Accounts(AFS, UCID), Programs, UNIX

Disclaimer: *These abbreviated notes DO NOT substitute the textbook for this class. They should be used IN CONJUNCTION with the textbook and the material presented in class. If there is a discrepancy between these notes and the textbook, ALWAYS consider the textbook to be correct. Report such a discrepancy to the instructor so that he resolves it. These notes are only distributed to the students taking this class with A. Gerbessiotis in Fall 2011 ; distribution outside this group of students is NOT allowed.*

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0.1 UCID account creation. To obtain a UCID (in fact a UCID login, UCID password), go to
`http://ist.njit.edu/accounts/index.php`
Click on the `(more info)` link appearing in red-ink at the end of the paragraph entitled `University Computing ID (UCID)`.

0.2 AFS account creation. Students who have a UCID are also ordinarily assigned an AFS account. There might be few exceptions of students who matriculated several years ago. **For such special cases**, one can obtain an AFS account, separately through the same link
`http://ist.njit.edu/accounts/index.php`
and clicking on the `(more info)` link appearing in red-ink under Major Computing Environments → Andrew File System (AFS). Even if the AFS login name is the UCID login, the AFS password is ordinarily different from the UCID password. If your UCID password does not work for the AFS account, it might be possible to correct this by trying the AFS password reset step outlined in 0.3 below.

0.3 AFS password reset. To reset your AFS password so that it is the same as the UCID password, go to
`http://afspassword.njit.edu/`
and click the 3rd option available under `Password Reset`. To complete this step you should know your UCID and its associated password. (Naturally, you may also choose any of the other 3 remaining options of the 4 available.)

0.4 Helpful URLs (URL stands for Uniform Resource Locator).

- **NJIT IST Central:** `http://ist.njit.edu`
- **NJIT Accounts:** `http://ist.njit.edu/accounts/index.php`
- **NJIT Software:** `http://ist.njit.edu/software/download.php`
- **NJIT Password Management:** `http://ist.njit.edu/support/password/index.php`
- **NJIT Password Reset:** `http://afspassword.njit.edu/`
- **NJIT Password Reset (same):** `http://ist.njit.edu/support/afs/afspassword.php`
- **AFS resources/help:** `http://web.njit.edu/`

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The text below applies to the figures of the next two pages. The AFS machines in the Lab are Sun/Solaris or Linux machines.

0.5 Login screen preliminaries. In order to login on any of these machines, you need to provide a login name and password in the popped-up Login Window. In addition, certain options might be set up by clicking buttons and selecting options through them. In order to login, you must know your AFS-login and the corresponding AFS-password. If you completed step 0.3/Option 3 of the previous page, these are also your UCID login/password.

From now on we shall call them simply `login` and `password` respectively.

Numlock? Before you do anything, make sure that there is no light ON on the top of the keyboard. If the **Numlock** light is ON you can leave it as is, or switch it OFF by pressing once the `Numlock` key which is usually located in the numerical key pad on the right part of the keyboard (over `key 7` and to the left of `key /`).

CAPS LOCK? If the `CAPS LOCK` light is ON, it MUST BE TURNED OFF by pressing the `CAPS LOCK` key once (or if this does not work, the `SHIFT` key instead). The `CAPS LOCK` key is usually located on the left of the `A key`.

0.6 Login Option Selection. Before you type in the login or password, click on the `middle round` button located beneath the login/password textbox. Select there the `Gnome Desktop` option (it is the third option but has an index 2 in front of it as in `2. Gnome Desktop`). (Don't forget that in computing things start from zero, and thus the first item has index 0, and the second, index 1!)

0.7 Login Name. The input field has a label on top of it `User name` that prompts you to submit your login. Type it in and press the ENTER key.

0.8 Password. The label now becomes `Password` and the text field is ready to accept your password. Type it in, and then press ENTER. If you made a mistake and typed an incorrect password wait until the text box has a Login Name label again to repeat step 0.7 or 0.8 or just type the correct password by repeating step 0.8. Be patient and observe the textbox label.

0.9 Environment. After a while you will get logged on. The status bar is on the top of the screen as opposed to MS Windows that is usually located in the bottom. Click on the left of the three or four buttons at the top. There the options of interest are `Internet` if you plan to start the Firefox browser, or `Mathematical/Scientific applications` for `Matlab`. Explore the environment if you have not encountered it before.

