

Using the Math Network for Math 587

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1 Purpose

The network is a central location where users can avail themselves of the installed software without undergoing the time, cost, and effort of acquiring the same items elsewhere.

Maple and *Pari/GP* are two items of mathematical software accessible through the math sub-network.

2 Directions

2.1 Logging in

With an ssh-compatible terminal program log in using your campus “Unix” username and password to the host `chern.math.albany.edu`. Upon successful login you should be given a command-line prompt.

2.2 Quick account software configuration

For proper access to resources in the math subnetwork and other campus Unix network resources (TeX and XML software), you will want to have a login configuration that is somewhat different from what University users currently have by default.

To bring this about quickly run the command `mathskel` from the command line of a host, e.g., `chern`, in the math subnetwork. Log out from the math network host and log in again in order to have the new configuration be effective.

2.3 Slow account software configuration

Your command line will be a “shell” that runs on the Unix network host inside a terminal window, maintained by a program on the machine where you are working. There are several possible shell interfaces in the Unix network. Enter the command

```
printenv SHELL
```

to determine which is your shell. In most cases your shell will show as *bash*, i.e., `/bin/bash`.

If your shell is *bash*, then for proper access to the resources in the math network, you should copy the file `.bashrc` and the file `.bash_profile` to the top directory in your account after moving any pre-existing versions of these files to other names for possible future reference.

Assuming you have not consciously changed your directory since logging in to `chern.math.albany.edu`, use the listing command `ls`¹

```
ls -aqF
```

to see whether you already have versions of either of these files. If, for example, you have a copy of `.bash_profile`, invent another name not in the listing, say `.bash_profile-foo`, for saving the old version and use the file moving command `mv`

```
mv .bash_profile .bash_profile-foo
```

to move the old version to your made up name.

To copy the new version of `.bash_profile` to your account use the file copying command `cp`

```
cp /math/local/doc/skel/.bash_profile .
```

(The `."` at the end of that command stands for the current working directory; alternatively one could use `~`, which stands for one's login directory.)

and use

```
cp /math/local/doc/skel/.bashrc .
```

to perform the same step for `.bashrc`.

The file `.bash_profile` provided here is a modification of the University's standard recommended version found in the directory `/usr/share/local/skel`.

If your shell is *csh*, i.e., `/bin/csh`, or *tcsh*, there are different files that apply to your login configuration. The file names are `.cshrc`, `.csh-aliases`, `.csh-vars`, and `.login`. They are also located in the directory `/math/local/doc/skel`. As described above for `.bash_profile`, you might want to back up any prior versions. Otherwise use commands like

```
cp /math/local/doc/skel/.login .
```

to copy them to your login directory.

If your shell is not any of these, consult me.

Logging out from `chern.math.albany.edu` and then logging in again is one way to realize the new login configuration, but for most purposes it should be sufficient (and certainly quicker) to use the command `"source .bash_profile"` in the case of *bash* or the command `"source .login"` in the case of *csh*.

2.4 Using X11 protocol

X11 protocol enables the use of graphical user interface (GUI) software on a remote machine. While it is convenient, it is not strictly necessary to use X11 with remote connections for the purposes of this course. Moreover, the use of X11 should not be attempted with slow network connections.

¹For showing "dot" files `ls` needs to be called in a special way. The manual page (enter `"man ls"`) for `ls` will provide more details for the curious.

For X11 to function a suitable background program, which is referred to as an X11 server, must be running on the local machine. An X11 server typically runs natively at suitable consoles on Unix (and *IX) systems but not typically with systems such as MacOS and MS-Windows where the user must consciously launch them before establishing remote connections. An X11 server is natively available in recent versions of MacOS. In MS-Windows an X11 server is available through the freely available software suite “Cywin”. A similar free-standing and freely available X11 server for MS-Windows is called “Xming”.

Assuming an X11 server is running, to establish an X11-enabled connection to a remote host (like chern) one usually launches a terminal window that supports a “secure shell” (SSH) connection. For connecting to chern from a Unix or *IX system, as well as from the MacOS command line or the Cywin command line, one enters the command

```
ssh -X chern.math.albany.edu
```

Alternatively with MS-Windows one may use a program called “putty” that is freely available at

```
http://www.chiark.greenend.org.uk/~sgtatham/putty/
```

Note that closing the remote connection should not stop the X11 server that is running in the background on the local platform.

2.5 Resources available

To verify that you are ready to use the math subnetwork for your course work please check that all of the following command names are available at the shell prompt:

1. `gp-2.3`
2. `gpdf` (when X11 is enabled)
3. `maple`
4. `latex`
5. `onsgmls`
6. `pdflatex`
7. `validhtml`
8. `xdvi` (when X11 is enabled)

2.6 Enabling a website for your account

Materials made available on the web from your account should be placed in the directory `public.html` in your login directory. The public URL

```
http://www.albany.edu/~zz012345/
```

points to the an HTML document named `index.html` (if it exists) in the directory `public_html` of user `zz012345`.

Run the command `startweb` (once in the life of your account) for quick creation of this directory and the initial setting of suitable file system permissions. (Suitable file system permissions are important: one wants materials intended for the web to be available and other items in one's account not to be visible through the web.)

The command `setweb` may be used whenever new items are placed in your web directory for automatic setting of web-critical file system permissions.

The command `setweb` sets permissions in a uniform way on resources in a user's `public_html`. Some users may want finer control. Finer control is available by using the command `chmod`. For more information see the corresponding system manual page (`man chmod`).