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- **160 Processors**
- **400 Gigabytes of RAM**
- **20 Terabytes of disk storage**
- **34 Years of processor time** used last academic year (05-06)

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Benchmarks Online Recognized by ACUTA as an Effective Online Newsletter

By Claudia Lynch, *Benchmarks Online* Editor

ACUTA, The Association for Communications Technology Professionals in Higher Education, has recognized *Benchmarks Online* as a particularly effective online newsletter, communicating technical information in a timely, accessible manner. A link to *Benchmarks Online* and the results of the web site recognition program is featured on the ACUTA homepage. The University of North Texas will be recognized for this achievement in the July issue of ACUTA e-News and at ACUTA's Annual Conference in Hollywood, Florida, July 29 – August 2, 2007.

Addressing voice, data and video communications needs for higher education, ACUTA – The Association for Communications Technology Professionals in Higher Education - serves nearly 800 institutions of higher education and 2,000 communications technology professionals from across the United States and Canada as well as Australia and New Zealand. ACUTA holds three national seminars and one conference annually to provide educational sessions and promote networking among campus communications technology professionals.

Benchmarks Online, an ACUTA Member Site to See!

Originally published, June 2007 -- Please note that information published in *Benchmarks Online* is likely to degrade over time, especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also search *Benchmarks Online* - http://www.unt.edu/benchmarks/archives/back.htm as well as consult the UNT Helpdesk - http://www.unt.edu/helpdesk/ Questions and comments should be directed to benchmarks@unt.edu

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Benchmarks Online

Campus Computing News

Microcomputer Maintenance and Classroom Support Services Join CITC

By Claudia Lynch, *Benchmarks Online* **Editor**

Interim Provost Gary S. Krahenbuhl announced on May 21 that he had taken action to "implement the reallocation of resources called for by the Fiscal Year 2007-08 spending plan adopted by the university administration and then approved by the UNT System Board of Regents at their February 9th quarterly meeting." Part of the outcome of Krahenbuhl's action was that the Microcomputer Maintenance Shop and Classroom Support Services began reporting to the Associate Vice President for Computing, Dr. Maurice Leatherbury.

A website, Answers to Questions about the Changes in the Microcomputer Maintenance Shop and Classroom Support Services, has been set up to address questions and concerns that may arise as a result of this change. Included in the website is a list of dates for various changes and contact information for further inquiries. See also, New computer purchasing procedures for UNT.

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Summer Hours

By Claudia Lynch, *Benchmarks Online* Editor

The spring semester has ended and SUM , 3WK1, 8WK1 classes* began on Monday, May 14. Following are the hours for Computing and Information Technology Center-managed facilities during this time period and, in some cases, the summer. The Helpdesk plans, at this point, to be open their normal hours. The University is officially closed for Memorial Day, May 28 and Independence Day, July 4.

Following are the hours for Computing and Information Technology Center-managed facilities during the break. See *Summer hours now in effect for many campus services* for information about altered hours for other campus facilities.

The **ACS General Access/Adaptive Lab** (ISB 110):

May 14 - June 3:

Monday - Thursday: 8 a.m. - 10 p.m.
Friday: 8 a.m. - 9 p.m.
Saturday - Sunday: CLOSED

Monday, May 28 (Memorial Day): 9 a.m. - 5 p.m.

June 4 - August 10:

Sunday: 1 p.m. - 10 p.m.
Monday-Friday: 8 a.m. - 10 p.m.
Saturday: 10 a.m. - 9 p.m.

Hours for Other Campus Facilities

General Access Labs

WILLIS:

Retain 24 hour schedule *except*:

May 13-31**:**

Monday -Thursday: 7:30 a.m. - 9:50 p.m.
Friday: 7:30 a.m. - 8:50 p.m.
Saturday: 9 a.m. - 8:50 p.m.
Sunday: 1 p.m. - 9:50 p.m.

June 1-3**:**

Friday, June 1: **Closed**
Saturday, June 2: 9 a.m. - 5:50 p.m.
Sunday, June 3: 1 p.m. - Resume 24 hour schedule

July 3-5:

Tuesday, July 3: Close at 9:50 p.m.
Wednesday, July 4: **Closed**
Thursday, July 5: 7:30 a.m. - Resume 24 hour schedule

SLIS:

Sunday: Noon - Midnight
Monday - Thursday: 10 a.m. - 2 a.m.
Friday & Saturday: 8 a.m. - 10:00 p.m.

MUSIC:

3WK1 (May 14-June 1):

Monday - Thursday: 8 a.m. - 5 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday: **Closed**
Sunday: **Closed**

5WK1 & 5WK2 (June 4 - August 10):

Monday - Thursday: 8 a.m. - 9 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday: 10 a.m. - 5 p.m.
Sunday: 1 p.m. - 8 p.m.