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0.10 Software You can complete all required course work by sitting in front of any of the AFS workstations in the Lab. Alternatively, you can download several pieces of software to your Windows PC/Laptop using the Software link specified in section 0.4. Software downloads require a UCID login and UCID password as well. A minimum set of programs that you might need is `MATLAB`. If you plan to connect to an AFS machine from your personal Windows PC but don't want to install MATLAB, you need to download `Secure Shell for Windows`. Note that OS/X and Linux have (mostly) Secure Shell preinstalled, but Windows does not.

Software can be downloaded through `ist.njit.edu` then clicking on the `Services` button, and then clicking on the sixth or so option labeled `Software`. This takes you to the URL outlined in section 0.4. In `Software`, i.e. in URL `http://ist.njit.edu/software/index.php`, click on the first link named `Download` located under the `software available for download and campus use` heading.

This will take you to the URL `http://ist.njit.edu/software/softlinks.php`. There, click where applicable, e.g. the first link.

There are multiple versions of MATLAB for students, faculty/staff, 64-bit versions or 32-bit versions (if there is no explicit reference to a 64-bit version, then it is a 32-bit version) for Windows, Linux, and Apple OS/X. It does not matter for the course which version you download; click the last (towards the bottom that is applicable for your case).

Make sure that you pick a student not a faculty/staff version, and if you have a Windows PC avoid the Linux (penguin icon) or the OS/X version! If you pick a 64-bit version, make sure that your machine has a 64-bit version of Windows installed on it. If you don't know this, do not download the 64-bit version.

Further down in the software list, somewhere after `SQL server` but before `StarOffice` you will find `SSH secure shell`. (Note that SSH is the acronym for Secure SHell.)

0.11 Unix commands. If you open a terminal on an AFS machine, then you need to do know how to navigate around a UNIX terminal. This is quite similar to navigating around a Windows command line prompt (known as `cmd` or `cmd.exe`). Below we provide an equivalent list between UNIX and Windows command line commands.

	Windows/Command Prompt	UNIX afs	Comment
%	dir	ls	List files in local directory
%	dir /?	man ls	Help for command
%	dir /S	ls -lR	Recursive listing (subdirectories)
%		ls -a	List hidden files+everything else
%	cd dirname1/dir2/dir3	cd dirname1/dir2/dir3	Go to dir3
%	cd C:\	cd	Return to home directory
%	cd ..	cd ..	
%	date	date	
%	time	time	
%	[Acrobat invocation]	acroread	
%	[Firefox invocation]	firefox	
%	[Matlab invocation]	matlab	
%	[ssh invocation]	ssh afs12.njit.edu -l UCID	Connect to AFS machine afs12 as USER UCID
%		scp FILE UCID@afs12:~/	Copy securely file FILE to the account UCID of afs12 at the top-directoy
%		who	Who is logged on
%		ps	Process Status
%		ps agux|egrep UCID	Check user's UCID processes
%		kill -9 PID	Kill a process with number (as shown with ps) PID
%		kill -9 9454	Will log you out (see bottom of next page)

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```
%    exit                    exit                    Terminate(and logout in UNIX)
%    exit                    logout                  Terminate(and logout in UNIX)
%                            pwd                     Print working directory
%    cat                     cat                     Catenate/Concatenat files
%                            cat x >y                "Copy file x to file y"
%                            cat x >>y               "Append x file to file y"
%    copy x y                cp x y                  "Copy file x to file y"
%    more                    cat, less, more         list contents of file
%                            cp -i                   copy and inquire to confirm
%                            cp -r                   copy recursively (directories)
%                            cp -r dir1  dir2        copy directory dir1 to dir2
%    mv                      mv                      move
%    del                     rm                      remove
%                            rm -r                   remove recursively a directory
%    md                      mkdir
%    rmdir                   rmdir
%    cls                     clear
%    echo                    echo
%    fc                      diff
%    find                    grep egrep
%    command /?              man command
%    chdir                   pwd

