB          IGS          R.R.

Type choice,  or type HELP for help, END to end session:

NS      Next screen of Short display      PA      New Personal Author search
SHO     Different records in Short        SU      New Subject search
LON     Long display                      TI      New Title search
REV     Review display

U> TEN -> rev
```

Alternatively, MELVYL allows us to review all of the titles retrieved by our search request. When we type "rev"; the display looks like this:

```
1.  Balancing on the brink of extinction : the Endangered .... 1991
2.  COHN, Jeffrey P.                        The politics of extinctio ... 1990
3.  EHRLICH, Paul R.                        Extinction : the causes a ... 1981
4.  EHRLICH, Paul R                         Extinction : the causes a ... 1983
5.  KELLY, Donald M.                        Near extinction : Califor ... 1990
6.  LABASTILLE, Anne.                       Mama Poc : an ecologist's ... 1990
7.  MYERS, Norman.                          Tackling mass extinction  ... 1986
8.  The Road to extinction : problems of categorizing the .. 1987
9.  The Road to extinction : problems of categorizing the ...1987
10.  Australia's endangered species : the extinction dilemma. 1990
11.  AUSTRALIA. Endangered Species Advisory Committee.
          An Australian national strategy for the conservatio...1989

Type the numbers of the records you want to see in a LONG display, or type HELP.

To see all the records, simply press RETURN.

          U> TEN -> 1
```

Now let's ask for a "LONG" display of item number 1 to see if it provides any clues about how we might refine the search.

```
Search request: FIND TITLE WORDS EXTINCTION SPECIES
Search result:  11 records in the TEN-YEAR Catalog database

1.
Title:          Balancing on the brink of extinction : the Endangered Species Act and
                lessons for the future / edited by Kathryn A. Kohm.  Washington, D.C.
                :Island Press, 1991.
Description:    xi, 318 p. : ill., maps ; 24 cm.
Notes:          Includes bibliographical references and index.
Subjects:       Endangered species -- Law and legislation -- United States.
Other entries:  Kohm, Kathryn A.
                (Record 1 continues on the next screen.)

Type choice,  or type HELP for help, END to end session:

NS      Next screen of Short display      PA      New Personal Author search
SHO     Different records in Short        SU      New Subject search
LON     Long display                      TI      New Title search
REV     Review display
```

As you can see by looking at the subject line, this book is cataloged under the subject "endangered species."

Step 8. Redefine and/or refine your search.

Judging by the other titles in the list in Step 7, it appears that a subject search for "endangered species" will very likely be fruitful.

```
U> TEN -> su endangered species

Search request: FIND SU ENDANGERED SPECIES
Search result:  520 records in the TEN-YEAR Catalog database

1. 1986 IUCN red list of threatened animals. 1986
2. 1988 IUCN red list of threatened animals. 1988
3. AAZPA manual of Federal wildlife regulations. 1985
4. Action plan for African primate conservation: 1986-90. 1985
5. ADAMS, Douglas, 1952-          Last chance to see. 1991
6. Alaska wildlife week unit : wildlife for the future. End... 1985
7. ALLEN, William B. 1928-        State lists of endangere... 1988
8. ANCONA, George.                Turtle watch. 1987
9. The Animal finders' directory. 1985
10. Animal genetic resources : a global programme for sustai... 1990
11. Animals and plants listed as threatened (T) or endangere... 1988
12. ARNOLD, Richard A.            Distribution, life histo... 1981
13. ARNOLD, Richard A. 1950-      Delta green gr (Elaphrus... 1985

...(followed by 507 more titles!)
```

MELVYL responds with 520 titles!

Step 9. Repeat steps 3-8, in any order, for additional searches

This is where the real power of using an OPAC starts; now that you've established a profitable search strategy and have some references upon which to base further searches, you can branch off to other related subject or title searches very easily.

Step 10. End your OPAC and TELNET sessions.

To leave MELVYL, type end:

```
U> TEN -> end

Thanks for using the MELVYL Online Catalog.
Type LOGOFF and press RETURN to terminate your TELNET session.
Press RETURN for the MELVYL catalog.