PACS Computing Center (formerly SCS & SMHM):

May 14 - Aug 10:

Monday - Thursday: 8 a.m. - 10 p.m.
Friday - Saturday: 8 a.m. - 5 p.m.
Sunday: Noon - 10 p.m.

SOVA:

May Hours:

Monday-Thursday: 8 a.m.- 8 p.m.
Friday: 8 a.m. - 5 p. m.
Saturday: Noon - 5 p.m.
Sunday: Noon - 8 pm.

June 4 - August 10:

Monday-Thursday: 8 a.m.- 10 p.m.
Friday: 8 a.m. - 5 p. m.
Saturday: 10 a.m. - 5 p.m.
Sunday: Noon - 8 pm.

COE:

May 14 - Aug 10:

Monday- Thursday: 7 a.m. - Midnight
Friday: 7 a.m. - 5 p.m.
Saturday: Noon-8 p.m.
Sunday: **Closed**

[COBA](#):

May 14 - Aug 10:

Monday - Thursday: 8 a.m. - 7:50 p.m.
Friday - Saturday: 8 a.m. - 7:50 p.m.
Sunday: Noon - 7:50 p.m.

[CAS](#)**:**

3WK1 - May 14-June 1:

GAB 330
Monday-Thursday: 8 a.m. - 10 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday: Noon - 8 p.m.
Sunday: Noon - 10 p.m.

Monday, May 28 (Memorial Day): **Open**
Friday June 1: **Close** 5 p.m.

GAB 550 : **Closed**

Terrill Hall 220 : **Closed**

Wooten Hall 120:
Monday-Thursday: 8 a.m. - 6 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday, Sunday: **Closed**

Monday, May 28 (Memorial Day): **Closed**
Friday, June 1: **Close** 5 p.m.

5WK1 & 5WK2 (June 4 - August 10):

GAB 330:
Monday-Thursday: 8 a.m. - Midnight
Friday: 8 a.m. - 5 p.m.
Saturday: Noon - 8 p.m.
Sunday: Noon - Midnight
Wednesday, July 4 (Independence Day): **Open**
Friday August 10: **Close** 5 p.m.

GAB 550: **Closed**

Terrill Hall 220:
Monday-Thursday: 8 a.m. - 8 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday, Sunday: **Closed**

Wednesday, July 4 (Independence Day): **Closed**<

Friday August 10: **Close** 5 p.m.

Wooten Hall 120:
Monday-Thursday: 8 a.m. - 10 p.m.
Friday: 8 a.m. - 5 p.m.
Saturday, Sunday: **Closed**

Wednesday, July 4 (Independence Day): **Closed**
Friday August 10: **Close** 5 p.m.

UNT Dallas Campus - 155A	Monday - Thursday: 7 a.m. - 10 p.m. Friday: 7 a.m. - 6 p.m. Saturday: 8 a.m. - 5 p.m. Sunday: **Closed**
Engineering General Access Lab (englab@unt.edu, Research Park, B129, 891-6733):	Monday, May 14 - Sunday, June 3: **Closed** **Beginning Monday, June 4**: Monday- Friday: 9 a.m. - 6 p.m.

* Terminology and schedules for classes offered in the summer has changed in recent years:

SUMmer=Entire Summer Session, 3WK1 = 3-week 1, 8WK1=8-week 1, 5WK1= 5-week 1, 10WK1= 10-week, 5WK2= 5-week 2. All summer sessions end on August 10 this year.

- Summer Session 3W1**:** formerly May Minimester
- Summer Session 5W1: formerly Summer I
- Summer Session 5W2: formerly Summer II.

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Bits and Bytes

By **Claudia Lynch**, *Benchmarks Online* Editor

Every once and awhile we have items that don't quite add up to a full-blown article, but we feel are noteworthy nonetheless. Those listed below fall into that category:

- Since summer is the time for all sorts of orientations -- Freshman, Transfer, TAMS -- Dr. Baczewski decided it was time to update the Back-to-school computer buying tips for a new generation of students and their parents. Check them out!

- Data Management Services has some new NCS Processing Request Forms available now. They are forms NCS 106173 (self-score) and NCS 4521 (w/name field).

- Apple IIs were first shipped to customers in June of 1977! As the folks at *eWEEK* note, "June 4 marks the 30th anniversary of the release of the Apple II, one of the 1977 trinity (also including the TRS-80 and the Commodore PET) that started the PC revolution. In honor of this auspicious event, eWEEK staff got together to recount their first—and current—PC experiences." They did this by creating a "PC March Through Time" slide show.

  For a *real* trip down memory lane, check this out.

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SSH Key Authentication[*]

By Howard Draper, Computer Support Specialist, Information Security.

