Benchmarks Online

Volume 6 - Number 1 * January 2003

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Campus Computing News

Sol.acs.unt.edu, a multi-user UNIX host reserved for faculty and graduate student research, has been upgraded. Read all about it!

Spam Filtering for GroupWise

Bulk E-mail or Unsolicited Commercial E-mail (UCE) - Spam by another name - has rapidly increased in past months. Because of this, the Campus Wide Networks Computing Team is now providing bulk E-mail filtering to help you manage this type of mail better. Details inside.

Website and Online Application Myths at UNT

Kenn Moffit, Director of University Online Communications, UNT Communications and Marketing, gives you the lowdown on some of the rules pertaining to developing and maintaining an official UNT Website.

Coming Soon to a Convention Center Near You!

The 2003 EDUCAUSE Southwest Regional Conference (formerly EduTex) is coming to Dallas February 19-21, 2003. Find out why you should attend.

Today's Cartoon

About Benchmarks *Online*

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Don't forget to check out our monthly columns. This month's topics:

- **RSS Matters** -- "Interactive Graphics in R (Part II): Kernel Density Estimation in One and Two Dimensions." The title says it all!
- **SAS Corner** -- "Reading Mixed Records" Read this article and learn how to import an external dataset, manipulate, and print that in SAS.
- **The Network Connection** -- "What Happened to the "WWW"?" Read this article and find out where all the Ws have gone.
- **Link of the Month** -- "ResNet" UNT's residential network is showcased here.
- **WWW@UNT.EDU** -- " Resource Management on a Budget: Part I " This month, Shannon Peevey talks about computing on a budget.
- **Short Courses** -- Spring Short Courses are here!
- **IRC News** -- Minutes of the Information Resources Council are printed here when they are available.
- **Staff Activities** -- New employees, people who are no longer employed at the Computing Center, awards and recognitions and other items of interest featured here.

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RSS Matters

The previous issue in this series can be found in the December, 2002 issue of Benchmarks Online: Interactive Graphics in R

Interactive Graphics in R (Part II): Kernel Density Estimation in One and Two Dimensions

By Dr. Rich Herrington, Research and Statistical Support Services Manager

This month we continue our discussion of elementary graphs in R. This month we examine histogram generation, 1-D and 2-D kernel density estimation. The GNU S language, "R" is used to implement this procedure. R is a statistical programming environment that utilizes the S and S-Plus language developed at Lucent Technologies. In the following document we illustrate the use of a GNU Web interface to the R engine on the "Kryton" server (http://kryton.cc.unt.edu/cgi-bin/R/Rprog). This GNU Web interface is a derivative of the "Rcgi" Perl scripts available for download from the CRAN Website (http://www.cran.r-project.org), the main "R" Website. Scripts can be submitted interactively, edited, and then be re-submitted with changed parameters by selecting the hypertext link buttons that appear below the figures. For example, clicking the "Run Program" button below creates a vector of 100 random normal deviates; creates a histogram of the random numbers, and then overlays a nonparametric density estimate over the histogram. To view any text output, scroll to the bottom of the browser window. To view any graphical output, select the "Display Graphic" link. The script can be edited and resubmitted by changing the script in the form window and then selecting "Run the R Program". Selecting the browser "back page" button will return the reader to this document.

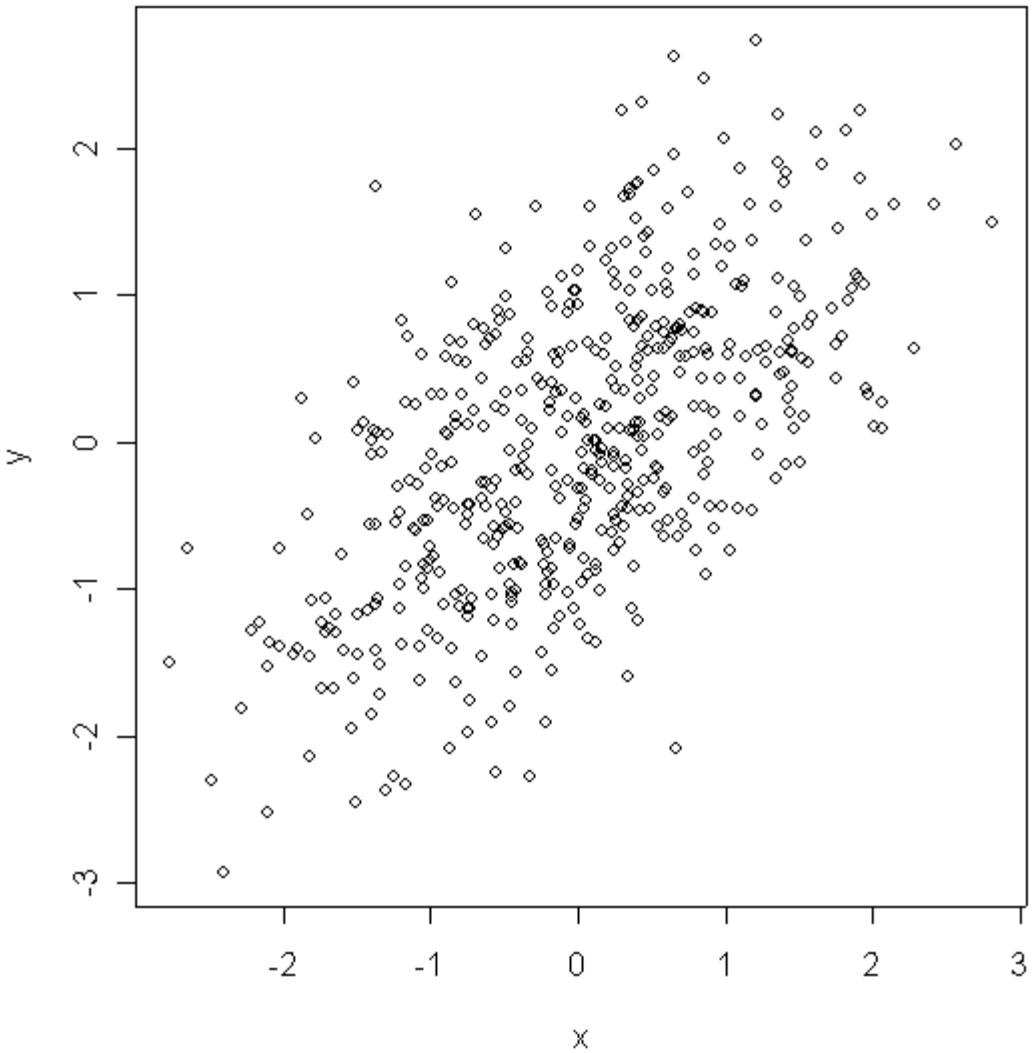
```
x<-rnorm(100)
hist(x, prob=T)
lines(density(x))
```

Run Program

Simulating Data with a Known Covariance Matrix

```
library(MASS)
set.seed(321)
x.y<-mvrnorm(n=500, mu=c(0,0), Sigma=matrix(c(1,.60,.60,1),
          ncol=2), empirical=T)

x<-x.y[,1]
y<-x.y[,2]
cor(x,y)

plot(x,y)
```