U> logoff

ELAPSED TIME = 0:11:53

END OF SESSION
Connection closed by foreign host.
```

FOR MORE INFORMATION ABOUT OPACS AND RELATED TOPICS

Essential Documents For Using OPACs

"Library Resources on the Internet: Strategies for Selection and Use"

FTP Host:	dla.ucop.edu
Directory:	pub/internet
Filename:	libcat-guide

"Internet Accessible Library Catalogs & Databases," by Art St. George and Ron Larsen.

FTP Host:	cerf.net.edu	
Directory:	cerfnet/cerf_net/	
Files:	internet-catalogs-08-91.txt	(text only)
	internet-catalogs-04-91_apl.ps	(apple.PostScript)

Note that the filename contains the date the file was most recently updated.

"OPACs in the UK: A list of interactive catalogues on JANET compiled for the Janet User Group for Libraries"

FTP Host:	vaxb.acs.unt.edu	
Directory:	library	
Files:	uk.lib	(ASCII text)

"University of North Texas' Accessing Online Bibliographic Databases," by Billy Barron.

FTP Host:	vaxb.acs.unt.edu	
Directory:	library	(this directory contains many other useful files on OPACs)
Files:	libraries.ps	(PostScript version)
	libraries.txt	(ASCII, text only version)
	libraries.wp	(Word Perfect 5.0 version)

Online Discussion Groups and Mailing Lists

1. As of September, 1991, there are at least 60 online discussion groups dealing with OPACs and related issues of information sciences. They range in coverage from discussion of a specific site's OPAC installations, to general discussion of present and future OPAC technology.

A comprehensive and up-to-date list of these groups is included in the "Directory of Scholarly Electronic Conferences," by Diane K. Kovacs of Kent State University, available via FTP:

FTP Host:	ksuvxa.kent.edu	
Directory:	files are all in root directory, no need to cd	
Files:	ACADLIST.FILE1	
	ACADLIST.FILE2	
	ACADLIST.FILE3	
	ACADLIST.FILE4	
	ACADLIST.FILE5	
	ACADLIST.FILE6	
	ACADLIST.INDEX	
	ACADLIST.README.	

As of September 1991, the "Libraries and Information Sciences" entries of the list are in the file ACADLIST.FILE2. However, you might as well get all 8 files; this is a tremendous resource, with information from many separate places put together in one large document in an easy to use structure.

2. NNSC Internet Resource Guide, "Chapter 2: Library Catalogs." As of September, 1991, about 30 libraries and library systems are described. Although these entries are largely rendered obsolete by the Barron and St. George /Larsen catalogs, they are still useful sometimes for supplemental information.

For all of Chapter 2:

FTP Host:	nnsc.nsf.net	
Directory:	resource-guide	
Files:	chapter2-ps.tar.Z	(compressed and tarred PostScript)
	chapter2-txt.tar.Z	(compressed and tarred ASCII text)

To obtain individual sections of Chapter 2, first FTP the Chapter 2 table of contents, and then FTP individual sections as desired:

FTP Host:	nnsc.nsf.net	
Directory:	resource-guide/chapter.2	
Files:	intro.ps	(PostScript table of contents)
	intro.txt	(ASCII text table of contents)
	section2-1.ps	(PostScript of section 2.1)
	section2-1.txt	(ASCII text of section 2.1)
	(etc.)	(etc.)

Chapter 12: Internet Accessible Databases and Bibliographies

WHAT IS INCLUDED IN THIS CHAPTER

This document gives information on how to access many of the computers on the Internet which contain large databases.

Of course, most computers contains large amounts of data. But in this chapter, databases are defined as "any highly structured repository of information whose contents you can access for your own analyses."

This chapter is organized by major topics, so you can quickly and easily identify sources useful to your purposes.

WHAT IS NOT INCLUDED HERE, AND WHERE TO FIND IT

- Online "White Pages" and "Yellow Pages" services which allow you to find individuals and organizations on the Internet are not included. Detailed descriptions of such services can be found in Chapter 14, "Internet Directory Services."
- Databases and information services which require special accounts on private computers, cost money to use, or can be purchased for local use are not included. Exceptions include a few "for fee" databases, in areas where free databases are not yet readily accessible.
- Many universities are currently implementing campus-wide information services. Although these information services are often treated as databases, they are usually used as directory services.
- In most of the NUSIRG, you have been provided with sample scripts to provide assistance or instruction in using a particular kind of resource. When there were a number of styles of user interface, our description focused on either a generic or common example. Unfortunately, there is such a tremendous variety of interfaces for these databases that a sample session would be of little value.

DATABASES OF DATABASES

It is possible that the Babel of databases interfaces will be rendered accessible through "databases of databases." In particular the Wide Area Information Service (WAIS) being developed by Thinking Machines Incorporated, has a great deal of promise for making a wide variety of Internet information services accessible through a single, easy-to-use interface. See Chapter 13 for more information about WAIS.

WHAT YOU NEED TO USE INTERNET DATABASES

- A computer connected to the Internet; and
- An understanding of:
  - e-mail: to send mail to Mailservers which will automatically mail help files, documents, or datasets;
  - FTP: to access "file archives," and copy files to your own account;
  - TELNET: to login into computers and run programs, search databases, and run simulations which could not be done on your own local computer.

Read the appropriate chapter(s) from NUSIRG, or any other source of Internet information if any of these terms are unfamiliar to you.

ORGANIZATION OF THE CHAPTER

The entries in this chapter are organized by the following major subject categories:

Multi-Disciplinary Databases
Aeronautical Navigation
Agriculture
Area Studies
Artificial Intelligence
Astronomy / Space Science
Census (US)
Chemistry
Computer Science
Computer Software
Ecology and Environment
Education
Genetics and Molecular Biology
Geography
Government and Politics
Grants and Contracts
History
Mathematics
Music
Physics
Statistics

ORGANIZATION OF THE ENTRIES

Each entry is coded in the following format (although not all entries contain every field):

Official Acronym and Full Official Name of Database

Audience: An estimation of who would most likely benefit from the database. Although most of these databases are not restricted in their access, not everybody would be able to use some data sets which are very large or require sophisticated processing or software.

Contents: A brief description of contents relevant to the purposes of this chapter. Please note that many of these sources contain information above and beyond what is mentioned in this contents field.

Comments: Additional things that you should know.

Access: How to access the database via TELNET, FTP, mail-server, telephone, or postal mail.

Contact: Official contact information if you have further questions

user-id@internet.address
name
postal mail address
telephone number

More Info: Pointers to official or more detailed descriptions, publications, online discussion groups, and other useful information.

Multi-Disciplinary Databases

CULDAT--Canadian Union List of Machine Readable Data Files

Audience: Anyone
Contents: Bibliographic and descriptive information about computer readable data files held by Canadian academic and governmental data libraries and archives. There are currently 1,417 databases accessible. Sources of databases searched in a CULDAT session include:

CUSSDA:	Carleton University, Social Science Data Archive.
NAC:	National Archives of Canada.
STC:	Statistics Canada.
UADL:	University of Alberta, Data Library.
UBCDL:	University of British Columbia, Data Library.
UMISE:	University of Manitoba, Institute for Social and Economic Research.
UWOSS:	University of Western Ontario, Social Science Computing Laboratory.
WATLS:	University of Waterloo, Leisure Studies Data Bank.
YUISR:	York University, Institute for Social Research.

Access: Via Mailserver, which accepts Remote Spires (RMSPIRES) commands. Useful RMSPIRES commands to get you started include explain, find, browse, and display. For example:

To get an overview of how to use CULDAT:

mail:	rmspires%ualtavm.bitnet@vm.utcs.utoronto.edu
subject:	(none needed)
message:	explain culdat

To get an overview of the subjects covered by CULDAT datasets:

mail:	rmspires%ualtavm.bitnet@vm.utcs.utoronto.edu
subject:	(none needed)
message:	browse subject

Contact: abombak@vm.ucs.ualberta.ca

Anna Bombak, Data Librarian
352 General Services Building
University Computing Systems
University of Alberta
Edmonton, Alberta T6G 2H1
(403) 492-5212

National Archives Center for Electronic Records

Audience: Anyone.
Contents: An archive of 10,000 datasets, with an emphasis on U.S. Government datasets. Particularly strong in health, demographic, and social science datasets.
Access: Currently, one must order copies of datasets on magnetic tape.
Comments: By time you read this, it may be possible to obtain some or all of these datasets on floppy disks or via FTP or mail-servers. Contact CER for an update.

Contact: For more information, or a free list of 4,000 Title List of Holdings

Ted Hull
tif@nihcu.bitnet.
The Center for Electronic Records
Archives and Records Administration
Washington, DC 20408
(202) 501-5579

More Info: There is a LISTSERV group called the "Federal Electronic Data Special Interest Group:"

fedsig-l@wvnvm.bitnet@punfs.princeton.edu

Free-Net

Audience: Anyone
Contents: Many informative files on health, education, politics, recreation, technology, etc.
Comments: Free-Net is best described as an "open access community electronic information system" which, for registered users, also allows easy access to discussion groups including USENET. Free-Net uses a novel interface in which the user wanders through an "electronic city." Files are in "buildings," so for example, to get information on politics and government, one would enter the "City Hall." A rather extraordinary open access system which could be set up at other sites at very little cost. There are currently five sites using the Free-Net software, all in the mid-western United States, but many more are being established around the world as part of a not-for-profit cooperative network called "The National Public Telecommunications Network" (NPTN). When you first log in, you will be asked if you want to visit or register. Follow the instructions. As a visitor, your privileges in Free Net are restricted. If you register, you will be sent a registration packet through the mail, which you must fill out and return.

Access: TELNET to:

freenet-in-a.cwru.edu	(Cleveland)
freenet-in-b.cwru.edu	
freenet-in-c.cwru.edu	
yfn.ysu.edu	(Youngstown, OH)
tso.uc.edu	(Cincinnati, OH)
heartland.bradley.edu	(Peoria, IL)

Contact: e-mail: aa001@cleveland.freenet.edu

T.M. Grundner, Ed.D
President, NPTN
Box 1987
Cleveland, Ohio 44106
(216) 368-2733

University of Maryland Info Database

Audience: Anyone.
Contents: Data and files on the following topics: Computers, Economics, Literature, Political Science, Meteorology, Area Studies, Electronic Journals.

Comments: Files can be viewed online while using a menu driven TELNET session, or they can be copies locally by FTP. Although you can transfer files from within the interactive system, you are probably better off noting which files you want, and then copying from the FTP host.

Access: For interactive sessions (highly recommended for browsing).

TELNET: info.umd.edu
User Name: INFO

FTP Host: info.umd.edu
directory: info

Aeronautical Navigation

NOAA Aeronautical Charting Data Sampler II

Audience: Anyone, but the files are huge, and require extensive handling. Not recommended for trivial purposes.

Contents: HUGE files containing data on the following:

1. Aeronautical Chart Automation Section (ACAS) data files (containing data on 17,000 airports, 21,000 runways, 46,000 obstructions to air navigation, navigational aid data, and ARTCC data for low and high air routes);
2. COMPSYS Distance and Bearing Software (used by National Airspace System for computing reporting points, intersections, and other fixes);
3. Special Use Airspace Data Files (used to inform pilots of restricted and prohibited airspace);
4. Advanced Automation System (AAS) Data.

Comments: NOT TO BE USED FOR NAVIGATION! For learning only. For MS/DOS computers only. Requires at least 120 Mb hard drive. These data, and the associated programs are from a CD-ROM. If you have a CD-ROM reader, you are probably better off obtaining the CD than using the FTP'able data.

Access: Accessible by FTP.