If you're reading this article, you probably use SSH (Secure Shell). If you don't know what SSH is, or you want to know more about it, go to SSH or type "man ssh" on a Linux/Unix environment. Typical implementations of SSH use a username and password to authenticate users. This method has considerable drawbacks:

- Any password can be guessed over time

- Most people don't watch their secure.log for failed login attempts

- By default, the root account may be remotely logged into via SSH, leaving the system completely vulnerable if someone is able to brute-force the login credentials

If you run SSH on the standard port 22/tcp, and it's listening on our public UNT network, and password authentication is enabled, then malicious users outside the UNT domain are attempting to log in. By trying every possible character combination (and especially common ones), they **will** succeed eventually.

So what are SSH keys?

SSH keys are a pair of cryptographic keys used to authenticate users instead of (or in addition to) a username/password. One key is private and goes on your source device in the ~/.ssh directory, and the public key goes in the destination device's ~/.ssh/authorized_hosts file.

How long does it take to generate SSH keys?

Seconds-- although RSA takes slightly longer than DSA. See this for an actual RSA vs DSA benchmark.

So do I use RSA or DSA?

RSA has undergone more public cryptanalytic scrutiny, and is tried and true. DSA is based off a different encryption algorithms (privately developed by the NSA), and can sign faster, but verifies slower. Keep in mind this means 300 milliseconds of difference. RSA can be used to encrypt or sign. DSA is only intended for signing.

What are the commands to create and implement SSH keys?

For this instruction set, I'll use RSA for simplicity. To use DSA instead, simply specify "-t DSA" when you use ssh-keygen.

First, type the ssh-keygen command to generate your ssh-key pair.

```
# ssh-keygen -t rsa

Generating public/private rsa key pair.
```

At this prompt, hit enter unless you want to specify a custom name.

```
Enter file in which to save the key
(/Users/exampleuser/.ssh/id_rsa):
```

Now you'll be twice asked to create a passphrase. If you don't use one, you can SSH to another machine without having to type anything. However, if anyone else ever has your private key, or a copy of it, they'll have all the same connectivity privileges that you do. For this reason, we recommend that you use a passphrase, and you can use ssh-agent if you wish to only type your password once per day. If you are a system administrator and want to use blank passphrases for easy automated connections, you can bind certain commands directly to the SSH keys to limit privileges of those auto connecting accounts.

```
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
```

After this, you're done with creating the keypair. Now all that's left is copying the *.pub key to your remote (destination) computer.

The following command will securely transmit the key to the destination host.

```
# scp id_rsa.pub username@system-
name.or.ip.address.edu:/home/username/.ssh
```

Now SSH into that remote machine, and move into the .ssh directory.

If you don't see a file called "authorized_hosts", then create it and move the *.pub key into it with the following command.

```
# cat id_rsa.pub > authorized hosts
```

If the file already exists and may contain other keys already, then type this to append your key to the existing contents.

```
# cat id_rsa.pub >> authorized_hosts
```

You may need to chmod 700 the destination's ~/.ssh directory and chmod 600 the actual authorized_keys file. These permissions requirements may vary depending on your UNIX/LINUX variant.

Now you should be able to ssh from your source to destination computer without

having to use a password. At this point, to completely thwart brute-force login attacks, you can edit your destination host's /etc/sshd_config file to disallow password authentication.

BE CAREFUL DOING THIS REMOTELY; CONSOLE ACCESS IS RECOMMENDED. BACK UP THE ORIGINAL SSHD_CONFIG FILE FIRST.

```
#PasswordAuthentication yes
 PasswordAuthentication no
```

To troubleshoot problems with SSH key connections, you can try the verbose switch with SSH.

```
# ssh -v desination.IP.some.where
```

[*] From the [UNT Info Security Wiki](http://www.unt.edu).

CORRECTION (1/2011) -- *In the interest of avoiding misinformation on this topic, the following corrections are offered to the above article.*

The following command will securely transmit the key to the destination host.

scp id_rsa.pub username@system-name.or.ip.address.edu:/home/username/.ssh/id_rsa.pub.remoteconnect

Now SSH into that remote machine, and move into the .ssh directory. If you don't see a file called "authorized_keys", then create it and move the *.pub key into it with the following command.

cat id_rsa.pub.remoteconnect > authorized_keys

If the file already exists and may contain other keys already, then type this to append your key to the existing contents.

cat id_rsa.pub.remoteconnect >> authorized_keys

Benchmarks Online

InHouse Series on Information Security

By **Claudia Lynch**, *Benchmarks Online* Editor

*I*nHouse, UNT's faculty/staff online newsletter, has been running a series of articles on information security. The latest article is What's confidential? What's not?. Also, check out the Managing spam Fun Fact.