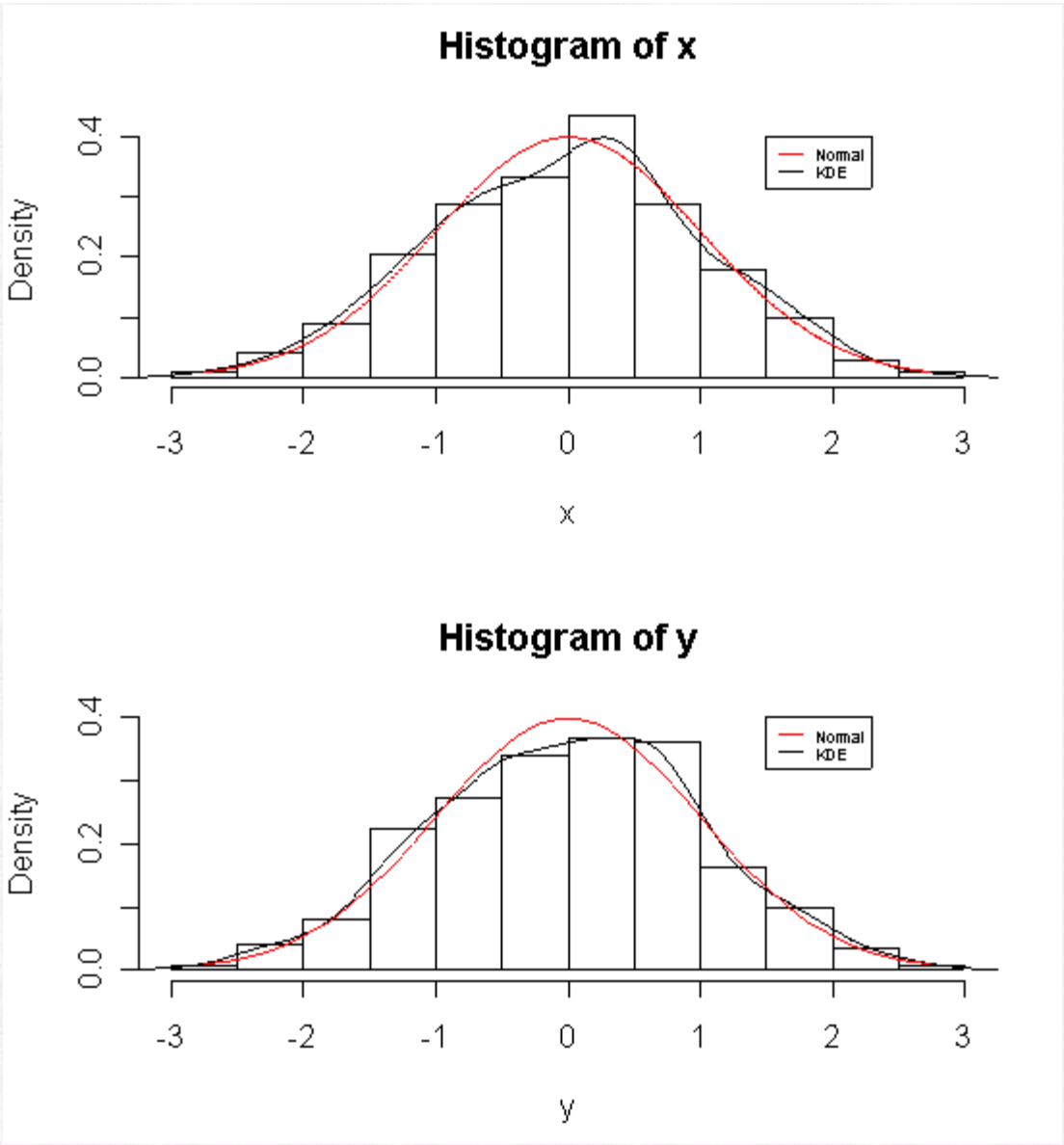
Run Program

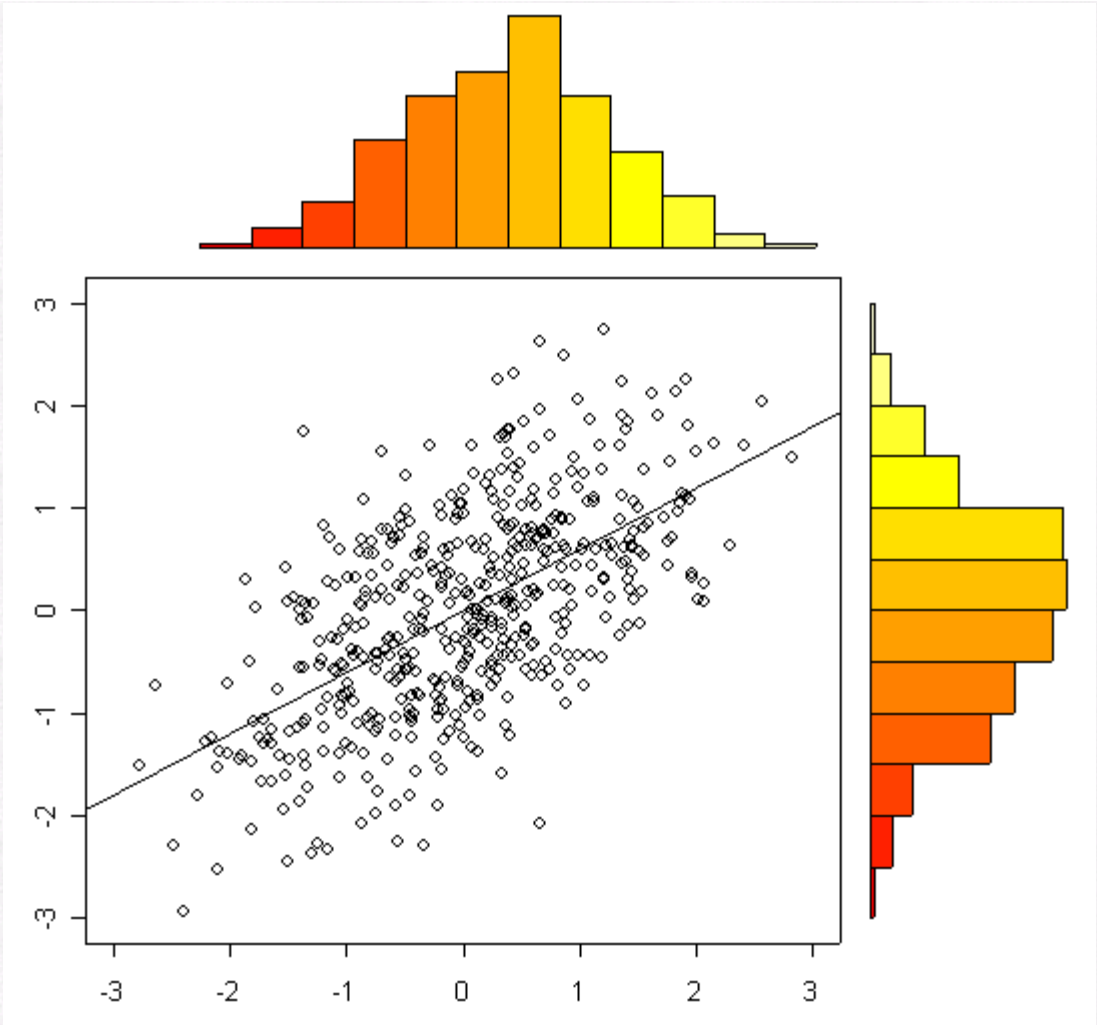


Histograms and One-Dimensional Kernel Density Estimation

```
par(mfrow=c(2,1))

xhist <- hist(x, prob=T, ylim=c(0,.42))

lines(density(x))

seq.x<-seq(min(xhist$mids), max(xhist$mids),.01)
lines(seq.x, dnorm(seq.x), col="red")

legend(1.5,.4,c("Normal", "KDE"),lty=1,cex=.6,
          col=c(2,1))

yhist <- hist(y, prob=T, ylim=c(0,.40))

lines(density(y))

seq.y<-seq(min(yhist$mids), max(yhist$mids),.01)
lines(seq.y, dnorm(seq.y), col="red")

legend(1.5,.4,c("Normal", "KDE"),lty=1,cex=.6,
          col=c(2,1))

top <- max(c(xhist$counts, yhist$counts))

xrange <- c(-3,3)
yrange <- c(-3,3)

layout(matrix(c(2,0,1,3),2,2,byrow=TRUE), c(3,1), c(1,3), TRUE)

plot(x, y, xlim=xrange, ylim=yrange, xlab="", ylab="")
abline(lm(y~x))

par(mar=c(0,3,1,1))

barplot(xhist$counts, axes=FALSE, ylim=c(0, top),
          space=0)

par(mar=c(3,0,1,1))

barplot(yhist$counts, axes=FALSE, xlim=c(0, top),
          space=0, horiz=TRUE)
```

Run Program

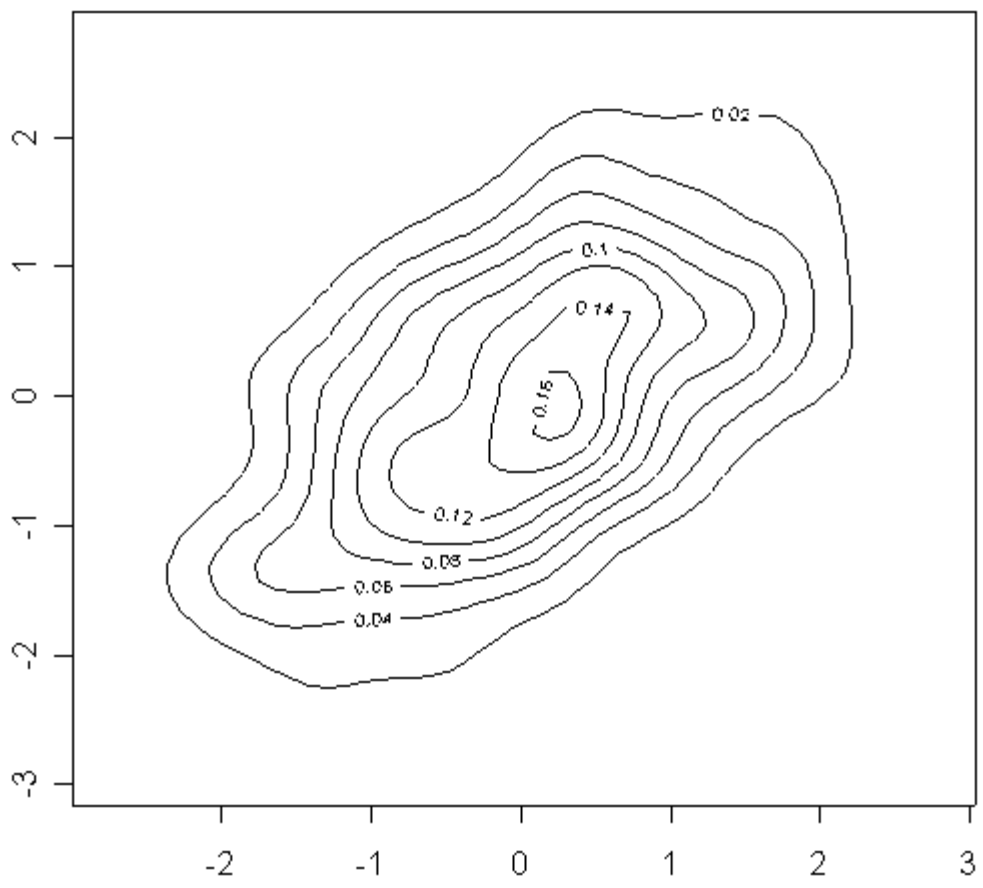

Histogram of x
Density
0.0
0.2
0.4
Normal
KDE
-3
-2
-1
0
1
2
3
x
Histogram of y
Density
0.0
0.2
0.4
Normal
KDE
-3
-2
-1
0
1
2
3
y