FTP Host:	hobbes.ksu.ksu.edu	
Directory:	pub/noaa	
Files:	instal.bat	(a DOS batch file for installation
	data/*.*.*	(10Mb compressed 62Mb uncompressed
	noaa/*.*.*	(12Mb compressed 36Mb uncompressed
	instal/*.*	(1Mb)

Contact: This contact information is for the CD-ROM, not the FTP'able dataset.

CD-ROM Project Director, Requirements & Technology Staff
NOAA, National Ocean Service
6010 Executive Blvd., Room 1022, N/CG3x22
Rockville, MD 20852
(301) 443-8323

More Info:

FTP Host: hobbes.ksu.ksu.edu

Directory: pub/noaa
File: readme.doc

Agriculture

PENpages

Audience: Anyone.
Contents: Online articles and brochures on agriculture, careers, health, consumer issues, weather, from The Pennsylvania State Department of Agriculture, Pennsylvania State University College of Agriculture, and Rutgers University.
Comments: Highly accessible, general information. Not a research oriented service; vt100 terminal emulation recommended.
Access: Accessible by TELNET

TELNET: psupen.psu.edu
Login: PNOTPA

Contact: e-mail: support@psupenn.psu.edu

Art Hussey, Assistant Director
Computer Services
Office of Administrative Services
The Pennsylvania State University
405 Agricultural Administration Building
University Park, PA 16802
(814) 863-3449

More Info: NNSC Internet Resources Guide, Section 3.14

PENpages User Guide: online, or request from above address.

Area Studies

INFO-SOUTH Latin American Information System

Audience: Anyone but a subscription charge is required.
Contents: Very extensive listings of citations and abstracts on a wide variety of Latin America issues.
Access: Accessible by TELNET:

TELNET: sabio.ir.miami.edu

Contact: e-mail: msgctr@sabio.miami.edu

INFO-SOUTH Latin American Information System
Institute of Interamerican Studies / North-South Center
Graduate School of International Studies
PO Box 248014
Coral Gables, FL 33124-3211
tel: (305) 284-4414

More Info: NNSC Internet Resources Guide, Section 3.22

Latin American Data Base (LADB)

Audience: Anyone interested in accessing current information originating directly from Latin America.
Contents: 11,000 articles from 1987 to the present organized under the following titles: "Chronicle of Latin American Economic Affairs," "Central America Update," and "SOURCEMEX--Economic News and Analysis on Mexico." Hundreds of new articles added each month.
Comments: You must contact LADB (see below) to arrange access.
Access: Once you have contacted the LADB, you can access LADB through the Internet or by a modem call to an 800 number.
Contact: To establish access, contact:

Roma Arellano
ladbad@bootes.unm.edu
Latin American Institute
University of New Mexico
801 Yale NE
Albuquerque, NM 87131-1016
(505) 277-6839

More Info: NNSC Internet Resources Guide, Section 3.26.

There is a special LISTSERV list devoted to discussion about this database:

ch-ladb@unm.bitnet%umrvmb.umr.edu

Artificial Intelligence

Bibliographic Mailserver for Artificial Intelligence Literature

Audience: Researchers in Artificial Intelligence.
Contents: Bibliographies of artificial intelligence literature, currently containing more than 20,000 references.
Comments: Most appropriate for researchers already very familiar with Artificial Intelligence. This data set is not well-suited for casual browsing.
Access: Via a mailserver. The host machine is in Germany, so if your primary language is English, you need to specify that output be sent to you in English.

Mailserver: lido@cs.uni-sb.de
Subject: lidosearch info english

Contact:

kobsa@cs.uni-sb.de

Dr. Alfred Kobsa
Department of Information Science
University of Konstanz
D-W-7750 Konstanz 1 Germany
tel: (+49) 7531 88 1

More Info: NNSC Internet Resources Guide, Section 3.29

University of California at Irvine Repository Of Machine Learning Databases and Domain Theories

Contents: 75 databases and domain theories useful for evaluating learning algorithms. The dataset files are divided into two parts: filename.data (which contains raw data), and filename.names, which contains documentation about the dataset file. Some of the files in the archive are not datasets, but rather generate datasets.
Contents: All files can be freely copied to your own computer for use.
Access: Accessible by FTP and an e-mail server.

FTP Host: ics.uci.edu
directory: pub/machine-learning-databases

mail: archive-server@ics.uci.edu
subject: (none needed)
message: help

Contact: ml-repository@ics.uci.edu

aha@cs.jhu.edu

Astronomy / Space Science

Astronomers

Audience: Professional Astronomers.
Contents: Contact information for astronomers and astronomical facilities around the world
Comments: Not to be used for trivial or commercial purposes.
Access: Send an e-mail request for this guide to:

e-mail@srf.ro-greenwich.ac.uk

NED--NASA / IPAC Extragalactic Database

Audience: Anyone.
Contents: Extensive information on 132,000 extragalactic objects (galaxies, quasars, infrared and radio sources), and software to search raw data and associated bibliographies.
Comments: Includes an online tutorial. Much of the software and some of the data are available for local use from the FTP host (see More Info)
Access: Accessible through TELNET.

TELNET: ipac.caltech.edu
login: ned

Contact: ned@ipac.caltech.edu

NED c/o IPAC
MS 100-22
California Institute of Technology
Pasadena, CA 91125
(818) 584-2903

More Info: Extensive online help.

FTP Host: ipac.caltech.edu
files: README files in various directories
NNSC Internet Resources Guide, Section 3.21

NSSDC--National Space Science Data Center

Audience: Anyone.
Contents: Official clearinghouse for NASA data, containing a directory of publicly available data. Datasets referenced by this service include: Global change datasets; Nimbus-7 GRID TOMS data; Interplanetary Medium Data (OMN); Geophysical Models; International Ultraviolet Explorer Data; Voyager and other planetary images; Earth observation data; Star catalogs. The TELNET front end also allows access to the Standards and Technology Information System, back issues of CANOPUS newsletters, etc.
Comments: Although the data must be purchased (on CD-ROM, diskette, or magnetic tape) the prices are not high considering the amount and quality of data available (for example, a set 8 CDs of Voyager images is $ 75). You can set up an official account with user-id and password if you plan to use NODIS more than once.

Access: Accessible through TELNET.

TELNET: nssdca.gsfc.nasa.gov
login: nodis

Contact: request@nssdca.gsfc.nasa.gov

National Space Science Data Center
Request Coordination Office
Goddard Space Flight Center
Code 633
Greenbelt, MD 20771

(301) 286-6695

SDDAS--Southwest Research Data Display and Analysis System

Audience: Anyone doing research in space, magnetosphere or upper atmospheric physics.
Contents: Data from upper atmosphere collected from a number of satellites (currently, Dynamic Explorers 1 and 2, UARS Partial Environment Monitor, and TSS-1 ROPE).
Comments: Although anyone can "take it for a spin," real use requires authorization from the contact person listed below. The service is menu driven and easy to use. If you are using certain graphics terminals, this service allows you to view many of the datasets in sophisticated graphical displays.
Access: Accessible through TELNET.

TELNET: espsun.space.swri.edu 540
Contact: sddas-help@pemrac.space.swri.edu

Dr. J.D. Winningham
Southwest Research Institute
Division of Instrumentation and Space Sciences
P.O. Drawer 28510
San Antonio, TX 78228-0510
(512) 522-3259

More Info: NNSC Internet Resources Guide, Section 3.7

Online, menu driven help
User's Guide mailed to authorized users
Detailed listing of data holdings can be requested from:

sddas-help@pemrac.space.swri.edu

SIMBAD--Set of Identifications, Measurements, and Bibliography for Astronomical Data

Audience: Astronomers with NASA or NSF contracts.
Contents: Data and bibliographic entries for stars and subsets of non-stellar objects
Comments: This service may become available via a CREN mail server in the near future, which is why it is included in this general listing.
Access: Accessible through TELNET, but one must have an account.
Contact: simbad@cfa.harvard.edu

SIMBAD c/o Computation Facility
Smithsonian Astrophysical Laboratory
60 Garden St., MS 39
Cambridge, MA 02138
(617) 495-7301

More Info: NNSC Internet Resources Guide, Section 3.5

SPACELINK

Audience: Anyone.

Contents: Database and interactive system containing information about NASA and NASA activities. A large number of possible curricular activities for elementary and secondary science classes.
Comments: A tremendously valuable resource for elementary and secondary science teachers. Very easy to use. In your first TELNET session, you will be prompted to create a unique user-id and password for subsequent sessions. Files of interest can be downloaded either during an interactive TELNET session, or by accessing the FTP file archives.
Access: Accessible by TELNET and FTP.

TELNET: 128.158.13.250
user-id: newuser
password: newuser

FTP Host: ames.arc.nasa.gov
directory: pub/SPACE/SPACELINK

More Info:

FTP Host: ames.arc.nasa.gov
directory: pub/SPACE/SPACELINK
file: Spacelink.index

Yale Bright Star Catalog

Audience: Anyone.
Contents: Machine-readable version of the 4th Edition of the Yale Bright Star Catalog, including such variables as photoelectric magnitudes, MK spectral types, parallaxed, and radial velocity comments (indication and identification fo spectroscopic and occulation binaries), projected rotational velocities, variability, spectral characteristics, duplicity, and group membership
Comments: These files are set up for MS-DOS microcomputers.
Access: Accessible through FTP.

For a version usable with MS-DOS computers:

FTP Host: pomona.claremont.edu
directory: yale_bsc
files: all files in the directory

For a version usable by Unix computers:

FTP Host: mandarin.mit.edu
directory: astro/data.etc/yale.bright/starchart
files: all files

Contact: jdishaw@hmcvax.claremont.edu
More Info:

FTP Host: pomona.claremont.edu
directory: yale_bsc
files: read.me
yaleread.me

Census Data

Michigan Archives of 1990 Census of Population and Housing

Audience: Anyone.
Contents: Michigan Census data includes summaries of summary tape files for states, counties, and places; publication programs of all papers and electronic products from the 1990 U.S. Census; guides to census questionnaires and geographic concepts used by the U.S. Census Bureau; guides to using CD-ROM disks of the PL94-171 datasets.
Comments: This is a slightly unusual FTP host. To enter the Census directory, issue "cd lelf:" --be sure to include the ":"! The basic FTP commands, such as "dir" and "get", will then work.
Access: Accessible through FTP.

FTP Host:	ub.cc.umich.edu	
directory	lelf:	(be sure to include the ":"!)
files:	all files in the directory	

Contact: grace.york@ub.cc.umich.edu

Grace York
Documents Center
University of Michigan
Ann Arbor, MI
(313) 764-0410

More Info:

FTP Host:	ub.cc.umich.edu	
files:	lelf:census	(directory of available files)
	lelf:cenguide	(guide to census, etc.)

Chemistry

IuBIO--Indiana University Archive for Molecular and General Biology

Audience: Anyone.
Contents: Chemistry software for DOS, MAC, etc.
Comments: Getting the document "Archive.doc" via FTP will make it easier for you to use this service.
Access: Accessible through FTP

FTP Host: ftp.bio.indiana.edu

Contact: archive@bio.indiana.edu

Don Gilbert
BioComputing Office
Biology Department
Indiana University
Bloomington, IN 47405

More Info: NNSC Internet Resources Guide, Section 3.13.

FTP Host: ftp.bio.indiana.edu
Files: Archive.doc

Computer Software

General Information about Computer Software Databases

There are countless archives of computer software available through the Internet. This section is not meant to be a comprehensive listing.

Computer Software (General Purpose Archives)

Washington University Public Domain Archives

Audience: Anyone.
Contents: An immense quantity of public domain and shareware software for the Amiga, Apple II, Atari, CP/M, DOS, GNU, Macintosh, Sun, TeX, Unix, VAX/VMS, X Windows operating environments. This server "mirrors" a number of other FTP hosts around the world. When mirrored archives receive new information, it is sent also to WUARCHIVE. The archive also contains files besides computer software, but software is its main strength.
Comments: A simple listing of just the filenames contained in this archive is over 7 megabytes in size. To use this archive effectively, it is crucial that you get the README files for each directory whose contents you want to explore. We recommend that you follow the suggestions provided in these README files.

Access: Accessible through FTP.

FTP Host: wuarchive.wustl.edu

Contact: archives@wugate.wustl.edu