Sample Output of ps agux|egrep UCID
UCID      9454  0.0  0.3 3360 2640 pts/5    S 10:55:43  0:00 -tcsh
UCID      9484  0.0  0.1 1304 1056 pts/5    S 10:55:46  0:00 /bin/sh ./proxy.sh
UCID      9486  0.0  0.4 5488 3784 pts/5    S 10:55:46  0:00 ssh -N -v -D3000 l
```

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Use secure shell to remotely start MATLAB.

This step will probably have to wait until the second or third week of classes. By that time it will be expected that each one of you has figured out how to get a UCID and an AFS account, and reset his/her AFS password to coincide with his UCID password. In other words you know your AFS-login (identical to the UCID) and your AFS-password (most likely after the 0.3 reset, identical to the UCID password).

By that time, you might have also decided to download on your home/dorm Windows PC (or otherwise) a copy of MATLAB and the secure shell program as instructed few pages ago in this document in step **0.10 Software**.

We show you now how to use SSH Secure Shell from a Windows machine to connect to an AFS machine and how to start MATLAB on AFS (rather than your laptop/desktop) from your home machine as well. Secure shell will allow you to remotely connect to an AFS machine from home.

For the remainder we assume your AFS login-name is `AFS-login` and the password is `AFS-password`. You also need to choose one of multiple AFS machines to remotely login from home or from your dorm room. Say we pick `afs12.njit.edu`. You can replace 12 by any number from around 1 to around 30. But if you plan to login to the 4th afs machine, this is `afs4.njit.edu`, not `afs04.njit.edu`. Alternatively, you can replace the `afs` prefix with `osl` as in `osl12.njit.edu` for the machines in Lab 2400.