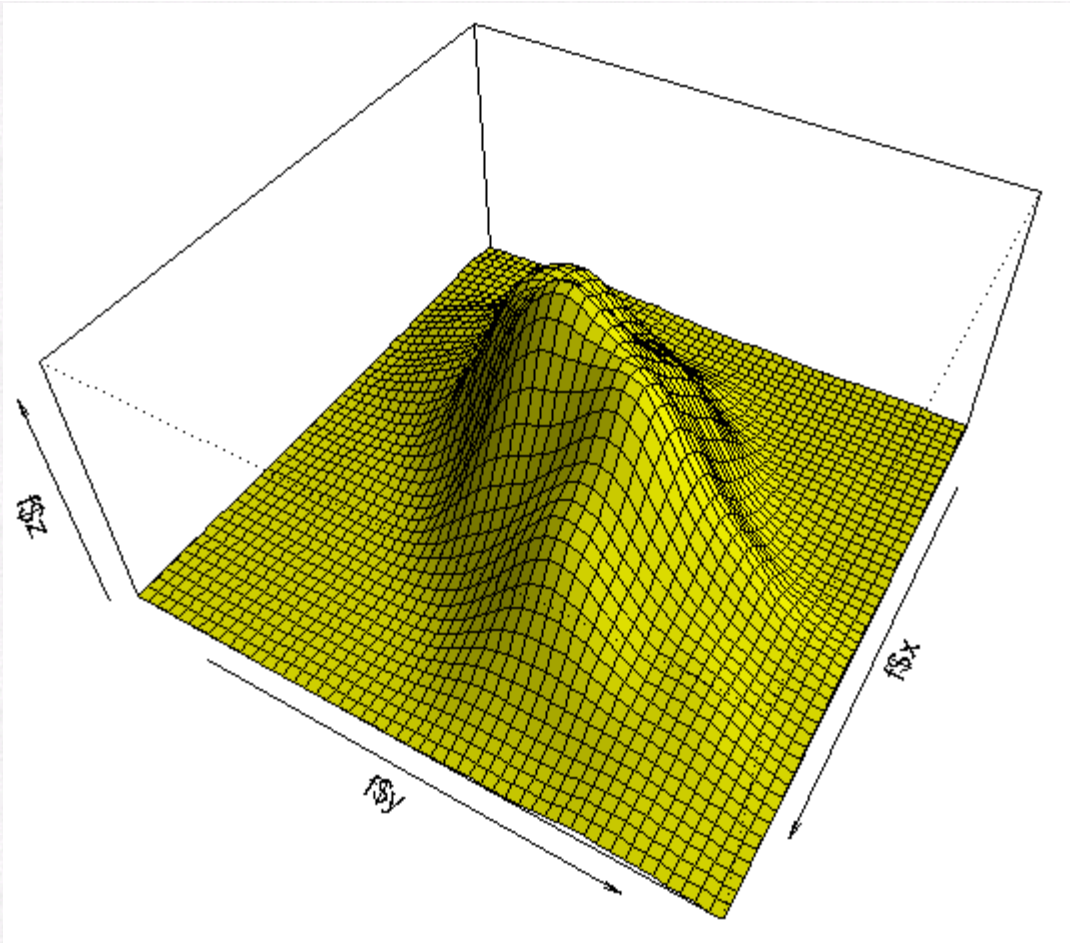


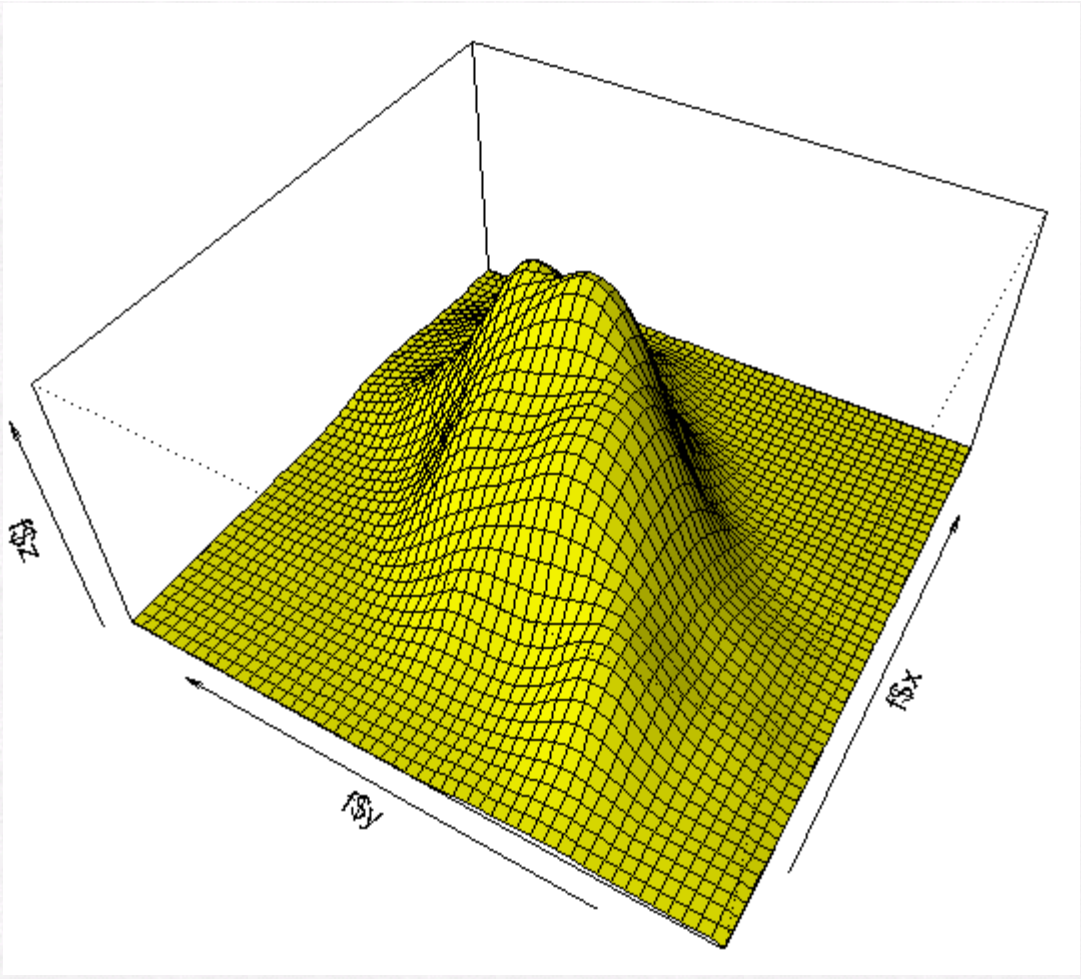
Contour and Perspective Plots: Two Dimensional Kernel Density Estimation

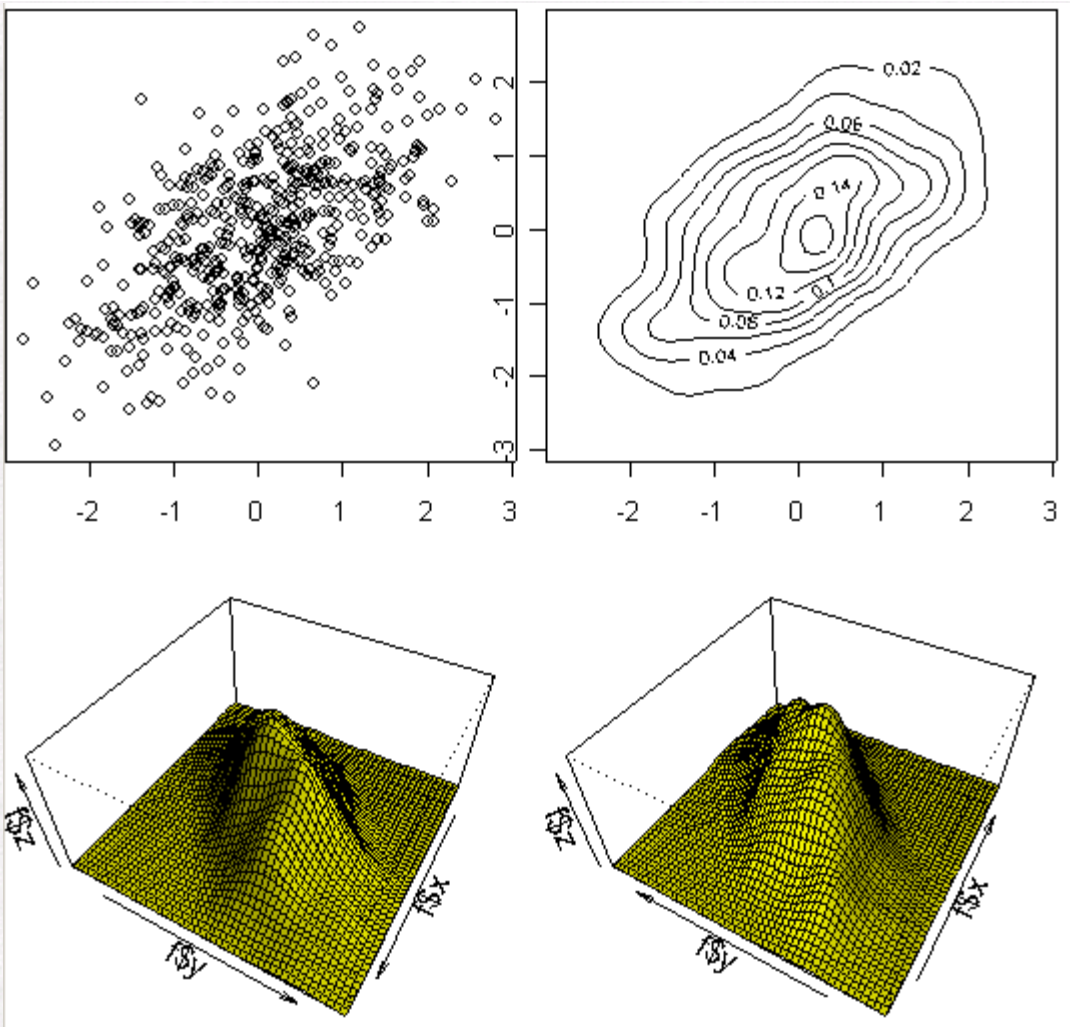
```
par(mfrow=c(2,2))

plot(x,y)

f<-kde2d(x,y,n=50)

contour(f$x,f$y,f$z)

persp(f$x,f$y,f$z,shade=.3, theta = 120, phi = 45,
      expand = 0.5, col = "yellow")

persp(f$x,f$y,f$z,shade=.3, theta = 300, phi = 45,
      expand = 0.5, col = "yellow")
```

Run Program




f$z
f$y
f$x


fSZ
fSY
fSX



Next Time

Next time we return to Part II of our series on multilevel modeling using the NLME (linear and nonlinear mixed effects) functions in R and S-Plus.