Washington University
Office of the Network Coordinator
One Brookings Drive
Campus Box 1045
St. Louis, MO 63130-4899

COSMIC

Audience: U.S. citizens (with occasional exceptions).
Contents: Computer software for a wide variety of applications and operating systems created under projects funded by NASA (thus the restriction to U.S. citizens). The COSMIC staff can also perform searches through the COSMIC database to locate programs appropriate to your interests and needs.
Comments: Most of the software must be purchased.
Access: E-mail requests for information only.
Contact: service@cossack.cosmic.uga.edu

COSMIC

The University of Georgia
382 East Broad Street
Athens, GA 30602
(404) 542-3265

More Info: NNSC Internet Resources Guide, Section 3.12.

Computer Software (Operating System Specific)

SUPERSFT--IBM Supercomputing Program Database

Audience: Anyone.
Contents: Catalog of programs suitable for use on IBM supercomputers using vector or parallel processing. The actual programs are not available through this service.
Comments: If you have written such programs, you can submit information about your program for inclusion in the catalog.
Access: Via a LISTSERVer, send e-mail to:

listserv@uicvm.cc.uic.edu

With one of the following in the body of the message:

get supersft help	(to get supersft help)
get supersft index	(for an index of files)
get filename filetype	(to obtain a particular (file of interest from (the supersft index list)

Contact: supersft@uicvm.cc.uic.edu

Supercomputing Support Office
University of Illinois at Chicago
Computer Center (mail code 135)
Box 6998
Chicago, IL 60680
(312) 996-2981

More Info: NNSC Internet Resources Guide, Section 3.8

VxWorks Users Group Archives

Audience: Anyone using or interested in the VxWorks operating environment.
Contents: VxWorks programs and information.
Access: Accessible through FTP and e-mail server.

FTP Host:	thor.atd.ucar.edu
directories:	pub/vx
	pub/unix
Mailserver:	vxworks_archive@ncar.ucar.edu
subject:	(none needed)

message: send index

Contact: thor@thor.atd.ucar.edu

Richard Neitzel
National Center for Atmospheric Research
Box 3000
Marshall Field Site
Boulder, CO 80307
(303) 497-2057 or (303) 497-2060

Ecology and Environment

General Information about Ecological and Environmental Databases

A new printed periodical called "The Green Library Journal: Environmental Topics in the Information World" aims to disseminate information about environmental databases and international environmental information centers. For more information about "The Green Library Journal," contact:

anna@idui1.csrv.uidaho.edu

Maria Jankowska, Editor
Green Library Journal
University of Idaho Library
Moscow, Idaho, U.S.A. 83843-4198

(208) 885-6260
Fax: (208) 885-6817

CEAM--Center for Exposure Assessment Modeling

Audience: Anybody interested in environmental simulation models
Contents: Environmental simulation models for: urban and rural non-point sources, conventional and toxic pollution of streams, lakes and estuaries, tidal hydrodynamics, geochemical equilibrium, and aquatic food chain bioaccumulation.
Comments: CEAM is not on the Internet, yet, but might be by time you read this. All software is in the public domain.
Access: Modem calls to CEAM Bulletin Board Service: (404) 546-3402.
Contact: jim@crom2.rn.com

Jim Fuller
Center for Exposure Assessment Modeling
Environmental Research Laboratories
U.S. Environmental Protection Agency
Athens, GA 30613

Environmental Exchange

Audience: Anyone.
Contents: Database of environmental issues including air and water quality, land-use, energy, waste, wildlife and environmental education programs.

Comments: ECIX is supported by the Joyce Mertz-Gilmore Foundation and the Energy Foundation.
Access: Contact Environmental Exchange for information.
Contact: tgray@igc.org

The Environmental Exchange
1930 18th St. NW
Suite 24,
Washington, DC 20009
(202) 387-2182

Education

Online Database for Distance Education

Audience: Anyone.
Contents: Information on education through computer networks.
Comments: Subscription charges may be levied as of 1992.
Access: From the U.S., one must go through the Internet / Janet gateway TELNET server, so there are considerably more prompts than you have encountered in within Internet TELNET. Note that once you are at the hostname prompt, you have access to many other Janet resources as well.

TELNET:	sun.nsf.ac.uk
login:	janet
hostname:	uk.ac.open.acs.vax
User name:	ICDL
Your name:	your name
Inst.:	your institutional affiliation

Contact: n_ismail@vax.acs.open.ac.uk, *or* kw_harry@vax.acs.open.ac.uk

ICDL
c/o The Open University, Walton Hall
Milton Keynes, MK7 6AA
United Kingdom
tel: (+44 908) 653537

More Info: NNSC Internet Resources Guide, Section 3.28.

Genetics and Molecular Biology

General Information about Genetics and Molecular Biology Databases

If you intend to use any of the Genetics and Molecular Biology databases listed in this section, you are advised to get the LiMB database to get an overview of what is available. Most, but not all, of the databases in this section are described in LiMB, which is constantly kept up to date.

LiMB Database--Listing of Molecular Biology Databases

Audience: Anyone.
Contents: A Database of Molecular Biology Databases LiMB.

Comments: The essential resource for anyone using, or thinking of using, Genetic and Molecular Biology Databases. If you are creating such a database, these are the people to notify to be sure of broad notification in the Molecular Biology community.

Access: The LiMB database of databases can be obtained either by sending a mail request to an electronic mail server, or by getting the file by FTP:

Electronic Mail Server requests:

mail: bioserve@genome.lanl.gov
subject: (none needed)
message: limb-data

FTP source (one of several)

FTP Host: ncbi.nlm.nih.gov
directory: repository/LiMB
file: limb

Contact: limb@genome.lanl.gov

LiMB
T-10, Mail Stop k710
Los Alamos National Laboratory
Los Alamos, NM 87545
(505) 665-3493

More Info:

FTP Host: ncbi.nlm.nih.gov
directory: repository/LiMB
file: README

Bibliography of Theoretical Population Genetics

Audience: Anyone.

Contents: A comprehensive bibliographic listing of articles on theoretical population genetics.

Comments: The two letters at ends of filenames indicate the range of primary author's last names in citations contained in each file; e.g., "bible.ac" contains references from authors whose names begin with "Aa" to "Ce."

Access: Accessible through FTP.

FTP Host: evolution.genetics.washington.edu
directory: bible
files: bible.ac
bible.cf
bible.fh
bible.hl
bible.lm
bible.mr
bible.rs
bible.sz

Contact: joe@genetics.washington.edu

Joe Felsenstein
Department of Genetics SK-50
University of Washington
Seattle, WA 98195

ENZYME

Audience: Anyone.
Contents: Dictionary of 3072 enzymes; contains nomenclature, information about catalytic activity, co-factors, diseases associated with the enzyme. Cross references to the SWISS-PROT dataset.
Comments: Version 7.0 will be available November, 1991.
Access: Accessible through FTP and e-mail server.

FTP Host: ncbi.nlm.nih.gov
directory: repository/ENZYME
files: enzyme.dat
enzyme.asn

Mailservers: netserv@embl-heidelberg.de
genbank.bio.net

Contact: bairoch@cmu.unige.ch

Amos Bairoch
Medical Biochemistry Department
Centre Medical Universitaire
1211 Geneva 4
Switzerland
tel: (+41 22) 61 84 92

More Info: Users Guide.

FTP Host: ncbi.nlm.hnih.gov
directory: repository/ENZYME
file: enzuser.txt

Gene-Server

Audience: Molecular Biologists / Geneticists.
Contents: A huge number of software programs for molecular biologists and Geneticist, and several databases including: GenBank; PIR protein sequences; R. Roberts Restriction Enzyme Database; and Matrix of Biological Knowledge Archive Server files
Access: Mail server:

mail: gene-server@bchs.uh.edu
subject: (none needed)
message: send help

Contact: davison@uh.edu

Dan Davison

(713) 749-2801

More Info: NNSC Internet Resources Guide, Section 3.1.

IuBIO--Indiana University Archive for Molecular and General Biology

Audience: Anyone.
Contents: Molecular biology software for a variety of operating systems and data (particularly *Drosophila* genetics).
Comments: Getting the document "Archive.doc" via FTP will make it easier for you to use this service.
Access: Accessible through FTP.

FTP Host: ftp.bio.indiana.edu

Contact: archive@bio.indiana.edu

Don Gilbert
BioComputing Office
Biology Department
Indiana University
Bloomington, IN 47405

More Info: NNSC Internet Resources Guide, Section 3.13

FTP Host: ftp.bio.indiana.edu
files: Archive.doc

Johns Hopkins Genetic Databases

Audience: Anyone.
Comments: You must register first with the contact person listed below for a user-id and password.
Contents: Online data from "Mendelian Inheritance in Man".
Access: Accessible through TELNET.

TELNET: welch.jhu.edu

Contact: help@welch.jhu.edu

GDB/OMIM User Support
William H. Welch Medical Library
1830 E. Monument St. Third Floor
Baltimore, MD 21205
(301) 955-7058

MBCRR--Molecular Biology Computer Research Resource

Audience: Anyone.
Contents: Source code and documentation for DNA and protein sequence analysis software for Unix.
Access: Accessible through FTP

FTP Host: mbcrr.harvard.edu

directory: MBCRR-Package

Contact: tsmith@mbcrr.harvard.edu

MBCRR, LG-S127
44 Binney St.,
Boston. MA 02115
(617) 732-3746

More Info: NNSC Internet Resources Guide, Section 3.20.

FTP Host: mbcrr.harvard.edu
directory: MBCRR-Package
file: README

PROSITE

Audience: Anyone, but most useful to molecular and structural biologists.
Contents: Dictionary of protein sites and patterns.
Access: Accessible through FTP.

FTP Hosts: ncbi.nlm.nih.gov
directory: repository/PROSITE
file: prosite.dat

Contact: bairoch@cmu.unige.ch

Amos Bairoch
Medical Biochemistry Department
Centre Medical Universitaire
1211 Geneva 4
Switzerland
tel: (+41 22) 61 84 92

More Info: Bairoch, A., 1991, Nucleic Acids Research 19:2241-2245.

Handbook and User Manual

FTP Hosts: ncbi.nlm.nih.gov
directory: pub/prosite
files: prosite.txt (Users Manual)
prosite.doc (Handbook)

SEQANALREF

Audience: Anyone.
Contents: DNA sequence analysis bibliography containing 1657 references.
Comments: Version 21.0 available in October, 1991.
Access: Accessible through FTP.

FTP Hosts: ncbi.nlm.nih.gov
directory: repository/SEQANALREF
files: seqanalr.dat (the bibliography)
seqanalr.txt (a help file)

Contact: bairoch@cmu.unige.ch

Amos Bairoch
Medical Biochemistry Department
Centre Medical Universitaire
1211 Geneva 4
Switzerland
tel: (+41 22) 61 84 92

More Info: Bairoch A. 1991. SEQANALREF: a sequence analysis bibliographic reference data bank. CABIOS 7:268-268(1991).

SWISS-PROT

Audience: Anyone.
Contents: Protein sequence data bank containing 21,795 sequences and 21,773 references.
Comments: Release 20.0 will be available in November, 1991; tape and CD ROM distribution in late 1991.
Access: Accessible through FTP.

FTP Hosts: ncbi.nlm.nih.gov
directory: repository/SWISS-PROT
file: userman.txt (ASCII users manual)

Contact: bairoch@cmu.unige.ch

Amos Bairoch
Medical Biochemistry Department
Centre Medical Universitaire
1211 Geneva 4
Switzerland
tel: (+41 22) 61 84 92

More Info: Bairoch A., Boeckmann B.; Nucleic Acids Res. 19:2247- 2249(1991).

Geography

Geographic Name Server

Audience: Anyone, but please do not use frivolously!
Contents: Currently, geographic information for U.S. cities, counties, states as well as some natural features taken from the U.S. Geodetic Survey, and the U.S. Postal Service. There are plans for worldwide coverage. Variables stored include names, elevation, latitude, longitude, population, telephone area code and FIPS codes where appropriate.
Comments: The output from this program is most easily used as input for other software packages.
Access: TELNET.

telnet martini.eecs.umich.edu 3000

Contact: Tom Libert
libert@eecs.umich.edu
(313) 936-3000

Government and Politics

U.S. Senate Bibliographies

Audience: Anyone.
Contents: Bibliographies of U.S. Senate Committee hearings and publications for the 99th-102nd Congresses.
Comments: Filenames in the database have a very particular way of being put together which you should understood before using the database. Be sure to obtain the file readme.gwp9108 which explains these formats.
Access: Accessible through FTP and e-mail server.

FTP Host: ncsuvm.cc.ncsu.edu
directory: senate
file: readme.gwp9108 (basic information file; the last four numbers represent year & month of file version)

e-mail: listserv@ncsuvm.cc.ncsu.edu
subject: (none needed)
message: get readme gwp9108 senate
floppy disks by mail

Contact: John A. McGeachy

Documents Department
D.H. Hill Library,
North Carolina State University
Raleigh, NC