Previous articles in the series are:

- Everyone is responsible for preventing security breaches

- Three tips to help prevent internet attacks and data theft

- Successful pilot Defensive Computing course may become mandatory training for all employees
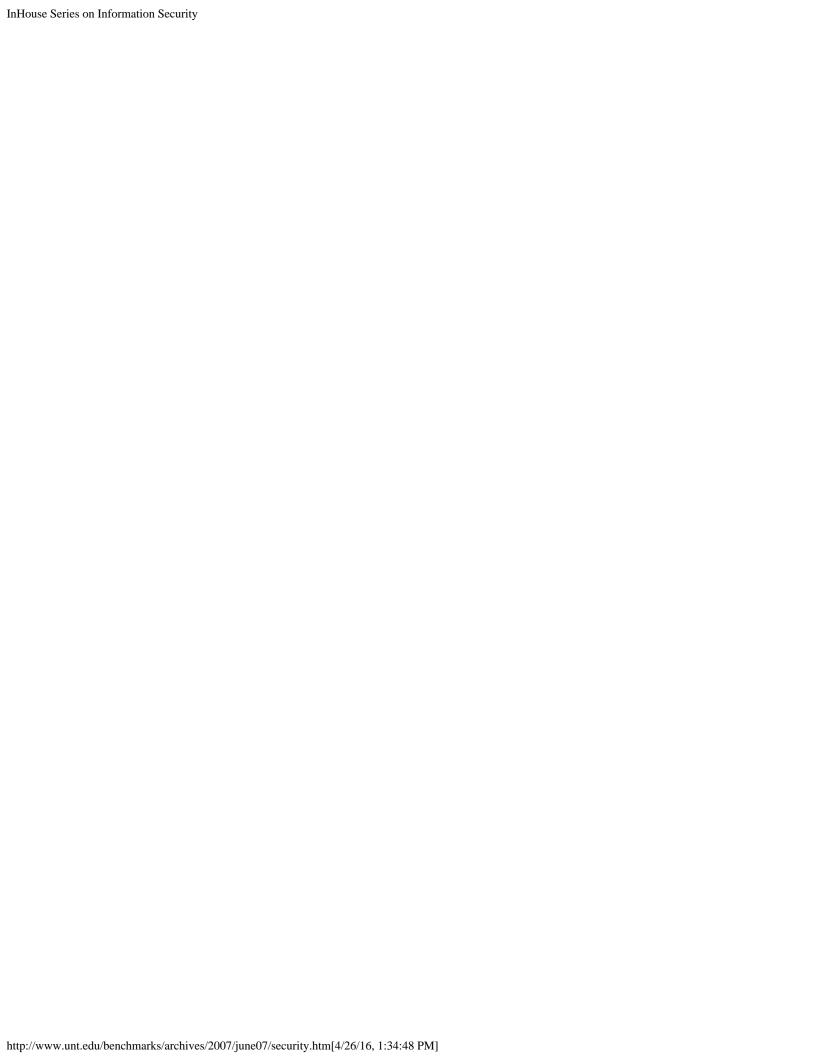
- Handling unsolicited e-mails

Additionally, *InHouse* has been looking for data protection anecdotes. See Tell us how you protect data? for more information.

Charlotte Russell, CITC Director of Administration and Compliance and Dr. Maurice Leatherbury, Associate Vice President for Computing and UNT's Chief Technology Officer, were interviewed for some of the articles. Jason Gutierrez, Network Computing Services, and Richard Anderson, Information Security Coordinator, have also been interviewed.

The Information Security website is listed as a valuable resource for keeping up-to-date on various information security issues and practices. Check *InHouse* frequently for more articles in this series.

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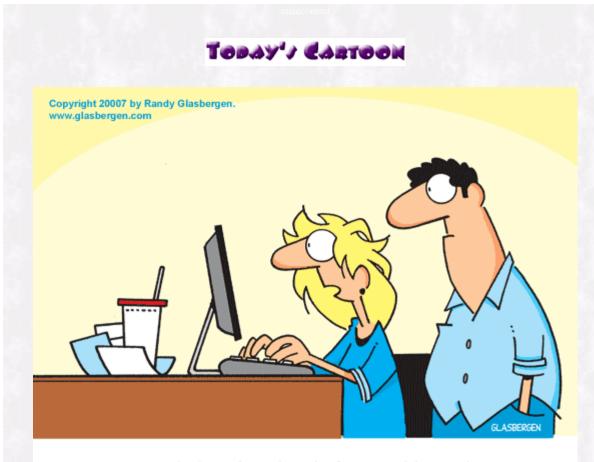 The Network Connection

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Benchmarks online

Don't Forget Our Monthly Columns!

By Claudia Lynch, *Benchmarks Online* Editor

In addition to our feature articles, *Benchmarks Online* publishes monthly columns that are focused on specific aspects of computing here at UNT (and beyond, in some cases). Check out what is waiting for you this month:

- **By the Numbers** - Not really a column, but a new feature, giving you a glimpse behind the scenes of the volumes of data, spam, etc. processed, managed, and otherwise handled here at UNT.