References

Krause, A. and Olson, M. (2000). The Basics of S and S-Plus, 2nd Edition. Springer Verlag: New York.

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SAS Corner

Reading Mixed Records

By Garvii Thomas, Research and Statistical Support Services Consultant

The following article is intended to show the average user of SAS how to import an external dataset, manipulate, and print that dataset in SAS. The dataset used in this article is Insurance.dat and is made of 25 mixed records of patients of "my" insurance company.

The following is the raw data stored in insurance.dat. It contains the patients' identification code, name, health plan, blood type, allergy type, and the number of dependents they have on their plan. Use the following SAS procedure statement to view the data:

```
proc fslist fileref='C:/Garvii/Insurance.dat';
run;
```

FSLIST: C:\Garvii\Insurance.dat

```
C400 THOMAS GARVII BC O+ Y DY 0
C401 CHRISTOPHER CHRIS BC AB+ N 2
C403 RIGHTON CAESAR ML AB+ Y SM 3
C413 EDWARDS MARLON BC B- Y HF 1
C425 PIERRE LAURENCIA NB B+ Y PA 1
C512 FARRELL MICHELL ML A+ N 5
C548 THOMAS NEVILLE BC O+ N 4
C577 CHARLES JOHNNY NB A+ N 10
C592 COLLINS KELVIN NB B+ Y SF 7
C599 FRAME ANTHONY BC A- Y PO 2
C610 ALLEN KATHYANN BC B+ N 1
C619 ALEXANDER RHANISHA ML AB- N 1
C635 ROSS RONA ED B+ N 1
C660 WILLIAMS KAREN ED O- N 4
C679 SUPERVILLE MARVIN ED AB+ Y PE 2
C700 ROBERTSON SAMUEL ED AB- Y SM 0
C715 ANTOINE CASSEY BC B- N 3
C717 STEPHEN DESIREE ML B- Y HF 1
C743 DECOTEAU SHIRLYN BC B+ N 2
C759 DUNCAN PAMELA ML A+ N 1
C809 GRIFFITH DIEDRE ML A- Y PA 2
C823 WALKER ANDREW NB B- N 1
C856 RICHARDS CASEY ML AB- N 1
C888 EDGERTON JOSHUA BC O+ N 3
C896 ALLEN ROGER BC B- N 0
```

The following program, Mixed.sas, is used to read in and manipulate the dataset to give the proceeding output.

Mixed.sas

```
data medical;
   length ID $ 4 LName FName $ 11 Plan $ 2 Blood $ 3 Allergy $ 1
          AlgyType $10; /* The length statement allows the user to
                           specify the character of a variable and its size*/
   infile 'C:/Garvii/Insurance.dat';
   input ID $ LName $ FName $ Plan $ Blood $ Allergy $ @;
                        /*Trailing @ prevents new record
                          from being LOADED*/
   if Allergy='N' then
      input Dependents;
   else if Allergy='Y' then
      input AlgyType $ Dependents;
run;

proc print data=medical;
   title 'Patients medical information';
run;
```

Output - (Untitled)

Patients medical information

Obs	ID	LName	FName	Plan	Blood	Allergy	Algy Type	Dependents
1	C400	THOMAS	GARVII	BC	O+	Y	DY	0
2	C401	CHRISTOPHER	CHRIS	BC	AB+	N		2
3	C403	RIGHTON	CAESAR	ML	AB+	Y	SM	3
4	C413	EDWARDS	MARLON	BC	B-	Y	HF	1
5	C425	PIERRE	LAURENCIA	NB	B+	Y	PA	1
6	C512	FARRELL	MICHELL	ML	A+	N		5
7	C548	THOMAS	NEVILLE	BC	O+	N		4
8	C577	CHARLES	JOHNNY	NB	A+	N		10
9	C592	COLLINS	KELVIN	NB	B+	Y	SF	7
10	C599	FRAME	ANTHONY	BC	A-	Y	PO	2
11	C610	ALLEN	KATHYANN	BC	B+	N		1
12	C619	ALEXANDER	RHANISHA	ML	AB-	N		1
13	C635	ROSS	RONA	ED	B+	N		1
14	C660	WILLIAMS	KAREN	ED	O-	N		4
15	C679	SUPERVILLE	MARVIN	ED	AB+	Y	PE	2
16	C700	ROBERTSON	SAMUEL	ED	AB-	Y	SM	0
17	C715	ANTOINE	CASSEY	BC	B-	N		3
18	C717	STEPHEN	DESIREE	ML	B-	Y	HF	1
19	C743	DECOTEAU	SHIRLYN	BC	B+	N		2
20	C759	DUNCAN	PAMELA	ML	A+	N		1
21	C809	GRIFFITH	DIEDRE	ML	A-	Y	PA	2
22	C823	WALKER	ANDREW	NB	B-	N		1
23	C856	RICHARDS	CASEY	ML	AB-	N		1
24	C888	EDGERTON	JOSHUA	BC	O+	N		3
25	C896	ALLEN	ROGER	BC	B-	N		0

An expansion of this and other concepts in SAS will be covered in my SAS short course series (http://www.unt.edu/rss/) for the Spring Semester here at UNT.

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Network Connection

By Dr. Philip Baczewski, Associate Director of Academic Computing

What Happened to the "WWW"?

In the "old days" (a couple of years ago), all Web site addressed invariably started with "www" the acronym for World Wide Web. These initials are the bane of public speakers and radio announcers everywhere. Three W's in a row are a mouthful for most English speakers (unless your audience understands a dialect where "dubya" is acceptable). Even the World Wide Web consortium uses "W3" as a shorthand for the three W's. In spite of all this, the "www" remains an expectation of many Web users.

It is almost reflexive to put the "www" in a Web address. At UNT, we made the student E-mail Web address as easy as possible: eaglemail.unt.edu . But people still try to insert that "www." The interesting thing is, it was never necessary in the first place. The "http:" designation in a URL defines the address which follows it as a Web site. The reason for the "www" lies in an Internet history where the development was driven by a technical community.

In the early days ...

In early Internet days, servers ran almost exclusively on UNIX systems. There were also a greater variety of server types, with the Web being one of the latecomers to the party. FTP (file transfer protocol) and mail servers formed the core of the early Internet, with gopher as a short-lived but wide-spread precursor to today's Web. As Internet traffic increased, UNIX systems were dedicated to one kind of server or another. A UNIX server's address consists, by default, of it's system name and it's default domain. For a long time, the only domain in use on the UNT campus was acs.unt.edu. The result was systems like gopher.acs.unt.edu.

If you had multiple Internet servers on one system, there was even more of a tendency to differentiate the addresses by the service type. If you had an FTP server, the practice was to name it "ftp.<domain>." If you had a gopher server, you'd name it "gopher.<domain>." If you had a World Wide Web server, you'd name it "www.<domain>" and that's how that "www" got into all those Web site addresses.

Now

Now, if you were to invent the World Wide Web and take it to your marketing, department to sell, the first thing they'd say is, "Hey, that's pretty slick, but we've got to get rid of all those W's." The Internet in its present state, however, did not spring fully-formed from Vinton Cerf's head,* but rather evolved into the practices in place today. As with other evolutions, you sometimes end up with things that seem to be unnecessary and annoying (like the human appendix).

The move away from the use of "www" in Web addresses indicates a maturing of the technology. We've finally realized that it's not the technology that's important but rather the

service. When the Internet was developing the technology was its reason for being. Internet services are generally not handled by one server any more either. Instead, a set of servers coordinate, sometime each having a different task, to provide the information or service you seek.

So, don't despair the loss of the "www" in your Web addresses. It just makes it easier to say those URL's and keeps you from having to type four more characters. It's just too bad it didn't go away sooner. If we could turn back the Internet development clock, I'd definitely try to eliminate that pesky "www."

---

* A founding father of the Internet. For a trip down memory lane read his "Cerf's Up" column marking the 20th anniversary (January 1, 2003!) of the "deployment of the Internet." An interesting "Life on the Internet Timeline" can be found here. - ED.

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Link of the Month

Each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s).

ResNet is the Residential Network that provides high-speed, 100MPS Internet access to most resident hall students. ResNet allows residents to enjoy a high performance connection to the Internet while leaving their phone free for important calls or messages. It also acts as a local area network. ResNet is currently available to the following halls:

- Bruce Hall
- Clark Hall
- College Inn
- Crumley Hall
- Kerr Hall
- Maple Hall
- West Hall

Point your browser to http://housing.unt.edu:8080/index.asp to find out more about this valuable asset for dorm dwellers.