Note. In order to really connect to `afs12.njit.edu` your "home" machine must be on the NJIT campus. If you really connect from outside of NJIT, one needs to use the Cisco VPN client to make your home part of NJIT.

In the remainder `ssh` stands for secure shell.

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0.12 Connect to an AFS machine with Secure Shell. On a Windows machine, click on a Secure-Shell icon if available or invoke Secure-Shell through the Start button. The window of Figure 1 will popup, click on the pane(area) `QuickConnect` to get a popped up smaller window also shown in Figure 1. Type in the field `Host Name` the afs machine you will be connected to (`afs12.njit.edu`) and in the `UserName` field, type in your `AFS-login` and be prepared to provide the password, after you click the `Connect` button. The first time you connect to `afs12.njit.edu`, the window in Figure 2 might pop-up (and click on Yes in such a case), or otherwise you get the Password prompt in Figure 3.

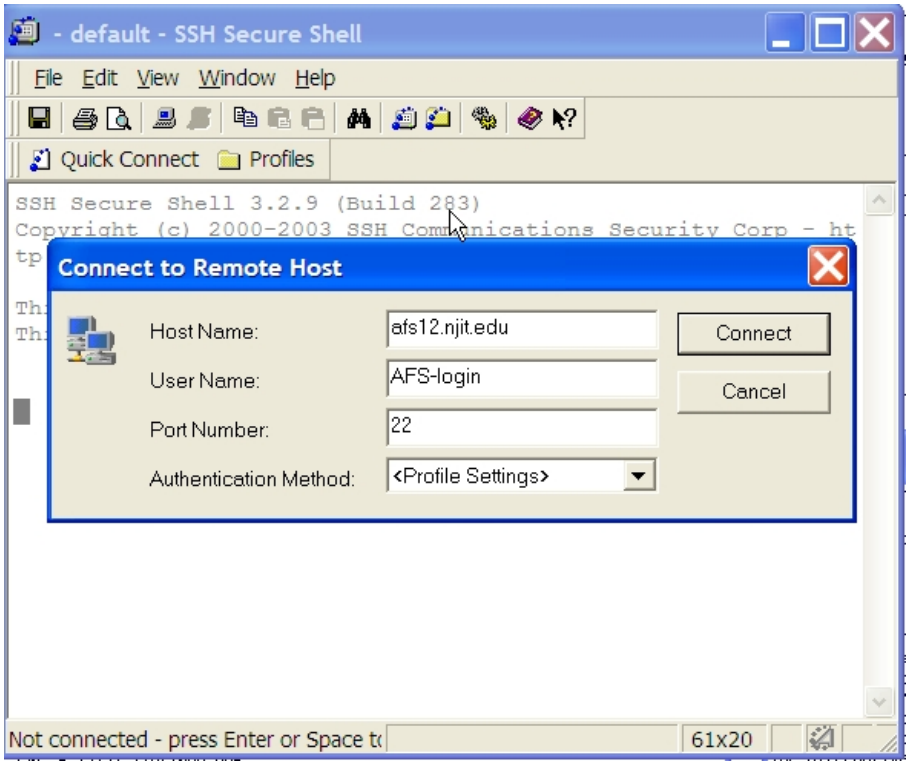


Figure 1: Secure Shell Window and Connect to Remote Host prompt.

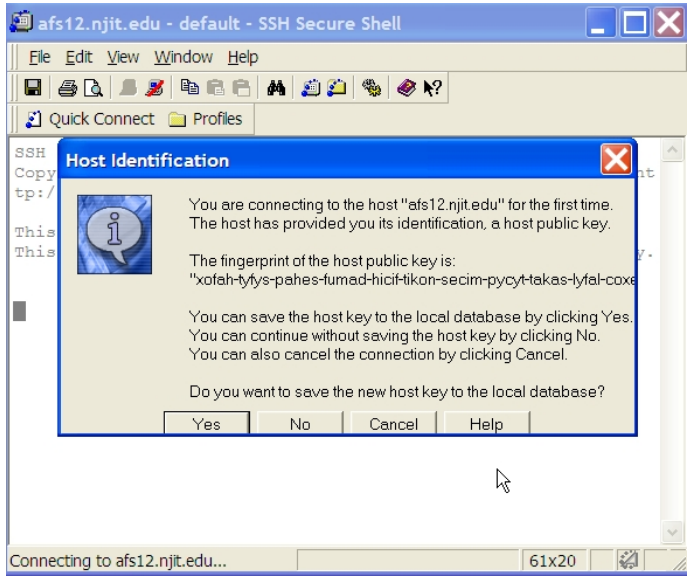


Figure 2: First time window

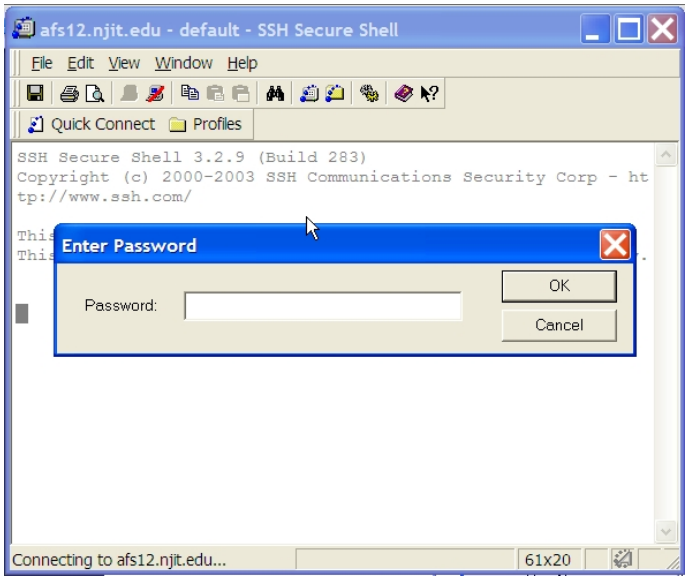


Figure 3: Password Prompt

0.13 Use command-line ssh. If you are already logged on a UNIX machine such as an Apple OS/X desktop or laptop, it is very likely that you might use a command-line version of ssh (secure shell) that does not involve the graphical interface of Figure 1. In such a case something close to Figure 4 might be involved.

In such a case in the prompt which is the percentage sign %, we type in the invocation on a single line such as