27695-7111
(919) 515-3280

Grants and Contracts

STIS--Science and Technology Information System (NNSC)

Audience: Anyone.
Contents: National Science Foundation publications, including NSF Bulletin, Guide to NSF Programs, grants booklet including application forms, grants program announcements, press releases, NSF telephone book, reports of National Science Board, abstracts and descriptions of research projects currently funded by NSF, and analytical reports and news from the International Programs division.
Comments: TELNET and modem service features prompts and full screen menus, online viewing of documents, database search utilities, provisions for downloading, and tutorial.
Access: STIS can be used through FTP, TELNET, or dial in calls by modem:

FTP Host: stis.nsf.gov
directory: all directories
files: all files

TELNET: stis.nsf.gov
login: public
MODEM CALL: (202) 357-0359, or (202) 357-0360
Terminal emulation settings should be term=VT100, parity=even, data bits=7, duplex=full.

Contact: stis@nsf.gov

Dr. STIS
National Science Foundation
Office of Information Systems,
Room 401
1800 G. Street, N.W.
Washington, D.C. 20550
(202) 357-7555

More Info: Online help during TELNET sessions.

STIS Manual, available from:

FTP Host:	stis.nsf.gov	
files:	stishelp.man	(ASCII format)
	stishelp.wp5	(WordPerfect 5 format)

History

General Information about History Databases

The FTP host ra.msstate.edu contains a great deal of information about history databases. This is a very good source to check periodically if you want to keep abreast of developments in history databases. The directory listed below also contains many online archives, articles, bibliographies, and other electronic documents. The archives are maintained by Don Mabry of Mississippi State University.

FTP Host:	ra.msstate.edu
directory:	pub/docs/history (contains many directories holding files of interest to historians)

MEMDB (Medieval and Early Modern Data Bank)

Audience: Contact MEMDB.
Contents: Data on western Europe between 800-1800 A.D.
Comments: One must pay subscription fees to RLIN
Access: Through Research Libraries Group, Inc.
Contacts:

MEMDB:The Medieval and Early Modern Data Bank
Department of History CN 5059
Rutgers, The State University of New Jersey
New Brunswick, NJ 08903

RLIN: RLIN Information Center
Research Libraries Group, Inc.
1200 Villa St.
Mountain View, CA 94041-1100

More Info: NNSC Internet Resources Guide, Section 3.3 (MEMDB)
NNSC Internet Resources Guide, Section 2.4 (RLIN)

Literature

Dartmouth Dante Project

Audience: Anyone.
Contents: A database containing the text of Dante's "Divina Commedia" and full texts of 600 years of scholarly commentary on the work. The database uses the BRS/Search program. Currently, 46 of 60 planned commentaries has been installed.
Comments: Online help, and printed user manual for $4.00 Note that many of the commentaries are copyrighted, so the database itself cannot be distributed. Available 24 hours a day, except for Monday, 4:15-6:30 am Eastern Time.
Access: Internet access via TELNET or modem:

TELNET: library.dartmouth.edu (or 129.170.16.11)

modem access: (603) 643-6300 (300 and 1200 baud)
(603) 643-6310 (> 1200 baud)

After connecting by either TELNET or modem, supply terminal emulation information ("unknown" will work for most sessions); when you see the "->" prompt, type:

connect dante

to connect to the Dante Database.

Contact: dante@dartmouth.edu

Dartmouth Dante Project
1 Reed Hall
HB 6087
Dartmouth College
Hanover, NH 03755
(603) 646-2633

Mathematics

MATLAB User Group Archive

Audience: Anyone interested in or using the MATLAB numeric computation system.
Contents: MATLAB functions and utilities.

Comments: These MATLAB files are also accessible from NETLIB (please see next entry). If you choose not to use NETLIB, you are encouraged to subscribe to the MATLAB users digest by sending a subscription request, including your e-mail user-id and address, to: matlab-users-request@mcs.anl.gov

Access: Via e-mail server:

mail: netlib@ornl.gov
subject: (none needed)
message: send index from matlab

Contact: bischof@mcs.anl.gov

Christian Bischoff
Math and Computer Sciences Division
Argonne National Labs
Argonne, IL 60439
(708) 972-8875

More Info: NNSC Internet Resources Guide, Section 3.18.

To subscribe to the MATLAB user's digest, send a request including you user-id and e-mail address to:

matlab-users-request@mcs.anl.gov

Netlib Mathematical Software Distribution System

Audience: Anyone using or writing mathematical software.
Contents: Library of mathematical software and algorithms; also a menu driven service called "walk" which allows one to find the appropriate algorithm for a particular purpose.
Comments: A tremendously valuable resource.
Access: Accessible through FTP, e-mail server, TELNET, and modem.

FTP Host: research.att.com
login: netlib
directory: all

Mail-server Access: North American users should send mail to

netlib@ornl.gov *or*
netlib@research.att.com

subject: (none needed)
message: send index

TELNET: research.att.com
login: walk

Modem Access: (908) 582-1238
login: walk

Contact: Eric Grosse, AT&T Bell Labs 2t-504, Murray Hill, NJ 07974

e-mail: ehg@research.att.com
tel: (908) 582-5828

Maple FTP Archives

Audience: Anyone using or interested in Maple mathematical software.
Contents: Maple software tools.
Access: Accessible through FTP.

FTP Hosts: 129.132.101.33 (neptune) ETH Zurich, Switzerland
129.97.128.58 University of Waterloo, Canada

Mathematica FTP archives

Audience: Anyone using or interested in the Mathematica software package.
Contents: Mathematica software tools.
Access: Accessible through FTP.

FTP Hosts: otter.stanford.edu
ftp.ncsa.uiuc.edu
nic.funet.fi
fenris.claremont.edu
siam.unibe.ch
vax.eedsp.gatech.edu

Music

Music and Lyrics Archives

Audience: Anyone.
Contents: Lyrics for thousands of contemporary rock albums, discographies and commentary on the classical music repertoire.
Comments: There is a directory to receive contributions to the archive (pub/tmp/incoming).
Access: Accessible through FTP.

FTP Host: vacs.uwp.edu
directory: pub/lyrics
file: files.directory

Contact: datta@vacs.uwp.edu

Physics

PINET--Physics Information Network.

Audience: Registered users.
Contents: SPIN and General Physics Advanced Abstracts, bibliographic databases, job announcements, AIP meetings, news releases, and announcements, ordering of AIP publications.
Comments: This is a for fee service which requires an initial registration fee, and hourly connect charges.
Access: Accessible through TELNET

TELNET: pinet.aip.org

Statistics

Statlib Statistical Software and Data Distribution System

Audience: Anyone.
Contents: Statistical software, algorithms, datasets, directory of statisticians.
Access: Statlib is accessible via FTP and e-mail server.

FTP Host: lib.stat.cmu.edu
login name: statlib
password: your-e-mail-address

Mail server: statlib@lib.stat.cmu.edu
subject: (none needed)
message: send index

Statlib will send a file containing information about the contents of the archives, and more detailed instructions on how to use the mailserver.

Contact: Michael Meyer

mikem@stat.cmu.edu
Department of Statistics
Carnegie Mellon University
Pittsburgh PA, 15213
(412) 268-3108

More Info: NNSC Internet Resources Guide, Section 3.19.

For More Information about Internet Databases and Bibliographies

Databases as Sources of Information about Databases

If there are databases in this chapter which are of special interest to you, you can communicate with their appropriate contact people for information to determine what other related databases exist or are being planned. In many cases, the databases listed in this chapter contain many pointers to other related databases (for example, the History archives at Mississippi State University provides information on a wide variety of history-specific sources throughout the world).

Fellow Internet Users and Peers as Sources of Information about Databases

If you are interested in particular classes of databases, you are advised to subscribe to some of the more quantitatively oriented Internet discussion groups to keep up to date on what databases are available to researchers in your field -- in fact, much of the information about online databases provided in this chapter was collected by following up on postings to discipline specific LISTSERV and USENET discussion groups. Refer to Section 3 of NUSIRG for more information on using LISTSERV and USENET, and how to determine what discussion groups are most appropriate for your needs.

Other Printed Compendia of Internet Databases

Chapter 2 of the following source contains continually updated information about a variety of Internet databases and bibliographies:

NSF Network Service Center. (1988 -). Internet Resource Guide. NSF Network Service Center, Cambridge, MA

FTP Host:	nnsc.nsf.net
directory:	resource-guide
files:	chapter2-ps.tar.Z (compressed and archived PostScript version of Chapter 2
	chapter2.txt.tar.Z (compressed and archived ASCII version of Chapter 2.

Chapter 2 of the following printed document provides detailed information about 10 Internet databases:

NYSERNet, Inc. 1991. NYSERNet New User's Guide to Useful and Unique Resources on the Internet. NYSERNet, Inc. Syracuse, NY.

Chapter 13: WAIS (Wide Area Information Server) : An Interface to Databases

WHAT IS WAIS?

WAIS is an innovative "information server" program which allows you to search diverse databases on the Internet from a single, easy-to-use interface.

For example, WAIS currently allows you to:

- read newspapers,
- get information on any country in the world,
- scan many specialized databases,
- get information about the Internet,
- and much more.

HOW WAIS WORKS

All versions of WAIS operate in the same way. WAIS runs on a "client" machine, such as a Macintosh connected to the Internet, and queries "server" machines which contain the actual databases (such as a Connection Machine in Cambridge, MA).

The WAIS client presents a uniform search interface, and translates the user's request into a syntax understood by the various servers. You don't need to know anything about the various query languages of the server databases to use WAIS.

WAIS is particularly adept at handling complex textual information. It can search through many large documents for the occurrence of keywords, and list which documents are of relevance to your query. Each document gets a score, ranging from 1-1000, for how well the document corresponds to what you want to find (with 1000 being deemed a "perfect fit"). The criteria by which WAIS determines relevance of documents can be modified to customize searches even more closely to the user's needs. This customization process uses a method called "relevance feedback."

One of the many exciting possibilities opened up by WAIS and related Information Servers is that you can create a "Personal Electronic Newspaper." You can have WAIS automatically pull all items of interest together into a single document monthly, weekly, or even daily.

There are versions of WAIS available for the Mac, Unix computers, X-window terminals, and VMS. If you want to install a copy of WAIS on your own system, read the section "How to Get a Copy of WAIS" at the end of this document.

FOR CURRENT INFORMATION ABOUT WAIS

WAIS is so new and rapidly evolving that this document will probably be out of date by time you read it. There will probably be hundreds of WAIS clients running on many different Internet hosts with access to hundreds of databases.

If you want to use or learn more about WAIS you are strongly encouraged to subscribe to one of the WAIS discussion groups or mailing listed at the end of this document to keep posted on the rapid development of this exciting new Internet resource.

USING WAIS

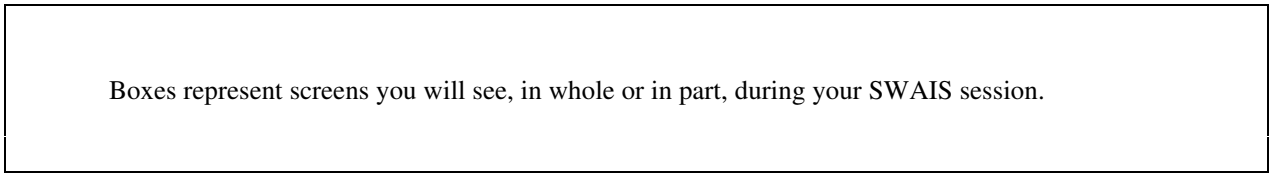
To illustrate the use of WAIS, we will show a session using the SWAIS program, which is a generally accessible and easily used implementation of WAIS on the Internet. Note that many of the details of using WAIS would be different on Mac or X-windows based implementations, which make extensive use of icons and the mouse.

SWAIS is one of several interactive, window oriented versions of WAIS. WAIS can also be run as a command line program which allows much more powerful and automated searching of server databases.

A SAMPLE WAIS SESSION USING "SWAIS"

To use the SWAIS version of WAIS you should use full screen terminal emulation, such as vt100. Ask your local user service staff or instructor if you need help.

Lines preceded by U> indicate lines on which you enter commands; lines preceded by W> indicate responses from WAIS.



To get started, just TELNET to quake.think.com:

```
U> telnet quake.think.com

W> SunOS UNIX (quake.think.com)

U> LOGIN:        wais
U> TERM = (unknown)     vt100
```

If you have specified a full screen terminal type, such as vt100, you should now see something like the following on your screen:

```
SWAIS                          Source Selection                    Sources:24

  #                  Server                        Source                Cost

01:          [          quake.think.com]  directory-of-servers          Free
02:          [      hub.nnsc.nsf.net]     ietf-documents               Free
03:          [      hub.nnsc.nsf.net]     internet-drafts              Free
04:          [          quake.think.com]  internet-rfcs                Free
05:          [          cmns.think.com]   info-mac                     Free
06:          [          quake.think.com]  US-Gov-Programs              Free
07:          [    cossack.cosmic.uga.e]   Cosmic-abstracts             Free
08:          [    cossack.cosmic.uga.e]   Cosmic-programs              Free
09:          [              wais.eff.org] eff-documents                Free
10:          [        sol.acs.unt.edu]    online-libraries             Free
11:          [  microworld.media.mit]     poetry                       Free
12:          [          cmns.think.com]   wall-street-journal          Free
13:          [          cmns.think.com]   world-factbook               Free
14:          [          cmns.think.com]   usenet-cookbook             Free
15:          [          cmns.think.com]   sun-mail                     Free
16:          [      hub.nnsc.nsf.net]     internet-phonebook           Free
17:          [          cmns.think.com]   risk-digest                  Free
18:          [          quake.think.com]  sample-books                 Free
19:          [          cmns.think.com]   sample-patents               Free

<space> select source, arrows move, <return> searches, q to quit,

? for help
```

The column labelled "server" names the Internet computer on which the database is located; "source" is a brief description of the contents of the database; and "cost" is the cost to the user. In the upper right hand corner, "sources 24" indicates that this particular WAIS server has access to 24 Internet databases.

When this screen first appears, you should see the top line highlighted. The up and down arrow keys on your keyboard allow you to move this highlighted line to different entries. To select an entry, you would use an arrow key to move to a desired source. Move the cursor to the line for the Wall Street Journal, and press the space bar. It will now have an asterisk in front of it meaning it is a source that will be searched.

What a Source Looks Like After Having Been Selected

```
...
11:          [    microworld.media.mit]    Poetry                       Free
12:    *     [    cmns.think.com]          wall-street-journal          Free
13:          [    cmns.think.com]          world-factbook               Free
...
<space> select source, arrows move, <return> searches, q to quit,

? for help
```

Now we can begin a search. Let's look for entries which contain information about tropical forests. Press the <RETURN> key, the screen will clear, and you will be presented with a keyword prompt.

The Keyword Search Window

```
U> KEYWORDS: tropical forest

Enter keywords with spaces between them; <return> to search

Searching: wall-street-journal
```

WAIS is now establishing an Internet connection to the computer "cmns.think.com", and searching through the database of Wall Street Journal articles for anything containing information relevant to the words "Tropical Forests."

In a few seconds, the search is done, and the results are displayed on your screen. The "score" column indicates WAIS's estimate as to how well that article fits your request, with 1000 being considered a "perfect fit." The articles will be listed from most to least relevant.

List of Articles Retrieved by WAIS

```
SWAIS                    Search Results                          Item

#     Score      Source              Title                      Lines

01:[1000]    (cmns-vax.think)    Debate About Tropical Forests Rage   169
02:[ 887]    (cmns-vax.think)    The Market -- Conservation's Best    190
03:[ 838]    (cmns-vax.think)    FORM + FUNCTION----By John           118
04:[ 570]    (cmns-vax.think)    U.S. Forest Service  Plans a Cut     64
05:[ 537]    (cmns-vax.think)    Business Brief -- Forest Oil Corp.   31
06:[ 505]    (cmns-vax.think)    As a Substitute, Somehow the Guy     60
07:[ 496]    (cmns-vax.think)    Business Brief -- Manville Corp.:    36
08:[ 496]    (cmns-vax.think)    Manville Corp.'s Net  Fell in 1s     46
09:[ 496]    (cmns-vax.think)    Who's News:    Fletcher Challenge    31
10:[ 488]    (cmns-vax.think)    Letters to the Editor --    Dolphi   59
11:[ 488]    (cmns-vax.think)    It's Rumored They Might Enlist       62
12:[ 480]    (cmns-vax.think)    Hershey Foods, Jell-O Are Mixing I   107
13:[ 480]    (cmns-vax.think)    Forest Products    Makers to Post    150
14:[ 480]    (cmns-vax.think)    Letters to the Editor:    Owls & O   140
15:[ 472]    (cmns-vax.think)    British Columbia Reaches--Compro     41
16:[ 472]    (cmns-vax.think)    Georgia-Pacific    Earnings Drop     53
17:[ 464]    (cmns-vax.think)    Letters to the Editor:    Dolphin-   47
18:[ 448]    (cmns-vax.think)    Business Brief -- Georgia-Pacific    25
19:[ 448]    (cmns-vax.think)    Potlatch Corp. Debentures   SAN      24
<space> selects, arrows move, w for keywords, s for sources,

? for help
```

Just like in the main menu, we select a particular entry by moving the highlighted line to a desired entry, and press the space bar.

Selecting an Article

```
01:*[1000] ( cmns-vax.think) Debate About Tropical Forests Ra  169

Retrieving:    Debate About Tropical Forests Rages
```

...and then the article is displayed on the screen.

```
0050564WJ 9004060153J
WALL STREET JOURNAL (J), NO PAGE CITATION
900406
Copyright (c) 1990 Dow Jones & Company, Inc.
FOREST, MONETARY NEWS, FOREIGN EXCHANGE, TRADE (I/MON)
ENVIRONMENT (I/ENV) PULP, PAPER, PACKAGING (ALL TYPES) (I/PUL)

        Debate About Tropical Forests Rages

        Southeast Asian Officials
        Assail Conservationists

        By Raphael Pura
        Staff Reporter of The Wall Street Journal

KUCHING, Malaysia--Mention the fate of Southeast Asia's tropical forests these days and watch
official hackles rise.

"I'm not an environmental villain," protests Abdul Taib Mahmud, chief minister of Sarawak, a steamy
Malaysian state on the north coast of Borneo.  He challenges conservationists to fly over his timber-
carpeted domain: "You'll be lucky if you see any bald patches anywhere in Sarawak."   Like other
government leaders across the region, Tan Sri Taib has reason to be defensive. Like it or not,
Southeast Asia is being sucked into the center of a global controversy over the world's fast-diminishing
tropical forests.

International environmental groups assert that unless the region's governments and timber industry
mend their ways, their actions will contribute to ecological problems that ultimately will affect the
entire Earth. Rapid deforestation of the tropics, environmentalists say, threatens to wipe out species of
plant and animal life, contributes to harmful changes in the global climate, and destroys forest-
dwelling societies.
(MORE)
```

Reading an Article

You can press any key and see the rest of the article. When we've finished reading the article, the following menu reappears at the bottom of the screen.

```
<space> selects, arrows move, w for keywords, s for sources, ? for help
```

We could continue looking at the other articles in the list from the Wall Street Journal; but to make a point about the power of WAIS, let's broaden the scope of our search. By accessing another database, we can learn more about Borneo, one of the places mentioned in the article. Use the "s" command to go back to the list of databases sources.

```
U> s
```

You will see the list of sources we saw previously. Put the highlighted line on the line referencing the "Wall Street Journal," and press the space bar. This will "unselect" the Wall Street Journal. Now move the highlighted

line to the next line, the "world factbook," which contains summary information on countries and places around the world.

```
13: * [      cmns.think.com]  world-factbook
```

Type "w" to get the keyword search window:

U> w

```
U> Keywords: Borneo

Enter keywords with spaces between them; <return> to search

Searching: world-factbook
```

```
SWAIS                          Search Results                  Item

#       Score     Source                 Title                                  Lines
01:     [1000]    ( cmns-vax.think)      Appendix E: Cross-Reference L          1072

<space> selects, arrows move, w for keywords, s for sources, ? for help
Retrieving: Appendix E:  Cross-Reference List of Geographic Names
```

You will now see the World Factbook Cross-Reference List of Geographic Names. Borneo is about four pages down in the list, so we need to scroll through a few pages of geographic names.

0000254CIA
The World Factbook 1990
900101

Addendum E: Cross-Reference List of Geographic Names

This list indicates where various names including all United States Foreign Service Posts, alternate names, former names, and political or geographical portions of larger entities can be found. WORLD FACTBOOK names are not necessarily approved by the United States Board on Geographic Names (BGN). Alternate names are included in parentheses, additional information is included in brackets.

Name	Entry in the WORLD FACTBOOK
Abidjan (US Embassy)	Ivory Coast
Abu Dhabi (US Embassy)	United Arab Emirates
Acapulco (US Consular Agency)	Mexico
Accra (US Embassy)	Ghana
Adana (US Consulate)	Turkey
Addis Ababa (US Embassy)	Ethiopia
Adelaide (US Consular Agency)	Australia
Adelie Land (Terre Adelie)	Antarctica

--More-- (There are several more pages before we get to Borneo.)

Bora-Bora	French Polynesia
Bordeaux (US Consulate General)	France
Borneo	Brunei; Indonesia; Malaysia
Bornholm	Denmark
Bosporus	Atlantic Ocean

(followed by many more pages of place names

According to this list, we can get more information about Borneo by looking at the specific listings for Brunei, Indonesia, and Malaysia. We'll select the file for Brunei to show you what a country listing looks like. As usual, press the w key to get the keyword search screen, and type "Brunei".

U> w

U> Keywords: Brunei

Enter keywords with spaces between them; <return> to search

Searching: world-factbook

```
SWAIS                          Search Results                 Item
#       Score     Source                 Title                                  Lines
01:     [1000]    ( cmns-vax.think)      Country:  Brunei--Geography            224
02:     [ 864]    ( cmns-vax.think)      Country:  Malaysia--Geograp            295
03:     [ 822]    ( cmns-vax.think)      Appendix E:  Cross-Reference           1072
04:     [ 822]    ( cmns-vax.think)      THE WORLD FACTBOOK                     697
<space> selects, arrows move, w for keywords, s for sources,
? for help
```

Move the cursor to line #1, press the space bar, and the file for Brunei will be displayed.