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Resource Management on a Budget: Part I

By Shannon Eric Peevey, UNT Central Web Support

In preparation for a conference in April, I have started to accumulate information on inexpensive ways to manage resources, in particular, visual resources. As most of you know, the Texas State Legislature is about to convene again, and the economic outlook for state-funded institutions is looking bleak for the next fiscal year. As we see the private sector scale down, and the lay-offs continue, it can make even the safe haven of a state job a bit unsure. Even if our jobs may not be in jeopardy, our budgets definitely are... At the University of North Texas, we have been feeling the economic crunch this year, and expect to feel even more next year. With this in mind, I am always on the lookout for ways to maintain cutting edge technology, while not spending the dwindling budget that other people in my university desperately need. This leads me to the subject of this article, reviving out-of-date machines through the use of open source operating systems.

The scenario...

My wife and I enjoy going to have Chinese food at many of the wonderful restaurants in the Garland/Richardson area, and during one of our adventures, we noticed an out of the way store that sold software and computers. On a whim, and because I am a computer geek, we stopped by, and my eyes popped out when we saw old desktop computers for $15... Sure, they were old Compaq Desktoppros, but I knew that they could be used for some wild scheme... Hmm... Pentium 133's, 32 megs of RAM and 1 gig hard-drives... What could they be used for?

Aha!!

What could these machines be used for?! Let me tell you. P133's could work great as a router, web servers, desktop machines, proxy servers, and can even be clustered, in large enough numbers, to be a rather competent super-computer. How is this possible, you might ask? This is possible through the use of open source operating systems, Linux and FreeBSD, (and it's siblings, NetBSD, and OpenBSD.) Many do not realize that these operating systems are optimized to work on old hardware, and can take that hardware, and make it seem young again :)

My Scheme

Through my work, and interest in computers, I have long desired to learn more about routing, load-balancing, and clustering, (as in process-sharing among multiple machines), for quite some time. The problem has always been the lack of hardware to do it. Most desktop

computers, even used computers, are so overpriced, IMHO, that I would rather buy new machines for $100 - $200 more. Therefore, when I saw the old Compaq computers for $15, I saw my chance. We backed up my truck to the store, and drove away with five computers, a 24-port hub, and various cables, wires and keyboards. The time was now. My “scheme” was to build an a load-balanced web cluster from these machines. One machine as the load-balancing router, two machines as the load-balanced web servers, one machine as the database server, and one machine as a storage device, to hold the web content. Now that I had the hardware, I needed to test a variety of operating systems to see which would meet my needs most appropriately for this “scheme”.

Enter the Operating Systems...

The first operating system, or OS, that would come to many people's minds is a version of a Microsoft server OS, such as, Windows NT, or 2000. But, Windows hardware requirements are too great for a machine with a P133, 32 megs of RAM and a 1 gig hard-drive. (For instance, Win2k Server needs 1 gig of storage for the OS by itself, not to mention a minimum of 128 megs of RAM.) Besides, the cost of licensing the OS would obviate the savings on hardware, and the operating system does not give me the power and flexibility that I desire in my test environment. Therefore, I began to look at open source OS's that would work well in this environment and give me the power and flexibility needed to create a test environment.

Red Hat Linux

Long a favorite of Linux users in the United States, Red Hat is a fairly mature Linux distribution. (You will understand what I mean by fairly mature later.) It is the standard distribution for many institutions, and it has a good working relationship with many large commercial corporations, such as Oracle, Sun, and Macromedia. These relationships, as well as, the popularity of this distribution make it very easy to find software, commercial and open source, that are configured to work with the directory structure, the package manager, and the libraries that are shipped with Red Hat. As of the writing of this article, Red Hat has released version 8.0, which incorporates a nice desktop scheme, installer, and a fairly up-to-date kernel (2.4.18). (The latest stable is 2.4.20). The gui installer finds most of your hardware, and configures the X Windows system, (the system that is used to run a gui desktop on most Linux systems), rather painlessly, (unusual for most Linux distributions). You log in and go... Very user friendly!

Reason I didn't choose Red Hat Linux: Red Hat has an minimal install size of over 400 megs, (without C compiler and gui desktop). Also, I have never had much luck with the RedHat Package Manager, or RPM, and would like a better package management system, if possible.

SuSE Linux

My favorite distribution for the last two years. This distribution is very popular in Europe, and, as everything German, is very well engineered. It uses the RPM system, and has a very nice gui installer that also finds all of a computers hardware fairly accurately. (I did an FTP install on my Toshiba Satellite laptop, and didn't need to configure any additional hardware after the installation :)) The company stays very up-to-date with packages, and includes KDE 3.X as it's main desktop environment. (In my opinion, the most powerful and easy-to-use desktop environment.) SuSE also ships with the SuSE Firewall, and SuSE Firewall 2, which make it easy to create rules governing Virtual Private Networks and De-Militarized Zones, and the packets that route through the SuSE box.

Reason I didn't choose SuSE Linux: For all of my grand-standing on the SuSE distribution, there is a glaring flaw... They do not have ISO images available on any FTP sites. This means that you either need to buy the CD version from a store, (yuck!!), download the distribution from an available FTP site for every machine, or create a mirror of the FTP site on your servers... Because I only have a 56k connection at home, I prefer to work from CD, instead of waiting for 20+ hours for the files to be downloaded remotely.

Peanut and Vector Linux

In my search for a small distribution of Linux, I began to search through many of the interesting “minimalist” distributions that can be found in the lists of Linux Online. (You may not know this, but there are many Linux distributions that fit on a single floppy disk!) Of these choices, two distributions seemed to really catch my attention: Peanut Linux, and Vector Linux. Peanut Linux is a 210 meg download, and is designed to be a simple desktop system with an easy setup. This distribution seemed to be very popular, but it lacked one important element... A C compiler. This was definitely not a server distribution. After discovering this fact, I looked to an alternative that came up in the same articles, Vector Linux.

Vector Linux is a slackware-based mini-distribution. (Meaning that Slackware was used as a starting point, and then modified to become a completely separate distribution.) The installer is text-based, and easy to understand. I installed the distribution, without a gui desktop, in a whopping 260 megs of storage. This including a C compiler, SSH, (a more secure replacement for Telnet), and most of the tools that I would need to run a group of load-balanced web servers. I was impressed! (According to the reviews, the gui desktop was very easy to configure, meaning that this would be a great desktop distribution too.)

Reason I didn't choose either Peanut or Vector Linux: Peanut's lack of a C compiler killed it immediately. It seems that the software that would be available for this distribution would be precompiled software. This is not appropriate for a server environment. Vector Linux was a great distribution that would have met most of my needs... Except, it did not have the ability to do a network install. (The Compaqs only have a floppy, so I was planning to boot from a floppy disk, and then automate the installation, much like the JumpStart, (Sun Microsystems), or KickStart, (Red Hat) tools.)

Slackware Linux

Since we talked about a Slackware-based distribution in the previous section, I thought that I should take a leap into the dreaded world of Slackware Linux, the oldest and “most difficult” distribution with which to work. (This was the information that I had gleaned from countless reviews and Google Groups messages...) Was I surprised to find that I was wrong! The install was very easy. I chose the standard install for newbies, and was prompted for all of the information that was needed by the installation program. Very nice! It even prompted me for all of the optional packages during installation, so that I was able to fine-tune the installation to my needs. Very nice! (The final install was about 350 megs. Well within my target range.) I also had the option for a network install, so that I could boot the machines from a floppy, and then install from another network server.

Reason I didn't choose Slackware Linux: The reason that I didn't choose Slackware, was that I didn't know how popular the distribution still is... (After the major distributions, such as Red Hat, SuSE and Debian, have passed Slackware in popularity, I didn't know what the future might be. Would Slackware be around in five years? Ten?) Also, I had difficulties

with the installation of Lilo on the Master Boot Record, and ended up using a boot floppy instead. (This also happened with Vector Linux.) Finally, I was looking for a better package manager than I had been using, (RPM)... Slackware has a package manager, but limited dependency checking... Sorry, Slackware!!

FreeBSD

Next, we are going to step outside of our Linux distributions, and take a look at one of the open source versions of Unix. The difference between Linux and Unix can be simplified to the kernel of the operating system. (As a matter of fact, that is the main difference.) The Linux kernel was created by Linus Torvalds at the Computer Science department at the University of Helsinki, Finland, and was originally based on the academic-unix-based kernel, Minix. Therefore, any distribution that uses this kernel for their distribution is called Linux. The Unix kernel can be based on any variant of the original Bell Labs Unix. These can be commercial distributions, such as, Sun Solaris, SCO, or academic versions, such as, BSD, from the University of California at Berkeley. That is where FreeBSD comes into the picture.

Originally, the Berkeley Software Distribution, or BSD, was designed for large mainframes and “super computers”. But, as prices began to plummet on Intel x86 platforms in the late 1980's, and early 1990's, there became a growing need for a version of BSD that supported these platforms. To meet this demand, a man named Bill Jolitz ported a version for the intel architecture, based on the open-sourced BSD code. This was known as 386/BSD, and in 1993 two groups began to enhance and modify the existing port into one of the most stable open source operating systems available. One of these groups became known as FreeBSD.