- **RSS Matters** - "RSS Matters" is the monthly column written by the Research and Statistical Support Group in Academic Computing Services. Their articles focus on topics of a statistical and/or research methods nature. **This month, Dr. Rich Herrington talks about "R Techniques: Summarizing Data By Grouping Variables."**

- **The Network Connection** - "The Network Connection" may well be the longest running column in computer publishing history. Certainly in University of North Texas computer publishing history.

  This month, Dr. Baczewski helps you to avoid E-mail bankruptcy in "Keeping Your Head Above the E-mail Waters." Read all about it!

- **Link of the Month** - As it says on the top of the "Link of the Month" page, "each month we highlight an Internet, USENET Special Interest Group (SIG), or similar mailing list(s) or Website(s)." Lately we have been confining ourselves to featuring UNT specific sites. **Just in time for orientation, this month's link is "A Tour of Student Computing Services at UNT." Click on the link above and check it out.**

- **Helpdesk FYI** - A new monthly feature from the CITC Helpdesk. Each month they will tackle a topic that has been of particular interest to callers/visitors to the Helpdesk. **This month Jonathan "Mac" Edwards clues you in on some "Keyboard Shortcuts." Check them out!**

- **Short Courses** - Every semester, Academic Computing Services (ACS) offers short courses on computer-related topics, many of them having to do with statistical research. This column keeps you up-to-date on what is being offered and when as well as other training opportunities.

  ACS is offering a series of Statistical Package/Research Courses this summer. Surf over to the Short Courses page to register. All the classes will be held in June. If you have a

group that needs a specific class at a later date, it may be possible to arrange a special class. Click on the link above for more information.

- **IRC News** - As their Webpage says, "the IRC is an advisory and oversight body created to foster communication and cooperation between and among UNT information resources providers and users." We publish the minutes of the IRC meetings each month, when they are available. **No minutes were available for publication this month.**

- **Staff Activities** - This column focuses on new employees, people who are no longer employed at the Computing and Information Technology Center, awards and recognitions and other items of interest featured here.

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Network Connection

By **Dr. Philip Baczewski**, Director of Academic Computing and User Services

Keeping Your Head Above the E-mail Waters*

A recent Washington Post story appearing in the Dallas Morning news, highlighted the concept of "e-mail bankruptcy" as some people's solution to an overwhelming amount of e-mail in their inbox. E-mail bankruptcy is when you just erase everything in your inbox and start over. You no longer owe anybody a reply and you start with a fresh slate. The question is, how long until you are again facing e-mail bankruptcy? As one who relies on e-mail on a daily basis, I can understand how overwhelming it can be to face a list of unread messages, however, the best strategy with e-mail, as with finances, is to manage your activity so that you don't get to the point where bankruptcy is your only option.

While it may be possible to survive in the modern world without e-mail, it's become expected that everyone has an e-mail address and that they'll answer your e-mail as soon as they get it. The reality is that expectations should vary depending upon the circles of relationship associated with a particular e-mail message. I expect to get a reply from someone else in my office. I don't necessarily expect to get a reply from any number of public figures who may have made themselves accessible via e-mail. Likewise, I am more likely to immediately answer someone who is in a close circle of association, such as an officemate or professional colleague.

I have to admit that there have been times when I've grown bored or just not kept up with mailing list traffic. In these cases, I've either "cleared the account" and started reading the current threads, or unsubscribed and gone my merry way. The nice thing about mailing lists is that a response is not expected (that's less for you to owe, e-mail-wise.) The way I've been able to deal with those messages is by segregating them from my other e-mail messages.

With these ideas in mind and a bit of organization, it's possible to keep e-mail from overwhelming your life and I offer these tips that may help anyone who may be feeling the weight of a large inbox.

- **You don't have to read or answer every e-mail.** I think it's polite to answer or at least acknowledge communication from others, but I prioritize my responses. If the e-mail comes from someone with which I have an established professional relationship, I will always try to respond in an appropriate time frame (my personal standard is within a day.) However, if I receive an e-mail with a subject heading that does not interest me and from a source I don't recognize, I'm likely to delete it without a response (and if I can tell it's spam, I'll delete it without opening it.)

- **A little organization will go a long way.** Use your e-mail filter rules to automatically put mailing list subscription messages and such into their own folder. This allows you

to browse such messages and read only the ones which are of interest to you. Most e-mail systems now attempt to identify spam and allow you to use your filter rules to place them in a special folder for browsing (to catch any false positives) and deletion so they don't clutter your inbox.

- **Don't oversubscribe yourself.** Back when e-mail and Listserv mailing lists were a new phenomenon, it was common for those new to the technology to subscribe to every list that piqued their interest, resulting in a flood of e-mail. Even these days, it's possible to have too many sources of e-mail. If you are judicious with your subscriptions, then the e-mail you receive will more closely match your interests and you'll be less likely to ignore it.

