Introduction to Computer Use in Mathematics

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Using Computers in Mathematics
Computing FAQ

The computer support person Zube has prepared a detailed FAQ that answers most questions

Access the FAQ at

http://www.math.colostate.edu/FAQ/FAQ.html

Please consult the FAQ!

I will summarize some key points
Accessing Computers: First Level

Your first access points to department computers:

- **Weber 201**
  public computing lab consisting of several Windows PCs and two postscript printers.

- **Weber 17/18**
  graduate student area consisting of 4 Windows PCs and one printer (hp4250)

- **Weber 10**
  graduate student area consisting of 3 Windows PCs and one printer (dps)
Accessing Computers: Passwords

Secure login is required for all department computers

Zube assigns your initial password

You should change the password on your first login

Type “CTRL-ALT-DEL” and select “change password”

Consult /math/HELP/choosing.passwords for help on choosing a good password
When you log into any department PC, you will automatically be given a J: drive

This is your home directory (folder)

You should save all of your files in this directory (folder), either directly or in sub-directories (folders) located in J:

The J: drive is backed up

Use c:\temp to write temporary files that you do not want to keep

There is no disk space quota but Zube monitors disk use. Using hundreds of megabytes is too much.
Accessing Computers: Printing

The department PCs are automatically configured with access to printers.

You can select the desired printer on the print dialog.

Printing is restricted to files directly related to mathematical work, teaching, and other professional use.

Your account will be disabled if you print large amounts of personal material.

Do not use the printers as copy machines, e.g., print out many copies of a handout for your class.
Accessing Computers: Rules

The department is extremely security conscious

Certain actions will result in permanent loss of your account

- letting someone else use your account
- running a server of any kind on any machine
- hacking on our or anyone else’s systems
- continually choosing a poor password
- unplugging any of the public machines connected to the network for any reason
Accessing Computers: Using Your Own Computer

It is possible to connect your personal computer to the department network, however there are serious restrictions and this is a low priority request.

An alternative is to use the university-run wireless network in Weber.

You can install a wireless card in your computer and install the CSU VPN software.

http://www.acns.colostate.edu/?page=vpn

This will give you full access to the internet.
Accessing Computers: Email

Everyone is given a department email address

Using the department server for email:

• You can read email from anywhere on the internet
• You can write email to department addresses from anywhere on the internet
• You can write email to addresses outside the department only when connected to the math network

Using another account for email:

• You can read email from anywhere on the internet
• You can write email from anywhere on the internet as allowed by your email server
Accessing Computers: Email

Zube can arrange to have email sent to your math address automatically forwarded to another account.

You may be able to configure your email software to use your math address as a default “Reply to” address.

You may sign up for a university lamar/holly email account using your EID.

This email account is widely accessible using either VPN or webmail.

Learn more about using webmail at webmail.colostate.edu.
Creating and Maintaining a Web Page
The Importance of Web Pages

Using a web page is an important part of teaching efficiently. It provides a communication link between the instructor and the students that is always accessible.

Information that should be included:

- Course information
- Course calendar
- Assignments and handouts
- Copies of lecture notes
The Process for Maintaining Web Pages

The public access to your web page is through the department server

The files for your web page are kept in the directory

~/public_html

Your personal URL is

http://www.math.colostate.edu/~LOGIN NAME

This links to the main file for your web page:

~/public_html/index.html

This file contains links to all of the other files comprising your web page
The Process for Maintaining Web Pages

You should locate a **local master copy** of your web page on the department PCs in the directory

\[ J:\public\_html \]

You should only edit the local copy

When the local copy is correct, you should transfer the updated and new files to the **public_html** directory on the department server using **winscp3** (or secure ftp) to

\[ ftp.math.colostate.edu \]

This insures that your web page is always accessible and functioning correctly during any times that you are making changes.
WinSCP3: Configuring for First Time Use

This tool provides a graphical interface for transferring files between computers using secure ftp

Double click on the icon to start the program

- Click on Session
- Enter Host name ftp.math.colostate.edu
- Enter User name Your math department log in name
- Enter Password Enter your password
- Click on Environment-Directories
- Check the option Remember last used directory
- Click on SSH
- Check option 2 for Preferred SSH protocol version
WinSCP3: Configuring for First Time Use

Continuing...