FreeBSD is a popular version of Unix, that is designed to run on inexpensive hardware. This, obviously, caught my eye. The minimum requirements for the system: i386 or greater, 4 megs of RAM, and 100 megs of storage. Wow!!! The installation is text-based, but fairly straight-forward. (NOTE: version 4.5 had a hard time finding the PS/2 mouse when using a Belkin OmniView SE 4-port. When searching on the newsgroups, I found that this is a problem with lower-end KVM's and FreeBSD.) The minimal install, around 200 megs, (including C compiler, and various other necessities), was very nice. Also, the maturity of the product is reflected in the manner that the project is managed. The FreeBSD team views FreeBSD as a whole, and not as a kernel with third-party applications added, as does Linux, and the team is made up of multiple groups who must test every aspect of an enhancement to the operating system before adding it into the RELEASE, or stable, code-base. These groups act as auditors, and the stability of the end product is a testament to their dedication. Security fixes are also dealt with in the same manner. The security team is presented with a fix for a known security hole, they test it for several days to make sure that the new code won't break the old, and then they place it in the development tree for a time before incorporating it into the stable source tree. Though I have been a die-hard user of Linux for the past 3-4 years, I find this style of project management a plus. Also, I like the fact that it is possible to use a version of FreeBSD into perpetuity. (ie. It is still possible to install FreeBSD 2.2 – RELEASE on an old machine, and find current packages that work with it. (FreeBSD 2.2 – RELEASE was released in March 1997.))

Reason I didn't choose FreeBSD: Though I wanted to use FreeBSD on my old machines, I found that Macromedia ColdFusion Server did not support, and had no plans to support, a version for FreeBSD, though there is a version for Mac OS X which is based on the FreeBSD kernel. :((I want to work with these old machines to test various dynamic content servers, ColdFusion being one of them.)

Debian Linux

Or more appropriately Debian GNU/Linux, is one of the true open source Linux distributions. The development community, made up of over 900 developers, has created a "Social Contract" with the open source community to keep Debian 100% free, and will not add any component to the operating system that is not 100% free and open source. (All software that is useful to end-users, but does not open source its source code, can be used, but will not be officially added to a release of Debian.) They have also striven to have a stable, error-free linux distribution. To this end, the Debian Community does not contain all of the newest and best versions of third-party applications, or the kernel for that matter, but relies on versions that have been tried and tested.

The newest stable version, is 3.0 release 1, and the installation of the distribution can take a little trial and error to get correct. (ie. The partitioning and initialization of partitions took a while to understand.) Otherwise, the installation was fairly easy, and the minimal install was about 182 megs. (This included everything that I needed, except the web servers and the openssl library. After installing these, the total install was 190 megs. Not bad!!) The package management tool that I enjoy using is the "apt" tool. This tool is configured during installation, and can find application packages from multiple medias. (I've tested the CD-ROM and internet downloads, and have been very pleased with the results.) If you can't find a package on the main source sites listed in the /etc/apt/sources.list, you can search the main web site for the location, and add it to the sources.list file. Run apt-get update, and then apt-get install package, and the apt tool will find, download, and install the package and it's dependencies with no work for the user. (It's a great package manager!! I don't have much experience with the "ports" tools on FreeBSD, but I imagine, it must be very similar.) Debian also has an auto-install tool called Progeny. This tool will help me to reinstall the appropriate image to any new machines that I would like to add to the "web farm". Also, with a growing development team, I can be assured that Debian will be around for quite some time, and that my support needs can be met on the internet.

Reason I chose Debian Linux: I chose Debian GNU/Linux as my open source operating system, because it fit into my hardware needs. With a minimal installation of under 200 megs, Debian will allow my old Compaq machines to come to life, (with room for log files, and mail queues! :)) The package management tools will allow for easy upgrades, and make security fixes a breeze. Also, because it is a Linux distribution, I will be able to run Macromedia ColdFusion MX on these machines...

And there you have it!

In this article, I attempted to look at various distributions of open source operating systems. These included distributions of Linux, and FreeBSD, a popular open source version of Unix. Though it would have been unwieldy to explore each of these operating systems in depth, I made the attempt to qualify the evaluation process by creating a particular environment, and problem, that I was trying to solve with an open source operating system. By doing so, I was able choose 4-5 criteria for which I was evaluating, and able to hit these points in the descriptions. Though this may be a hypothetical situation, as used in this article, the situation is not at all unusual in the "real" world. I feel that it is important for any institution, commercial or state, to evaluate the economic ramifications of discarding "old", out-of-date systems, in order to maintain the technological edge for end-users. I am attempting to show that those systems do not need to go away, and that they can actually be brought back to life with thoughtful consideration to the operating system and applications that run on it. I hope you will continue with me next month, when we look at the installation and configuration of other open source projects, Apache, OpenSSL, PHP, on our Compaq

Deskpro 4000 computers.

See you then!!

Links

- Red Hat Linux www.redhat.com
- SuSE Linux www.suse.com
- Slackware Linux www.slackware.org
- Vector Linux www.vectorlinux.org
- Peanut Linux http://www.ibiblio.org/peanut/
- FreeBSD www.freebsd.org
- Debian GNU/Linux www.debian.org
- Linux Online www.linux.org
- The Linux Kernel Archives www.kernel.org
- Java JumpStart Edition http://www.sun.com/developers/tools/jumpstart.html
- Red Hat Kickstart http://jamesthornton.com/redhat/8.0/rhl-cg-en-8.0/ch-kickstart2.html
- Open Source Definition http://www.opensource.org/docs/definition_plain.html

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Short Courses

By Claudia Lynch, *Benchmarks Online* Editor

The Spring Short Courses are here! All the courses you've been waiting for, starting in February. Please consult the Short Courses page to see the course schedules and to register for the classes of your choice.

Customized Short Courses

Faculty members can request customized short courses from ACS, geared to their class needs. Other groups can request special courses also. Contact ACS for more information (ISB 119, 565-4068, lynch@unt.edu).

Especially for Faculty and Staff Members

In addition to the ACS Short Courses, which are available to students, faculty and staff, staff and faculty members can take courses offered through the Human Resources Department, the Center for Distributed Learning, and the UNT Libraries' Multimedia Development Lab. Additionally, the Center for Continuing Education and Conference Management offers a variety of courses to both UNT and the general community, usually for a small fee.

GroupWise Training

If would like to have a Basic GroupWise seminar for your area, please contact Jason Gutierrez, Campus Wide Networks, jasong@unt.edu .

ProDirections Instructor-led Training

UNT has formed a partnership with ProDirections to offer instructor-led computer training on Microsoft Word, Excel, PowerPoint, and Access. Classes are $99+$42 for the book. Classes in a series (3 classes in the same series) are $99 for each class and the book is free. The Excel Series includes Basic Excel, Advanced Excel-part 1, and Advanced Excel-part 2. The Access Series includes Basic Access, Intermediate
Access, and Advanced Access.

For a description of each class please go to http://www.prodirections.com/ and click on "Corporate Workshops"

Center for Distributed Learning

The Center for Distributed Learning offers courses especially for Faculty Members. A list of topics and further information can be found at http://www.unt.edu/cdl/training_events/index.htm The center also offers a "Brown Bag" series which meets for lunch the first Thursday of each month at

Noon in ISB 204. The purpose of this group is to bring faculty members together to share their experiences with distributed learning. One demonstration will be made at each meeting by a faculty member with experience in distributed learning. More information on these activities can be found at the Center for Distributed Learning Website.

Technical Training

Technical Training for campus network managers is available, from time to time, through the Campus-Wide Networks division of the Computing Center. Check the CWN site to see if and when they are offering any training.

UNT Mini-Courses

These are a variety of courses offered, for a fee, to UNT faculty, staff and students as well as the general public. For additional information surf over to http://www.pware.com/index.cfm .

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. For example, the College of Education recently acquired some Macromedia Tutorials for Dreamweaver 4.0, Flash 5.0 and Fireworks 4.0.

The Training Web site has all sorts of information about alternate forms of training. Training tapes, Computer Based Training (CBT) and Web-based training are some of the alternatives offered. Of particular interest are courses available via SmartForce (formerly CBT Systems). See http://www.unt.edu/smartforce/ for more information.

There are also handouts for computer training on the following topics:

- GroupWise 5.2 Handout for Win95/NT
- FAQ for GroupWise 5.2
- Computers - Back to the Basics
- Introduction to Windows 95 /98/NT
- Introduction to Word 97
- Advanced Word 97 - MailMerge It Together
- Introduction to PowerPoint 97 (Creating a Slide Show)
- Introduction to Remedy (THE Call-Tracking Program)
- AND, the award winning Introduction to Excel 97

Adobe Acrobat Reader Format only for the following:

- Introduction to Microsoft Word 2000
- Introduction to Microsoft Excel 2000
- Creating a Slide Show with PowerPoint 2000
- Using Netscape Communicator & the UNT Home Page

Use the Internet to search for answers to Microsoft Office problems. See http://www.zdnet.com/zdhelp/filters/office/ December 1999's "List of the Month" offers links to free Microsoft Word and Excel information also.