```
ssh afs12.njit.edu -l AFS-login
```

and the password prompt appears in the line immediately after.

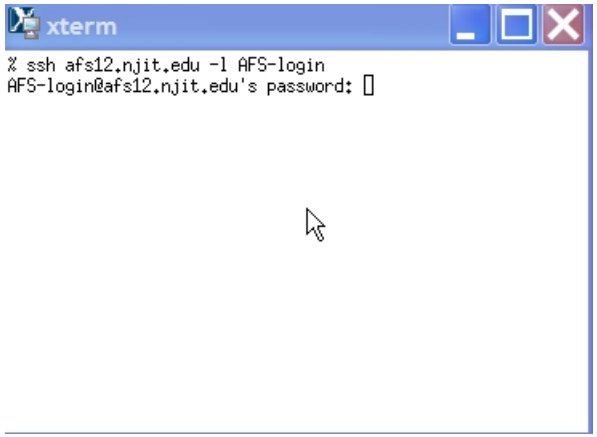


Figure 4: Secure Shell Command-line invocation.

Here the `AFS-login` is typed after `-l` which is the minus symbol (located on the keyboard next to the zero key) followed immediately by the ell letter (the letter after k but before m in the alphabet). Spaces are important where shown; case (lower case vs upper case) is important and all typing is sensitive to it. After pressing the ENTER symbol on the keyboard the Password prompt appears in the following line as shown in Figure 4. You type in the correct `AFS-password` and you then enter `afs12.njit.edu` or whatever other machine you might wish to use instead.

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0.14 We assume that you have connected remotely to an AFS machine (say afs12.njit.edu) using either the graphical version of secure shell (Figures 1- 3) or the command-line version (Figure 4).

We are not going to tell you how to start MATLAB using the local (Windows) version stored in your Windows machine. An icon on the Desktop might be available (called shortcut) or you might have to click on the `Start` lower-left-corner button and then on the `All Programs` option, and finally select `MATLAB` from the list that follows.

If you are already in `afs12.njit.edu` either through step **0.12** or step **0.13** you can startup the local (AFS version) of MATLAB as follows by just typing in `matlab` in lower-case and then pressing ENTER.

(From now on every time we type in a command, we will assume that we press ENTER, and thus not repeat the "and then pressing ENTER".) MATLAB gives you the option of running one of three or four versions. (This might change and the number of versions might decrease or increase.) Choose the last option (and in our case this is option 4), by typing 4 that for us corresponds to `MATLAB 7.0 R14.3`.