- Click on preferences
- Click on Preferences...
- Click on Transfer
- Under Upload options
- Check option Set permissions
- Make sure options R is set for Owner, Group, Others and W is set for Owner. Do not set other permissions.
- Click Okay
- Click on Save...
- Type math ftp as session name and click okay
WinSCP3: Steady State Use

Double click on the icon to start the program

- Click on **Stored sessions**
- Double click on **math ftp** to connect
- Use the navigation tool to navigate to the local **public_html** directory on the left and the public **public_html** directory on the right
- Use the mouse to select files on the left to transfer
- Using **shift+mouse** and **ctrl+mouse** to choose multiple files
- Click on **Copy** on bottom row to transfer files
- Quit
Creating a Web Page

Create the folder `public_html` on the J: drive

Navigate to

http://www.math.colostate.edu/~estep/webpagemodels/samplepages.html

Follow the four links

On each page, right click on the page or choose the menu File, then Save Page as...

Navigate to the `public_html` folder on the J: and click Save

You now have a local copy of a basic web page. Edit the files to make them suit your needs
Editing a Web Page

The simplest way to edit an existing web page or create a new page from scratch is to use Microsoft Word or Abisoft

In either case, simply start the program and then open the file to be edited

After making the desired changes, save the file in html format

Warning: Microsoft Word does not write “clean” html and the default file structure for saving web pages is complicated
Web Settings for Microsoft Word

You will produce “cleaner” web pages with Word if you select certain web options

- Click on Tools
- Click on Options
- Click on the General tab
- Click on the Web options button
- Click on the Browsers tab
- For Target Browsers select option Microsoft Internet Explorer 4.0, Netscape Navigator 4.0, or later
- Click on the Options tab
- Check the Disable features not supported by these browsers and Rely on CSS for font formatting options, and uncheck the others
Web Settings for Microsoft Word

Continuing...

- Click on the Files tab
- Uncheck the Organize supporting files in folder option
- Check the Use long file names when possible option
- Check the Update links on save option
- Uncheck both options under Default editor
- Click on Okay twice
File Formats for the Web

It is best to stick to relatively plain html and standard pdf

Use pdf for mathematics, typeset documents, graphics, and scans of handwritten notes

To generate pdf from LaTeX, produce a dvi file and then use dvi2pdf

One way to generate a pdf file from a Windows program like Word is to print to one of the pdf printers available in the print dialog. This will prompt you for a file name and you can navigate to an appropriate directory
Creating a Weekly Schedule
Creating a Weekly Schedule

Everyone teaching a course is required to create a weekly schedule that is accessible to the public.

The process has been automated.

Each instructor creates a text file called “officetimes” or “officetimes.txt” which uses a short hand notation to describe the schedule.

The file is located in the ~/public_html/ directory on the web server.

The file is read once a night and the schedule is then automatically created.
Creating an officetimes File

Open up a text editor, such as Wordpad, that is capable of saving a plain text file.

Word is not a good choice for creating the file.

The text file contains commands that indicate different types of events as well as their times and locations.

Each event is given on a line by itself.

Events start at the full hour and run for one hour.

Events that run longer have to be entered for each time slot.

Each event is described by a letter (OLWNR) that indicates the type of event.
Creating an officetimes File

The types are

O  Office hours.
   Time must be given and a room is optional

L  Lectures.
   Lecture name and location have to be given

W  Other events listed in the schedule.
   Name and location have to be given

N  Events that are on the printed version but not displayed on the web.

R  Remark.
   Everything following this letter will be put verbatim on the web pages. This item has to come last. You can include HTML formatting.
Creating an officetimes File

Time is indicated by a sequence of letters from MTWRF followed by a number indicating times between 8am and 6pm

Unless the event is an office hour, the time is followed by the name of the event and the location

The last blank on the line separates the event from the location, thus room numbers are not permitted to contain a blank space

If you do not want (or cannot) list a room, give a question mark

While locations (Room Numbers) may not contain a blank, events may, thus “Algebra Seminar WB117” is parsed as expected
Creating an officetimes File

For example, a text file containing

- MW10
- F2
- L MWF11 M766 WB014
- L MWF14 M400X E202
- W R2 Seminar WB117
- N T3 Soccer
- R This is my schedule
Creating an officetimes File