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Minutes provided by Sue Ellen Richey, Recording Secretary

IRC Regular and Ex-officio Voting Members: *Judith Adkison, College of Education; Donna Asher, Administrative Affairs; Craig Berry, School of Visual Arts; Lou Ann Bradley, Communications Planning Group; Cengiz Capan, College of Business and GALC; Bobby Carter, UNT Health Science Center; Matt Creel, Student Government Association; Christy Crutsinger, Faculty Senate; Jim Curry, Academic Administration; Don Grose, Libraries and University Planning Council; Joneel Harris, EIS Planning Group; Elizabeth Hinkle-Turner, Student Computing Planning Group; Tom Jacob, College of Arts and Sciences; Abraham John, Student Development; Jenny Jopling, Instruction Planning Group; Armin Mikler, Research Planning Group; Kenn Moffitt, Standards and Cooperation Program Group; Ramu Muthiah, School of Community Services; Jon Nelson, College of Music; Robert Nimocks, Director, Information Technology, UNTHSC; John Price, UNT System Center; Philip Turner, School of Library and Information Science and University Planning Council (Chair, IRC); VACANT, Graduate Student Council; VACANT, Staff Council; VACANT, University Planning Council; Virginia Wheeless, Chancellor, for Planning; Carolyn Whitlock, Finance and Business Affairs;* ***IRC Ex-officio Nonvoting Members:*** *Jim Curry, Microcomputer Maintenance and Classroom Support Services; Richard Harris, Computing Center and University Planning Council; Coy Hoggard, Computing Center/Administrative; Judy Hunter, GALMAC; Maurice Leatherbury, Computing Center/Academic; Doug Mains, UNT Health Science Center; Patrick Pluscht, Center for Distributed Learning; Sue Ellen Richey, Computing Center (Recording Secretary); Ken Sedgley, Telecommunications.*

There was no IRC meeting in December.

IRC Meeting Schedule

The IRC generally meets on the third Tuesday of each month, from 2-4 p.m., in the Administration Building Board Room. From time to time there are planned exceptions to this schedule. There was no meeting in December. All meetings of the IRC, its program groups, and other committees, are open to all faculty, staff, and students.

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Transitions

The following are new employees:

- **Patrick Dolan** - Information Security Intern, Information Security (team), CCA (part-time).
- **Cathy Gonzalez** - Computer Systems Manager, EIS Project, Admin Computing.
- **Kaiser, Peter Kaiser** - I/O Operator, Print Services, Production Services, MTS (part-time).

The following people no longer work in the Computing Center:

- **Spencer Metcalf** - I/O Operator, Print Services, Production Services, MTS (part-time).
- **Neda Salahi** - Lab Monitor, ACS General Access Lab, ACS (part-time).

Changes

The following people have moved from the UNT campus to the UNT Research Park. They are all on the EIS Project Team:

- BLEAKLY, B. K.
- BROTHERS, John
- DUCHEMIN, Eric
- HANSEN, Tracy
- HOLMES, Rhonda
- HOOPER, John
- JONES, Robert
- KENNY, Jerry
- KHAN, Mohammed
- LINKE, Luanne
- MALLOT, Teresa
- MUKHERJEE, Dave

- NOVAK, Andy
- OLERU, Basil
- OTAKPOR, Tony
- SKORIC, Alana
- WALKER-BROOKS, Vicky
- WOEFEL, Bob

Awards, Recognition, Publications

The following people were recognized in the January 10 issue of *Inhouse* for their years of service to UNT:

- **Robert Jones,** Programmer/Analyst EIS Project - 15 years of service.
- **Dan Strange**, Programmer/Analyst UNT/HSC Fiscal Data Systems - 15 years of service.
- **Chris Cofer**, UNIX System Administrator, UNIX/VMS Systems - 5 years of service.
- **Daren Dugan**, Netware 4.1/NDS Support, Network Operating Systems - 5 years of service.
- **Carl Shirley**, Programmer, Student Records Data Systems- 5 years of service.

The following people have been nominated as Soaring Eagles and will receive their award at the President's Staff Sack Lunch on February 25:

- **Cristin McClure** and **Tammy Sprabary**, Campus Operators were recognized for the outstanding job they do communicating with callers.
- **Bob Saringer**, CATV/Communications Technician, Telecommunications, saved the day by delivering equipment to the Coliseum for a project at the last minute.
- **Larry Vick**, Technician, Telecommunications, seems to be always helping someone. He was recently spotted helping a woman change a tire.

Last month we noted the publication of a chapter from the book *Crossing the Line: Women Composers and Music Technology, volume one - United States* by Student Computing Services Manager **Elizabeth Hinkle-Turner**. This month, we are happy to tell you about another of her "publications," a new son. Vital Statistics are as follows:

- Name: Jacob Theodore (JT) Turner
- Born: January 3, 2002, 2:15 a.m.
- Weight: 7 pounds, 7 ounces
- Length: 19 inches

J.T. was welcomed home by brother Jerry and father Ted, as well as several protective feline members of the Turner household.

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Research UNIX Host Upgraded

By Dr. Philip Baczewski, Associate Director of Academic Computing

Sol.acs.unt.edu is a multi-user UNIX host reserved for faculty and graduate student research. The original Sol was a Solbourne Sun-compatible server which was the first large-scale UNIX system supported on the UNT campus.

That Solbourne hardware was replaced in 1997 with a Sun E5000 server. Sol is now in its third incarnation after its operation was transferred to a new server platform at the beginning of the SPRING semester.

Sol has been upgraded from version 2.6 to version 8 (2.8) of the Solaris operating system and is now running on a Sun E3500 server. The E3500 runs at the same processor speed as the "old" Sol, but has a faster internal disk I/O subsystem. You should notice little or no changes other than those listed here:

- pico is no longer available, however, the pico command still works and invokes the "joe" editor with pico emulation and most control-key commands will work as they did in pico;
- those using IMSL will need to replace the source line in their .cshrc file (if any) to read, "source /usr/local/vni/CTT4.0/ctt/bin/cttsetup.csh";
- those using IMSL should remove any "setenv LM_LICENSE_FILE" command from their .cshrc (this is now set in the cttsetup file);
- those accessing CRSP via FORTRAN programs will need to use the new version of the crspfort script: "/export/data/CRSP/CRSPAccess2.5.1/unt/crspfort".

Getting an account on Sol

Faculty and graduate students may request Sol access by logging into the UNT Account Management page (http://people.unt.edu/manage) and selecting "Request a Sol Account" under "Misc Functions." Students will need to designate a faculty sponsor who can endorse their access.

Questions?

If you have questions or comments about the new Sol environment, contact Dr. Philip Baczewski (baczewski@unt.edu), Associate Director of Academic Computing.

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Spam Filtering for GroupWise

By Claudia Lynch, Benchmarks Online Editor

Bulk E-mail or Unsolicited Commercial E-mail (UCE) - Spam by another name - has rapidly increased in past months according to Jason Myre, Campus Wide Networks Messaging Support Manager. Because of this, the Campus Wide Networks Computing Team is now providing bulk E-mail filtering to help you manage this type of mail better. According to Myre, E-mail that is likely unsolicited now includes the word "BULK:" before the subject of the message.

How is this possible?

The Campus Wide Networks folks are using a program called SpamAssassin to determine if E-mail is UCE (i.e. Spam). Don't worry, no E-mail originating from a *.unt.edu address will be marked as UCE.

There's a rule for that!

If you want to decrease the amount of E-mail coming into your GroupWise mailbox, you can create GroupWise rules to move tagged E-mail to a folder for later browsing, reading, or deleting. If you are interested in filtering bulk E-mail, just follow the instructions provided at:
http://cwn.unt.edu/cwn/rules/spam_rule.html

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* We have been writing about Spam in *Benchmarks Online* and the now defunct *Benchmarks NewsJournal* for years. Literally. In a November 2000, Network Connection article, Dr. Philip Baczewski noted that "in the early, almost prehistoric Internet days -- around 10-12 years ago -- a term was coined for E-mail sent unsolicited or to an inappropriate forum. The common name is Spam, I guess because such E-mail is unwanted and possibly unpalatable." One of Dr. Baczewski's latest missives on the topic can be found in this Network Connection article, "A New World of Spam."

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Website and Online Application Myths at UNT

By Kenn Moffitt, Director of University Online Communications, UNT Communications and Marketing

November 2002 marked my ten-year anniversary here at UNT. There are some things about working at UNT that I totally get. Like it is a shorter wait to receive a human heart or to go into space than it is to get a reserved parking space. Like unsolicited advice from a UNT member outside of a department is sometimes as welcome as Christina Aguilera at a Brittany Spears look-a-like contest. Like UNT has the population of a small city and sometimes the interdepartmental communication of tin cans on a string. I understand those things ...

I remember the great E-mail war of 1994. “You stop sending unsolicited stuff to everyone in the E-mail list”, “No, you stop sending E-mail to everyone in the E-mail list” . . . All of these rebuffs were replies sent to everyone in the E-mail group and not just to the offending senders, which caused a flurry of E-mails every couple of minutes one fine afternoon. Things like this happen from time to time, human nature being what it is . . .

In the beginning

I understand how the Web presence evolved at UNT. The Mosaic browser hit campus. Some areas got the importance of the Web right away and some took a while. There wasn’t a lot of support back then when the Internet was used primarily by researchers and “Trekkies” and so you had to “roll your own” solution if you wanted to jump on this new Web bandwagon.

Way back then, not only did we have to teach ourselves HTML and Web server administration, often in between the duties that we were already performing or on our own time, but we also had to try and convince our superiors about the importance of the Web. How the Web was not just another toy or fad that would have all of the productivity of “FreeCell” and “Minesweeper” on a work computer.

Each Web developer was an island. No matter where our strengths actually lied, we each had to be a communicator, writer, artist, information architect, programmer, marketer and project manager. To make the Web presence happen for our departments.

Now

Flash forward to now. Everyone gets it. Web self-service applications are a given for students. We have a great Web Support department that is constantly

upgrading the tools and providing classes to help new Web developers. Our bosses sometimes have to be convinced NOT to put something on the Web. Our new EIS System and portals will be Web based. A large number of students are involved in online learning. All of these advancements while we as Web developers often are still doing things the old ways. This I don't totally understand.