- **Respond appropriately.** Don't write a 5-paragraph missive when a 5-word reply will do. Likewise, if someone is requesting information from you, be as precise and complete as possible in order to cut down on follow-up e-mail exchanges.

- **Stay current.** If you ignore your e-mail, then you'll be putting yourself on the road to certain e-mail bankruptcy. Applying the tips above can help make e-mail a much more manageable and useful medium, without it overwhelming your time.

- **Set appropriate expectations.** Don't tell someone to send you an e-mail if you know you won't have time to respond. Use the communications medium with which you are most comfortable. If that's the telephone, then give out your phone number instead (and as tempting as it is, don't use e-mail to avoid people.)

If you follow these tips, then you are less likely to be on the road to e-mail bankruptcy. One of the most powerful tools you have in most e-mail clients is the ability to set up filters and to group e-mail into folders. I've used this technique for many years and it takes quite a bit of the pressure off of the inbox and makes it much easier to prioritize which messages will receive your more immediate attention. With a little preparation, you don't have to dread your inbox every morning.

---

* This article is an expansion of a UNT News item release on June 5 which was picked up by the *Denton Record Chronicle* in their June 8 edition.

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Link of the Month

Each month we highlight an online mailing list or website. Frequently the link is associated with UNT.

COMPUTING and INFORMATION TECHNOLOGY CENTER — STUDENT COMPUTING SERVICES

A Tour of Student Computing Services at UNT

Students just got a new tool to help them in their college careers. A website has been created that is dedicated to making important computer-related information at UNT easily accessible. To take the student tour, go to:

http://www.unt.edu/helpdesk/studenttour/

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Helpdesk FYI

By **Jonathan "Mac" Edwards**, **Assistant Manager of the CITC Helpdesk**

Keyboard Shortcuts

Have you ever been sitting at your computer working on your latest project, and wanted to quickly save a document without dealing with that pesky mouse? Want to prove to your boss that you are the master of efficiency? Want a way to quickly hide that new proposal from prying eyes? Keyboard shortcuts are the answer!

This month I thought I would go over some basic useful shortcut keys on your computer. Most of the basic menu commands (such as File, Edit, and View) can be easily accessed by holding down the Alt Key, and then the first letter of the function you wish to open.

    Alt + F   = File

    Alt + E   = Edit

    Alt + V = View

    Alt + F4 = Close Application

Most programs have the key you need to hit in conjunction with Alt underlined. The Ctrl (control) key can also be used to perform many shortcut functions. Press both of the following keys simultaneously:

    Ctrl + A   = Select All

    Ctrl + S   = Save

    Ctrl + Home = This will quickly take you to the beginning of a page or document.

    Ctrl + End   = This will quickly take you to the end of a page or document.

    Ctrl + W   = Closes current window, but leaves the application open.

    Ctrl + Z   = Undo

The three commands I use the most are Ctrl + C and Ctrl + V.

Ctrl + C = Copy

Ctrl + V = Paste

Ctrl + X = Cut

Many of these will also work on an Apple, but instead of Ctrl hold down the Cmnd button.

The windows Key is located between the Ctrl and Alt keys on most keyboards.

Windows key + Pause/Break Key = System properties

Windows + D = Show Desktop. Hitting it again will quickly bring back all of your documents and programs. This is a great tool to quickly access your desktop instead of trying to minimize a bunch of open windows.

Finally the following three shortcuts can be very helpful when browsing the internet.

Ctrl + Right Enter = This allows you to enter in the main website name, and then auto fill in the rest. If you want to visit Google simply type Google into your address bar. Then hit Ctrl + Enter. Your browser will then auto-fill in the rest of the address with www.google.com!

Ctrl + Right Click = Over-ride pop-up blocker. This command works for most pop-up blockers. Simply hold down the Shift Key while clicking on a link, and it will not be blocked by your pop-up blocker. Unfortunately this does not over-ride either the Firefox or Norton Antivirus Pop-up blocker

Shift + Right Click = Open link in new window. This command allows you to open a link in a new window. Shift + Left Click will allow you to open a window in a new Tab.

If you want to find even more shortcuts, just hit Ctrl + E, Alt + D, type Google, Ctrl + Enter, and search away!

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IRC News

**Minutes provided by Sue Ellen Richey,
 Recording Secretary***

No minutes were available for publication this month.

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* For a list of IRC Regular and Ex-officio Members click here.

**DCSMT Minutes can be found here.

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. The schedule can be found here. All meetings of the IRC, its program groups, and other committees, are open to all faculty, staff, and students.