```
0000034CIA
The World Factbook 1990
900101

Country: Brunei

- Geography

Total area: 5,770 km2; land area: 5,270 km2
Comparative area: slightly larger than Delaware
Land boundary: 381 km with Malaysia
Coastline: 161 km
Maritime claims: Exclusive fishing zone: 200 n
Territorial sea: 12 nm
Disputes: may wish to purchase the Malaysian salient that divides the country
Climate: tropical; hot, humid, rainy
Terrain: flat coastal plain rises to mountains in east; hilly lowland in west
Natural resources: crude oil, natural gas, timber
Land use: 1% arable land; 1% permanent crops; 1% meadows and pastures;
79% forest and woodland; 18% other; includes NEGL% irrigated
Environment: typhoons, earthquakes, and severe flooding are rare
Note: close to vital sea lanes through South China Sea linking Indian and
Pacific Oceans; two parts physically separated by Malaysia.

- People

Population: 372,108 (July 1990), growth rate 7.1% (1990)
Birth rate: 23 births/1,000 population (1990)
Death rate: 4 deaths/1,000 population (1990)
(Followed by much more very detailed information)
```

FOR MORE INFORMATION ON WAIS

The FTP Host at think.com contains much of what you need to know to get started using or installing WAIS.

FTP Host:	think.com	
directory:	wais	
files:	NCSA-Telnet-MacTCP.sit.hqx	(Telnet for MAC WAIS
	UNC	(directory of WAIS for SUN
	WAIStation-0-61.sit.hqx	(Version 0.61 MAC WAIS
	WAIStation-0-62.sit.hqx	(Version 0.62 MAC WAIS
	WAIStation-Canned-Demo.sit	(MAC WAIS Demo
	WAIStation-README	(GET THIS FILE....
	Z3950	(directory of Z39.50 info
	etc	(private directory
	motif-a1.tar.Z	(Motif / WAIS code
	wais-8-b1.tar.Z	(WAIS for Unix
	wais-8-b2.tar.Z	(WAIS for Unix
	wais-8-b3.tar.Z	(WAIS for Unix
	wais-corporate-paper.text	(WAIS document
	wais-overview-docs.sit.hqx	(WAIS docs. for MAC WAIS
	wais-project	(private directory

Note that all of the program files are archived and compressed. Use binary mode during your FTP transfer, and when you've received them, unarchive and uncompress the files.

OS	Unarchiving Program	Uncompressing Program
MAC	BinHex 4.0 or newer	UnStuffIt
Unix	tar	uncompress

Read the passage in Chapter 4 of NUSIRG entitled "The ABCs of Handling Special Files" if you need more information about how to use these programs.

KEEPING UP TO DATE WITH WAIS

Mailing Lists

There are a number of Internet interest groups devoted to discussions about WAIS:

wais-discussion@think.com	moderated mailings every 1 or 2 weeks.
wais-interest@think.com	major monthly announcement about WAIS
wais-talk@think.com	unmoderated and active discussion for WAIS users and implementors

To subscribe to these groups, send an e-mail message to "list-name-request@think.com":

Mail:	wais-discussion-request@think.com
Subject:	Subscription Request
Message:	(request a subscription, and provide your name, user-id, and Internet address)

USENET Newsgroups

Read this newsgroup through your USENET newsreader software. (For information about USENET, read Chapter 7 of NUSIRG.) By time you read this, there will probably be many more USENET discussion groups which deal WAIS in the "comp" and other major hierarchies.

alt.wais	if your site doesn't receive this group, send a message to the person responsible for your site's USENET news feed.

TECHNICAL CONTACT:

Brewster Kahle
Thinking Machines Corporation
1010 El Camino Real, Suite 310
Menlo Park, CA 94025
415-329-9300 X228
brewster@think.com

Thinking Machines Corporation
245 First Street
Cambridge, MA 02142
617-234-1000

PUBLISHED REFERENCES ABOUT WAIS

Printed copies of the following and many other WAIS documents can be obtained by contacting:

barbara@think.com

Barbara Lincoln
Thinking Machines Corp.
1010 El Camino Real
Suite 310
Menlo Park, CA 94025

phone: (415) 329-9300
fax: (415) 329-9329

Markoff, J. 1991. "For the PC User, Vast Libraries." New York Times. July 3. pp.C1.

Stanfill, C., and R. Thau, 1991. "A Parallel Indexed Algorithm for Information Retrieval." Proceeding of the 12th International Conference on Research and Development in Information Retrieval SIGIR-89.

Stein, R. 1991. "Browsing Through Terabytes." Byte Magazine, May. pp. 157-164.

Chapter 14: Internet Directory Services

"In my house there's this light switch that doesn't do anything. Every so often I would flick it on and off just to check. Yesterday, I got a call from a woman in Germany. She said, 'Cut it out.'"

Steven Wright

OVERVIEW OF USING INTERNET DIRECTORY SERVICES

In the previous chapters of NUSIRG, you've learned how to:

- Use Internet tools
- Get information about information and resources

In this chapter you'll learn how to:

- Get contact information for people on the Internet
- Find e-mail addresses for computers on the Internet

With the techniques described in this chapter you will be able to independently find user-ids and addresses appropriate to your particular needs and interests, rather than having to consult already compiled lists of information.

Specifically, you will learn how to answer questions like the following:

- "What is the user-id and e-mail address for my colleague Jason Jaspers at Oregon State University in Corvallis?"
- "How do I find the Internet address of a computer at the University of Montana which has data I need for my economics class project?"

or even:

- "I think my long lost buddy from high school, Robin Sampson, might have an account on the Internet. How can I find her user-id and e-mail address?"

CURRENT CAPABILITIES OF INTERNET DIRECTORY SERVICES

Every day, we can get information about people's and companies' telephone numbers without a second thought. All we have to do is look in a phone book or call directory assistance.

Equivalent services are also becoming available for the Internet. Computer scientists are actively working on projects such as Knowbots and X.500 directory services which will be like "white pages" of users and hosts, and "yellow pages" of network services. These services are still under development. Consequently some of them are awkward to use, and contain information for only a tiny fraction of users, hosts, and services on the Internet.

But even though present-day Internet information services are very incomplete in their coverage, a small percentage of a huge number can still be a very large number. For example, the "whois" service at nic.ddn.mil probably lists somewhere around 2% of all Internet users and hosts--but this still amounts to over 75,000 users.

TECHNICAL AND ETHICAL CHALLENGES TO INTERNET DIRECTORY SERVICES

These caveats are not meant to disparage the contributions of the many people working on such projects, but rather to acknowledge the difficulty of the task with which they are wrestling.

Many technical, ethical, and economic issues significantly complicate the provision of (or even deciding whether to provide) comprehensive, reliable, and easy to use Internet directory services. In light of all these issues, providing Internet information services is one the great challenges facing computer network technology.

- Complexity of Computer Information: E-mail addresses and their user-ids are often considerably more complicated and variable in format than information needed for telephone listings. For example, one person usually has no more than one home address, while it's not unusual for a computer user to have five or six computer accounts.

- Volatility of Computer Information: In addition, e-mail addresses or user-ids change much more rapidly than postal addresses or people's names. Your town has probably been in the same state since it was established, the street you live on has probably had the same name for decades, and very few people change their first names. In contrast, the domain name of an Internet computer might change every couple of years, and your user-id(s) can be changed at any time, based on decisions made by you or by systems administrators.

- Local Information Services are Still Embryonic: In order for an Internet wide information system to be created, it would be useful (though possibly not necessary) for local site information systems to be developed and perfected. This is not yet the case. Most institutions still do not have a publicly accessible master list of local user-id's and services.

- Privacy and Security Issues: Many sites are understandably reluctant to publicize some or all addresses or user-ids because of concerns about unauthorized access to sensitive data or costly computer resources.

- Competing Paradigms: Standardized Internet protocols have already been established for transmitting data (TCP/IP) and resolving computer names (DNS). However, there are still a number of competing approaches for providing Internet "white pages" and "yellow pages" services, and, very likely, additional programs will be created in the next few years. On the bright side, however,

programs, such as Knowbots, which are described below, can be used to present a single user interface for querying distinct information databases.

FINDING A PERSON ON THE INTERNET (THE EASY WAY)

It might seem old-fashioned, but you can find most people after a few well-planned phone calls or letters, at minimal cost in time and money. When you contact them, you can ask them directly for their user-id and e-mail address. Here's a typically vague "person directed" question a typical Internet user might ask which is best approached by "traditional" methods.

You: *"I had a friend in High School named Robin Sampson. We agreed that no matter what, we would get in touch with each other before 1992. She loved the Pacific coast, so I bet she's somewhere between Baja and Alaska. The last time we talked she was majoring in computer science at Oregon State, so it seems likely she might use the Internet."*

"I guess I'll try Robin's old phone number in my address book".

Tel: *"We're sorry, this number has either been disconnected or is no longer in service..."*

You: Call Alaska directory assistance:*"Could I have the number for Robin Sampson or her dad, Henry Sampson?"*

Tel: *"We're sorry, those names aren't listed for Anchorage or anywhere else in Alaska."*

You: *"Hello, is this the Oregon State alumni office? Could I have the current address for Robin Sampson, class of 1985?"*

Tel: *"We're sorry, on her alumna information form, she wrote 'Headed for the great unknown; have fun tracking me down!'"*

Don't give up yet! You could try contacting some mutual friends or checking with directory assistance in other area codes along the Pacific.

But Robin appears to be a member of the rare and elusive few who cannot be so easily found (and having read this far, you appear to be one of those people who thrive on the challenge of pushing existing technology "through the envelope").

FINDING A PERSON ON THE INTERNET WITH DIRECTORY SERVICES

If you can't find a person's Internet address by using telephone calls or postal mail, there are a few Internet directory services which you can try.

Table 1 gives a brief summary of the features and uses of the most useful Internet directory services. Table 2 summarizes the basic "how to's" of accessing each of these services.

The rest of this chapter presents more detailed information and examples on these services, and presents a few sample sessions.

Table 1: Summary of Internet Directory Services

Knowbot Information Server (KIS)

A white pages "meta-service" which searches for finding user-ids of Internet users listed in many other white pages services, including:

finger (@ any Unix host, e.g., finger@milton.u.washington.edu)
mcimail@nri.reston.va.us
mitwp@mit.edu
profile@gwen.cs.purdue.edu
profile@megaron.arizona.edu
profile@nri.reston.va.us
whois@nic.ddn.mil
X.500

This list includes most of the other services on this page, so KIS is your best candidate for "one stop" name searches.

"USENET Address Server" (hereafter referred to as"U-ASK")

Searches for user-ids and e-mail addresses of people who have posted messages to USENET discussion groups. This is a very useful service for finding "average" Internet users who have posted to USENET. It's not a full-featured directory service, just a list of names and e-mail addresses searched by the Unix grep command (this service actually has no name; "U-ASK" was coined so it could be referred to by a name in this document).

DDN Network Information Center WHOIS Service

Searches for names, user-ids, computer and postal addresses, telephone numbers and other contact information for 70,000+ registered users, hosts, organizations, gateways, and networks throughout the Internet. Most persons listed are network administrators or technical staff; especially good coverage of MILNET (formerly ARPANET).

PSI White Pages Pilot Project

Searches for names, user-ids, and e-mail addresses, primarily administrators and staff of participating institutions. This is an exploratory project of the X.500 Directory Service.

soc.net-people

This is a USENET discussion group which is devoted to helping people find other people. It is accessed by using USENET newsreader and news posting software (for more information about USENET, refer to Chapter 7 of NUSIRG). If you post to this group, you are encouraged to make your "subject" line as concise and informative as possible. For example, an intelligent posting to find our hypothetical friend Robin Sampson might look like this:

subject: Western U.S: Robin Sampson

I am attempting to locate a friend named Robin Sampson. The last I heard from her was in 1983, when she was studying computer science at Oregon State (followed by other relevant information).

Table 2: Basic Access Information for Internet Directory Services

How to Use this Table

The syntax examples present the simplest possible kind of search; most of these services have additional options for more sophisticated searches (e.g., restrict the search to users in a particular geographic region, etc.)

Service	Access Info	Addresses and Basic Syntax Examples
Knowbot	e-mail	kis@nri.reston.va.us kis@sol.bucknell.edu
	TELNET	nri.reston.va.us 185 (no password) sol.bucknell.edu 185 (no password) (you *must* include 185, the port #)
	syntax example:	query Robin Sampson
	online help:	help or ?
"U-ASK"	e-mail	mail-server@pit-manager.mit.edu
	syntax example:	send usenet-addresses/Sampson
	online help:	no
DDN.MIL	e-mail	service@nic.ddn.mil
	TELNET	nic.ddn.mil
	syntax example:	whois Sampson
	online help:	extensive help and tutorials
PSI	TELNET	wp.psi.com (login = fred) or wp2.psi.com (login--fred)
	syntax example:	whois, but please read online help. This is a complex system
	online help:	man fred or manual

KNOWBOT INFORMATION SERVER (KIS)

Summary

Retrieves user-ids, e-mail addresses, postal addresses, telephone numbers, and institutional affiliation for users throughout the Internet.

In its current implementation, KIS is set up to search other white pages datasets (thus KIS is referred to as a white pages "meta-service"). The following white pages services are currently accessed by KIS:

mitwp@mit.edu
mcimail@nri.reston.va.us
whois@nic.ddn.mil
X.500
finger (@ any Unix host, e.g., finger@milton.u.washington.edu)
profile@nri.reston.va.us
profile@megaron.arizona.edu
profile@gwen.cs.purdue.edu

This list includes most of the other services discussed in this chapter, and new services will be added as they become operational, so KIS is your best choice for "single stop" name searches.

Access Methods

- ❑ e-mail: kis@sol.bucknell.edu, or kis@nri.reston.va.us
- ❑ TELNET: nri.reston.va.us 185, or sol.bucknell.edu 185 (no password required)

Local Installation

KIS can be installed locally and run on computers connected to the Internet using any version of Unix with Berkeley style sockets. KIS currently has translation programs for whois (nic.ddn.mil), profile, mcimail, QUIPU, and finger. Any sites using these services can be added easily to a locally installed KIS.

Sample Knowbot Information Server Session (via TELNET)

Note that this entire session could have been performed with a single e-mail request as long as each user command was placed on a separate line.

User Commands (U>), KIS responses (K>)	Explanation
U> telnet nri.reston.va.us 185	(make TELNET connection)
U> services	(show directory services available by default
K> nic	at this KIS site)
K> mcimail	
K> ripe	
K> x500 (be sure to set the org)	
K> finger@a.Unix host	
U> query Robin Sampson	(search for Robin Sampson)

K> Name:	Robin Sampson
K> Organization:	Oregon State University
K> Address:	
K> City:	Corvallis
K> State:	OR
K> Country:	US
K> Zip:	97331-3902
K> Phone:	503/555-9999
K> E-Mail:	rsampson@ucs.orst.edu
K> Source:	whois@nic.ddn.mil
K> Ident:	RSA999
K> Last Updated:	02-Apr-91.

K> No matches found for Robin Sampson from mcimail@nri.reston.va.us
K> No matches found for Robin Sampson from ripe@nic.eu.net

U> service finger@ucs.orst.edu (use the finger program at