Produces

This is my schedule

<table>
<thead>
<tr>
<th>Time</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>8am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9am</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10am</td>
<td>Office Hour</td>
<td>Office Hour</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11am</td>
<td>M766 (WB014)</td>
<td>M766 (WB014)</td>
<td>M766 (WB014)</td>
<td></td>
<td>M766 (WB014)</td>
</tr>
<tr>
<td>12pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2pm</td>
<td>M400X (E202)</td>
<td>M400X (E202)</td>
<td>Seminar (WB117)</td>
<td>M400X (E202)</td>
<td></td>
</tr>
<tr>
<td>3pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5pm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Soccer practice Tuesdays at 3 will not appear on the web but only in the printed version
Creating an officetimes File

After creating the file, save it as plain text in the folder public_html on the J: drive

Use WinScp3 to transfer the file to the web server as described above for creating and maintaining web pages

Be sure that WinScp3 is configured properly, as described above
Using a Scanner and the Web
Instructions for the Scanner in 201 Weber

A scanner makes it very simple to distribute lecture notes and solutions

You simply hand write the material neatly, scan the pages, save as a pdf, and link into your web page

A public scanner is located in the northeast corner of 201 Weber

Log into the PC next to the scanner and follow the instructions in the file scan.to.pdf.txt located on the desktop

• Load your document face up in the document feeder with the top left of the page closest to the xerox logo on the front. Make sure you have no staples, paperclips or anything else in your stack that might damage the feeder
Instructions for the Scanner in 201 Weber

Continuing...

• Click on the paperport icon on the desktop

• Click on the Scan icon in the PaperPort Toolbar. The scan window will pop up on the left side. Make sure the Scanner option reads Documate 510 and the scan what? is set for document.

• Click the scan button. The scan manager opens. Here you can choose some options on the right hand side, but by default they should be set for ADF (Automatic Document Feeder), Black and White and 200 DPI.

• Click the scan button. It will feed each page with a slight hesitation. When it is done, click the exit button. Next, you will be asked if you want to scan more pages, scan the other side or done. Click done.
Instructions for the Scanner in 201 Weber

Continuing...

• The scanned file in pdf format will appear on the paperport desktop with the current date as the filename (and an number like (2) for the second scan, (3) for the third scan, etc.).

• By default, these scans are saved in:

  My Documents\My PaperPort Documents\Samples

but you can also right click on the image in the paperport desktop and pull down to save as to save it somewhere else and/or rename it.

• Exit paperport and live happy.
Using Acrobat Professional to Scan a Document

Using **Acrobat Professional** to read in a scan has the advantage that it lets you edit and manipulate the pdf file

- **Start Acrobat Professional** (This has to be the professional version, not the free version)
- Choose **File** then **Create PDF** then **From Scanner**...
- Make sure the scanner is listed in the popup dialog and choose **Okay**
- On the next dialog page, select the **scanning options** **Greyscale** and **150 or 200 DPI**
- There will be a pause while the scanner warms up
- After the scanner finishes, click on **Done** or **Next page** if you have more documents to scan
- Click on **File** then **Save as**... and save the file
Permissions and Accessibility
Permissions and Accessibility

The files kept on the web server can be accessed by the public only if you tell the server that this is allowed.

This is called setting permissions for the files.

The permissions on a file are attributes that the server stores about the file.

There are various categories of people who can access the file and various kinds of permissions that can be given.

The goal here is to set permissions so that all users can read the file.
Permissions and Accessibility

Above, we explain how to configure WinScp3 so that it sets the proper permissions when the files are uploaded to the server.

Permissions can also be set manually using unix commands inside a terminal window connected to the server.

Permissions can be set on any file individually or on all files simultaneously.

You first need to connect to the server using ssh, e.g., using putty.

If you do not understand how to do that, then it is probably best not to try to set permissions manually.
Permissions and Accessibility

Once you are logged into the server, enter the following commands

To change permissions on a particular file, such as the officetimes file discussed below

>cd public_html
>chmod go+r officetimes

To change permissions on all the files

>cd public_html
>find . -type d -print | xargs chmod 755
>find . -type f -print | xargs chmod 644