Originally published, June 2007 -- Please note that information published in *Benchmarks Online* is likely to degrade over time, especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also search **Benchmarks Online** - http://www.unt.edu/benchmarks/archives/back.htm as well as consult the UNT Helpdesk - http://www.unt.edu/helpdesk/ Questions and comments should be directed to benchmarks@unt.edu

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Research and Statistical Support
University of North Texas

RSS Matters

You can link to the last RSS article here: SPSS' Hotfix for Windows Vista - Ed.

R Techniques: Summarizing Data By Grouping Variables

By Dr. Rich Herrington, Academic Computing and User Services, CITC

In this article we examine a few different ways of summarizing data across groups or what is referred to in as "factors" in the R language. R's model for data types consist of several different **"modes"** - numeric, logical, character, and factor (other data types exist, but we concern ourselves here with the type called numeric and factor. Factor variables are used in R to represent class information or "nominal" data. Converting modes, for example character modes such as "M" or "F" or "Single" or "Married", are accomplished by using the **"as."** conversion functions. For example, **"as.factor(gender)"** will convert the variable which consists of numeric 1's and 0's to a factor variable that can be used subset the data for summarization. Finally, we use various combinations of looping techniques, indexing techniques, and the **"split"** function to subset by groups and display the group statistics. Below we present several ways of doing this.

Several Methods for Summarizing on Factor Variables

```
# Create data frame with one variable that is of type "factor"
# to be used as a grouping factor

grp<-c(0,0,0,1,1,1)
grp<-as.factor(grp)

dv1<-c(10,20,30)
dv2<-c(40,50,60)

dataSet<-data.frame(grp, dv1, dv2)

attach(dataSet)

############### Version 1

# First use library "doBy", or alternatively use "split" function

# Using library "doBy"
library(doBy)
summaryBy(dv1~grp, data=dataSet, FUN=c(mean, sd), na.rm=TRUE)
summaryBy(dv2~grp, data=dataSet, FUN=c(mean, sd), na.rm=TRUE)
```

```
# Using "split" function
dataSet.list<-split(dataSet, grp)
lapply(dataSet.list, mean)
lapply(dataSet.list, sd)



############### Version  2

# Using an "apply" function only; Subsetting occurs
# within the apply calling arguments

apply(dataSet[dataSet$grp==0, c("dv1", "dv2")], 2, mean)
apply(dataSet[dataSet$grp==1, c("dv1", "dv2")], 2, sd)


############### Version 3
#
# Using "apply" With a "for loop";
# The subsetting is done by creating "index" objects that
# are then used within the apply function calling arguments

# Create "dv" index object
var.index<-c("dv1", "dv2")

# Create group index object - has the number of levels of outcome
grp.value<-c(0,1)

for (i in grp.value){
 print(i)
 print(apply(dataSet[dataSet$grp==i, var.index], 2, mean))
 print(apply(dataSet[dataSet$grp==i, var.index], 2, sd))
}


#################  Version 4

# Create a summarize function;  set parameters to send to summarize
# function;  call the summarize function in a loop and format output
# before calling summarize function

# Summarize function
my.summarize.function<-function(dataVector, grp.Vector, grp.Value){
   cat("mean\n")
   print(mean(dataVector[grp.Vector==grp.Value]))
   cat("sd\n")
   print(sd(dataVector[grp.Vector==grp.Value]))
        cat("\n\n\n")
}

# Set up the calling parameters to function "my.summarize.function"

# Select names of dv's and grouping variable

# Extract all names
var.index<-names(dataSet)

# Extract matrix with only numeric data vectors (drop grouping variable on
# column 1)
dataVectors<-dataSet[,var.index[-1]]

# Extract grouping variable (vector is column 1)
grp.Vector<-dataSet[,1]

# Declare which value of grouping variable to summarize by
grp.Value<-1


#######      Two different ways of calling my.summarize.function


# Using "apply" function only (cannot print the column names
# or the dv names when the function is called)
apply(dataVectors, 2, my.function, grp.Vector, grp.Value)


# Using a "for loop" that calls function "my.summarize.function"
# We can print the column names and dv names before calling
# "my.summarize.function";  this allows for some formatting of output

for (i in var.index[-1]){
```

```
        cat("group = ")
  cat(paste(as.character(grp.Value)),"\n")
        cat(paste(as.character(i)),"\n")
        my.summarize.function(dataVector=dataVectors[, i], grp.Vector,
grp.Value)
  }
```

Good luck and happy computing until next month. I'll leave you with the following joke that my colleagues here in the office just absolutely groaned at ..... I think they don't have a refined sense of humor.

Q: What is so hilarious about high prices with statistical software in academia?

A: Most people don't get the joke!   "arrr..arrrr....arrrr...arrrr....rrrr".

Get it? It's the sound of a pirate laughing. Oh well, I'll keep working at it.