```
                                        Robin's computer)

U> print                                (ask for display of current
                                        KIS search variables)

K> name Robin Sampson
K> service finger@orst.edu
K> raw = FALSE

U > query Robin Sampson                 (search for Robin again)

K> Name:          Robin Sampson         (output from the finger)
K> E-Mail:        rsampson@ucs.orst.edu (daemon at ucs.orst.edu)
K> Source:        finger@ucs.orst.edu
K> Last Updated:  (unknown)

U> quit                                 (type "quit" to leave KIS)
```

For More Information About KIS

Online Help:	help, ?, and help <command> (e.g., help query)	
Technical Documents:	FTP Host:	nri.reston.va.us
	directory:	rdroms
	files:	KIS.PS
		KIS.txt
Overview Document	NNSC Internet Resources Guide, Section 4.5	
Discussion Group:	kis-users@nri.reston.va.edu	
	(to subscribe, send e-mail to: kis-users-request@nri.reston.va.edu)	

USENET-ADDRESSES SERVER (U-ASK)

Summary

Retrieves user-ids and e-mail addresses.

This service is based on a simple C program which searches ("greps") through a list of names, user-ids, and e-mail addresses culled from USENET article headers. As of September 1991, it is installed only at pit-manager.mit.edu. The addresses database is updated every month or two.

on the up-side:

- Searches through this database will often turn up many names not found in the standard white pages services (as in the hypothetical example below).

on the down side (until other sites install such servers...):

- ❏ Not all USENET groups are received at MIT (e.g., regional groups).
- ❏ Many USENET articles are posted with limited distribution, and will not be included in the database.

Access Method

Send an e-mail message to the mailserver using the following syntax:

e-mail:	mail-server@pit-manager.mit.edu
subject:	(none needed)
message:	send usenet-addresses/name

for example:

mail	mail-server@pit-manager.mit.edu
mail text:	send usenet-addresses/Sampson

In a few minutes, you should receive a mail file from the mail-server containing all user-ids and e-mail addresses for anyone with the last name of "Sampson" who has posted USENET articles received at MIT:

```
...
robin@paradox.zeno.oz.au          (Robin Sampson)
rsampson@ucs.orst.edu             (Robin Patricia Sampson)
ras@uicvm.uiuc.edu                (Robin Thomas Sampson)
...
```

Local Installation

If you or your users anticipate needing to access this database frequently, you can FTP the database (currently > 2 megabytes in size) and use locally written search programs to search through it:

FTP Host:	pit-manager.mit.edu
directory:	pub/usenet-addresses
file:	addresses.Z

For More Information About U-ASK

If you have problems with the present server at MIT, send mail to postmaster@pit-manager.mit.edu.

PSI WHITE PAGES PILOT X.500 PROJECT

Summary

Retrieves names, user-ids, computer and postal addresses, primarily for administrators and staff of participating institutions.

PSI White Pages is a "pilot project" sponsored by the U.S. Defense Advanced Research Projects Agency and the U.S. Air Force.

X.500 is a strongly hierarchical storage system--entries are arranged in trees, with each entry having "parents" and "children." Such a storage and recovery system is very effective for highly structured organizations.

Access Methods

TELNET:	wp.psi.com or wp2.psi.com
login:	fred (fred means "FRont End to the Directory")

Sample X.500 Session (via TELNET)

In the following session, commands which you enter are preceded by "U>" or "U>fred>", and responses from the X.500 directory service are preceded by "X>". Please note that this database is frequently updated. Thus, the information you obtain from a search will differ from this example.

```
U> telnet wp.psi.com
U> login name is fred

U> fred> whois * -org NorthW

X> NorthWest Net (1)      +1 206-562-3000
X> NorthWest Net
X>      Suite 202
X>      15400 SE 30th Plc
X>      Bellevue
X>      WA
X>      98007
X>      A regional network supporting educational/commercial research

X>Name:         NorthWest Net, US (1)

X>Modified: Wed Oct 16  13:27:42 1991
X>      by: Manager, US (2)

X>14 children.
X>
X>      5. Battelle Pacific Northwest Labs
X>      6. Montana State University
X>      7. ND-HECN-North Dakota State University
X>      8. Oregon Graduate Institute
X>      9. Oregon State University
X>      10. Portland State University
X>      11. University of Alaska
X>      12. University of Idaho
X>      13. University of Oregon
X>      14. University of Washington
X>      15. Washington State University
X>      16. Western Washington University
X>      17. Manager
X>      18. Postmaster
```

You can then query X.500 for more information about any one of the individual sites which it has listed.

For More Information About The PSI White Pages Project

There is a great deal of documentation about the PSI White Pages Pilot Project specifically, and X.500 and QUIPU generally.

Online Help:

help, ?, and help <command> (e.g., help query)

Introductory Documents:

You can send e-mail to wp-info@psi.com and to wp-more-info@psi.com

report-1.ps	"White Pages Pilot Project: Status Report, 12/31/89"
report-2.ps	"Realizing the White Pages using the OSI Directory Service, 5/2/90"
report-3.ps	"White Pages Pilot Project: Status Report, 9/10/90"

In addition, PSI's proprietary graphical interfaces to the White Pages are available in source form to interested parties by contacting ssd-info@psi.com.

A brochure on the White Pages is available by sending e-mail to:

wp-brochure@psi.com

The following essay compares the merits of X.500 and Z.39.50:

"Towards Networked Information Retrieval," by Wengyik Yeong, PSI Inc.

FTP Host:	uu.psi.com	
Directory and files:	wp/nir.txt	(ASCII)
	wp/ps/nir.ps	(PostScript)

Online Discussion Groups of X.500 Related Topics

USENET Newsgroups:

comp.protocols.iso
comp.protocols.iso.dev-environ

Mailing Lists:

iso@nic.ddn.mil
isode@nic.ddn.mil

To subscribe to these mailing lists, send a subscription request to:

iso-request@nic.ddn.mil
or
isode-request @nic.dd.mil

INTERNET DIRECTORY SERVICES: WHERE DO WE GO FROM HERE?

The evolution of the Internet, like most other forms of technology, is very responsive to the needs and activities of its users. The demands which you and other Internet users place on the services described in this chapter will be a powerful incentive for the creation of high quality Internet directory services.

It has taken years of development to attain the level of quality we expect from traditional information systems such as telephone directory services. Internet directories are not yet as comprehensive, reliable, or easy to use as they could be, but with strong demand from the user community and rapid response from service providers, such systems could be at hand before the end of the decade.