We are locked in our cubicles, creating our own independent Websites in a vacuum without thinking about being part of a greater whole. Every Website and application at UNT is a part of the University Web presence and we developers should be part of a larger Web developer community here at UNT. Our Web users at UNT don't care if they are on a particular department's Website and new UNT Web users don't necessarily understand which department is responsible for which Website anyway. To the Web users at UNT all of the various sites are the entire Web presence and are all the UNT Website. I see this repeatedly when students send E-mail to me from the main UNT site complaining about other sites that I have no connection to (believe me, I also get plenty of complaints about sites I am responsible for).

Myths -vs- Reality

So as the Web has grown up over the years, maybe it is time that we in the UNT Web developer community address some of our own growing pains. We are now expected by students, faculty and staff to be "Web professionals" and not "hobbyists". Maybe now is the time that we should get rid of some of the old, self-taught habits that keep from fully serving the UNT Web community. The following lists a few of the misunderstandings or myths that are still prevalent at UNT:

- **MYTH: The Web policy and Web publishing guidelines do not apply to all Websites and services at UNT.**
- **Reality:** The UNT Web Publishing Policy and Guidelines are rules that UNT Websites and online applications have to follow at UNT. They are common sense, accepted Web practices (though they do make "sense", you would be surprised that they are not always "common" among UNT Web developers). These contain rules such as: a prominent link back to UNT must appear on every main Web page or destination; contact information should be displayed so that the Web audience can communicate comments or problems with the Website owner; and that metatags must be used on every main entry site to ensure that the site can be located when using UNT or external search engines. State law requires some of the rules and guidelines such as metatags.

- **MYTH:** The UNT wordmark is just a design element and really does not serve any real purpose or add anything except aesthetic value to UNT Web pages.
- **Reality:** The UNT wordmark has been required on main UNT Websites since 1997. The wordmark is UNT's logo and is therefore the only visual cue that confirms that a Web user is visiting an official UNT Website. The wordmark is especially valuable because every UNT Website looks completely different. Usability experts such as Jakob Nielson report that Web users expect to find a logo or wordmark throughout the entire site and that the wordmark or logo is expected to be a link back to the

company or entities homepage. Don't agree with me? Check out any professional, corporate Website and look for the logos and the design consistencies between departments and areas.

- **MYTH: My site or Web service stands alone.**
- **Reality:** ANY Website or application that a user accesses from the UNT home page or that is considered as official information is a part of the UNT Web presence. A student or community member does not make distinctions between departmental Websites and Web applications that they navigate to. All Websites and applications are viewed as part of the UNT entity and have the potential to affect user's views about UNT as a whole. Creating, publishing or removing a single Website can affect other departments. If you create a new Website, it must be linked from other pages and sometimes other departments in order to be found. The new Website must also contain accurate titles, metatags, and text keywords in order for users to find the site using UNT and external search engines. If you remove or relocate a Website, you should do a search to see if other departments at UNT are linking to your Website and contact those departments about the change.

- **MYTH: A Website must be unattractive and under-designed visually to be accessible to persons with disabilities**
- **Reality:** Text and links are the meat and potatoes of the Web. While you don't want to sacrifice accessibility compliance for artistic design, you also shouldn't have to sacrifice Web design to add accessibility. A Website can have both. Logical and easy access for all and attractive and contemporary design for the non-disabled audience. There is even some evidence that huge blocks of text and links without design practices can adversely affect people with cognitive learning disabilities or dyslexia. Good design can divide these walls of text and lists of links into more manageable sections and provide focus and priority to a page full of competing information.

- **MYTH: People with disabilities are a very small minority of the people that use the UNT Website and these people probably don't use the Web very much**
- **Reality:** Many people think of Web accessibility as adding features to existing Websites in case someone with disabilities chooses to visit. In some cases, a Website or application is better suited to people with disabilities. If a person who is blind or site impaired could perform real-world functions from the safety and comfort of their own home instead of finding a way to campus and navigating to a building and department, don't you think that the Web would be the preferred way of performing the function or accessing information?

- **MYTH: Most Websites have counters and so I should add a counter to my site to appear more professional**.
- **Reality:** Okay this is more of a petty annoyance of mine than anything else, but I can't resist. Counters are primarily used on small, private Websites and are used as a marketing tool to show visitors how popular the site is. Most, if not all, counter programs can be set to start counting at a higher number than zero. So if you use a counter to show off your site popularity, why not start the counter at 1,000 or one million instead of zero to impress your audience? However, if you are using the counter to

try and accumulate accurate information about how many times that your site was visited, then your Web administrator should be able to provide you with more useful statistics. A Web counter can only tell you how many times the page was visited but comprehensive Web statistics from server log files can also show you how many visits your site has received, by which audiences, coming from which URLs, and using which browsers and versions. If you visit the Nielsen//NetRatings list of the top 25 net properties you can visit the top sites and you will see the absence of counters.

- **MYTH: I use FrontPage or Dreamweaver to create my Web pages so I really don't have to learn HTML.**
- **Reality:** FrontPage, Dreamweaver and other Web WYSIWYG packages write HTML markup for you. But, if the applications mess up the page or produce HTML that has an undesired effect, it is important to know how to go into the markup and edit the code. These Web editors only write HTML that is based on the current version of HTML supported when the packages came out. FrontPage 2000 does not include wizards and dialogues to insert accessibility features that have become more prominent in the Web development field. If you want to add accessibility features, you will have to make small edits to the HTML that FrontPage produces and for that you need at least some understanding of HTML.

Questions?

I hope this helps clear up any misunderstandings that you may have had with regard to Web pages at the University of North Texas. Feel free to contact me if you have any questions/comments about any of this: moffitt@unt.edu

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Coming Soon to a Convention Center Near You!

By Claudia Lynch, Benchmarks Online Editor

The 2003 EDUCAUSE Southwest Regional Conference (formerly EduTex) is coming to Dallas February 19-21, 2003. This year's theme is "IT in Higher Education: Mobilizing the Mission." By attending this conference you can find new ways to learn, share ideas, and connect with others in your field and from your region. If you register by January 22 and reserve your room by January 28 you will save money.

- You can register at: http://www.educause.edu/meeting/registration.asp?meeting=SWRC03
- Explore the conference program: http://www.educause.edu/conference/swrc/2003/program.asp Make sure and check out the "how-to" sessions. They offer valuable, region-specific information on topics ranging from faculty training and wireless technologies to portals and enterprise security. You can also take a deeper look at security and wireless networks at the half-day pre-conference seminars held on February 19.
- For information on other EDUCAUSE learning and networking opportunities, see http://www.educause.edu/conference/
- For a look at some of the topics covered at last year's conference see: http://www.unt.edu/benchmarks/archives/2002/april02/edutex.htm

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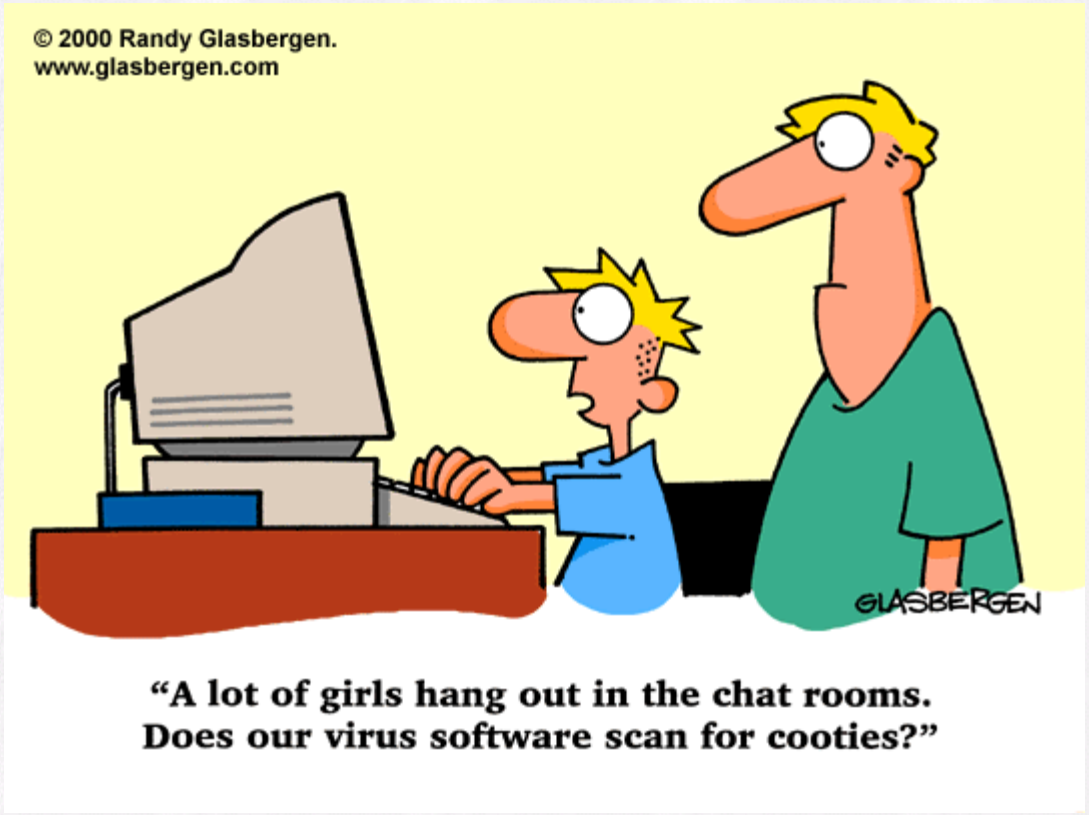

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