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Short Courses

By [Claudia Lynch](#), *Benchmarks Online* Editor

Academic Computing Services (ACS) is offering a series of Statistical Package/Research Courses this summer. Surf over to the [Short Courses](#) page to register. All the classes will be held in June. If you have a group that needs a specific class at a later date, it may be possible to arrange a special class. See "Customized Short Courses" below for further information.

Due to staff changes, courses offered in the past under the "Wide Area Network & Information Systems Courses" subheading such as "Getting Started with Dreamweaver" and "Moving from FrontPage to Dreamweaver" will not be taught – at this point – this summer. We hope to be able to offer courses like these soon. In the meantime, please consult the new computer based training website to see what offerings are available: http://www.unt.edu/cbt/

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, and the [Center for Distributed Learning](#). 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.

EIS Training

Questions or comments relating to EIS training should be sent to the EISTRN GroupWise account. Upcoming EIS training events may be found at the links below:

- [Learning to Use EIS](#)

- [EIS Timekeeper Training Schedule](#):

- [EIS ePro Training Calendar](#)

Ongoing training is available on WebCT

Moving from GroupWise to Microsoft Outlook Training

The article "E-Mail Migration Project Update" in this issue discusses plans and **lists resources** for preparing the campus community for this transition.

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 here.

The center also offers a "Brown Bag" series which meets for lunch the first Thursday of each month at Noon in Chilton 245. 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.

Center for Teaching, Learning, and Assessment

The Center for Teaching, Learning and Assessment describes itself as offering "a range of services to faculty and Teaching Fellows and Assistants to facilitate teaching and the measurement of learning at the class, department, and college level."

Technical Training

Technical Training for campus network managers is available, from time to time, through the Network Computing Services (NCS) division of the Computing and Information Technology Center. Check the NCS site to see if and when they are offering any training.

UNT Mini-Courses

There 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.unt.edu/minicourses/

Center for Media Production (CMP)

According to their website:

CMP Certified Software Training

Affordable software training is available at the Center for Media Production on the UNT-Denton campus. Upon completion, participants will receive a certificate as "CMP Certified" in that particular course. In addition, UNT students may record this activity on their Eagle Transcript (through the Student Activities office) and UNT Faculty and Staff can receive training credit on their HR training record.

All training classes provide 12 hours of instruction over 4 class meeting days and conclude with the certification exam. Training is hands-on, and class sizes are small.

E-mail inquiries to cmptraining@unt.edu

Recently, courses have been offered in Adobe Creative Suite (CS2) software, including InDesign and Illustrator (at both Introductory and Advanced levels). Dreamweaver introductory courses are also being offered.

Alternate Forms of Training

Many of the General Access Labs around campus have tutorials installed on their computers. The Library has a Computer Training Resources webpage with lots of resources listed. The Training website also has all sorts of information about alternate forms of training. Computer Based Training (CBT) is one of the alternatives offered.

For further information on CBT at UNT, see the CBT website. Note, also, the article in the March issue of *Benchmarks Online*, "New SkillPort Training Site Loaded and Catalogued." See also, "Free and Legal: Copyright Advice and Training Online."

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Staff Activities

Transitions

New Employees:

- **Christopher Gathright**, Security Intern, Information Security (part-time).

- **Julia Sokolowska**, Student Assistant**,** Telecommunications (part-time).

- **Hsuan Chun Chang**, ACS GAL Consultant (part-time).

- **Russell Heeter**, Programmer, UNT/HSC Fiscal Systems (AIS).

- **Jacob Flores**, Microcomputer Consultant, Helpdesk (part-time).

- **Swathi Koppanur**, Student Assistant**,** Data Communications (part-time).

No longer working in the Computing and Information Technology Center:

- **Srinivasa Kommineni,** ACS GAL Consultant (part-time).

- **Casey Colby**, Student Assistant**,** Data Communications (part-time).

- **Jason Emanuel**, Computer Systems Manager, UNIX Systems Team.

- **David Gallegos**, Microcomputer Consultant, Helpdesk (part-time).

- **Steven Rowell**, UNIX System Administrator, UNIX Services.

Awards, Recognition, Publications, etc.

Steve Vocelka, Computer Operations Manager, was honored at the President's Staff Sack Lunch on May 8. He received the *Steve Miller Outstanding Employee Award* (*InHouse*, May 15).

Soaring Eagles

Lisa Coleman, Helpdesk Consultant, **Jennifer Lafleur**, Assistant Director for Computing and IT Planning and Administration, and **Charlotte Russell**, Director of Administration and Compliance, were all recognized as Soaring Eagles in the May/June issue of the *Human Resources Newsletter*.

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especially links to various Websites. To make sure you have the most current information on a specific topic, it may be best to search the UNT Website - http://www.unt.edu . You can also search **Benchmarks Online** - http://www.unt.edu/benchmarks/archives/back.htm as well as consult the UNT Helpdesk - http://www.unt.edu/helpdesk/ Questions and comments should be directed to benchmarks@unt.edu

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