If you want to quit the MATLAB version selection process, press `ctrl-C`. This is done by pressing the Control key `Ctrl` and while pressing that key also pressing the `C` key as well. After you had typed 4, MATLAB would take some time to load itself (half a minute to a minute). As soon as you get the `>>` MATLAB prompt which is two 'greater than' symbols `>` one after the other, you can start using MATLAB. If you want to quit from MATLAB then, (after you get the MATLAB command prompt), you have the option of a graceful exit by typing in `quit`.

ATTENTION. The possible options for versions of MATLAB change from time to time. In some environments, you might be offered only 2 options instead of 4. Note that the word `depecated`, is a typo for `deprecated`. These two (deprecated) options are by now obsolete anyway. My rule of thumb is to always choose the last option!

Running MATLAB on AFS remotely from a Windows machine (continued)

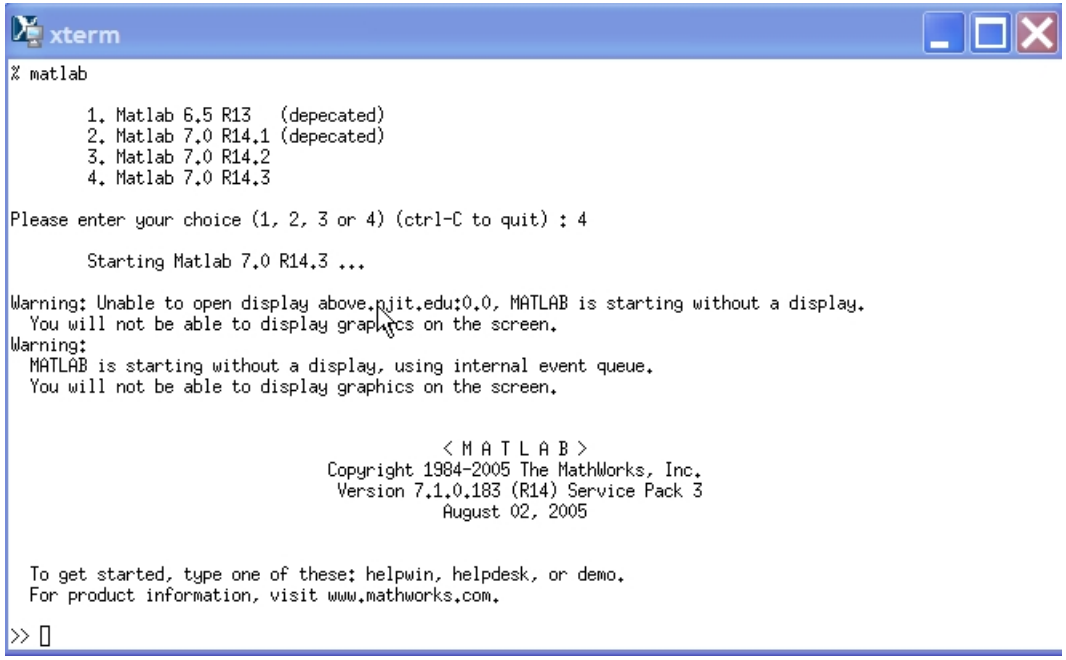


Figure 5: Text-based MATLAB invocation.

Alert! If something looks wrong, or MATLAB does not work properly check step 0.5. Is the NumLock or CapsLock light on? Switch them off, get out of MATLAB (quit) and restart MATLAB by repeating step **0.14**.

0.15 You can logon an AFS machine directly through steps **0.6 - 0.8** if you are in the Lab. Or you connect to AFS remotely through steps 0.12 or 0.13. In either case after login on the AFS machine you repeat the startup procedure of step **0.14** but instead of the MATLAB command line prompt >> you get the graphical MATLAB interface shown in Figure 6. The screen is split 1/3-2/3, with the right portion of the screen occupied by the **Command Window** similar to the one we obtained with the text-based invocation. The left portion of the screen is split into two subwindows. The top one shows the current directory (from which the invocation was issued) and the bottom-left windows shows a command history of the commands issued in the command window.

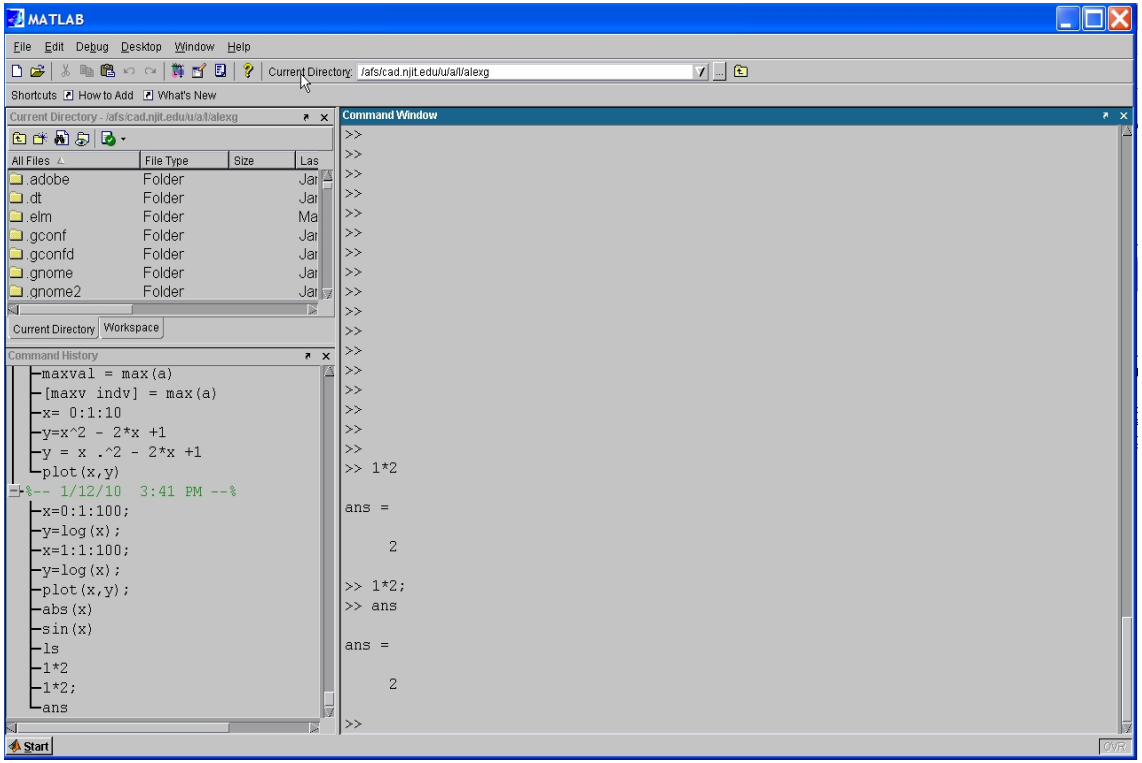


Figure 6: Graphical MATLAB invocation.