**In-Class Exercise #1**

**Basic Unix and SAS**

**Tasks**:

1) Using Putty SSH Secure

2) Logging into WRDS

3) Get familiar with UNIX commands

4) Compiling and executing a simple SAS program

**Install putty on your computer**

* Click on the following link to download the free version of putty SSH.

<http://www.chiark.greenend.org.uk/~sgtatham/putty/download.html>

**Open putty and Open a WRDS session**

* Open putty
* On the saved session, save “wrds.wharton.upenn.edu”
* Load “wrds.wharton.upenn.edu”
* Copy and paste “wrds.wharton.upenn.edu” on the host name
* Click on the open.
* You will next be prompted for your wrds user name and password. Enter your user name and password and your session will begin.
* You should see the following command line prompt:

>> wrds (~)%

**Open leap file transfer protocol (FTP)**

* Click on the following link to download the free version of leap FTP.

http://leapftp.findmysoft.com/download/

* Similar to the instructions above, set up a profile named *wrds\_ftp* for the wrds server in leap file transfer.
* Connect to WRDS using the same password as above. The files on the left are on your local computer and the files on the right are on the WRDS server.
* Use free trial version that you can download from https://www.edmodo.com

**Unix commands:** You need to learn how to operate in a unix environment, starting with basic line operating commands such as

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| --- | --- | --- |
| Navigating directories | | |
| top | Shows the status of jobs running on the wrds unix system | |
| cd | change directory, method used for moving from one folder to another. | |
| cd .. | moves up one directory. | |
| Cd / | moves you to root. | |
| Pwd | prints to console your present working directory – where you currently are. | |
| List contents | | |
| ls | list contents of current directory (without details) | |
| ls -la | shows long format inc. group owner, size, date modified, permissions of all files (with details) | |
| cat | read the contents of files | |
| Creating files and directories/folders | | |
| mkdir | use the mkdir command to create a new directory/folder. | |
| rm(dir) | use the rm(dir) command to remove a file(directory). 파일을 없애려면 rm, directory를 없애려면 rmdir | |
| mv | mv folder1/file.html folder2/file.html | |
| cp | cp folder1/file.html folder2/file.html | |
| Compressing and backing up files and folders | | |
| zip -r foo.zip foo/ | | compress the folder ‘foo’ and all of its contents into a zip file called ‘foo.zip’. |
| zip foo.zip foo.html | | compress the file’foo.html’ into a zip file called ‘foo.zip’. |
| Logout | | Logout |

A google search of “unix commands” will give you additional references to other unix commands. The wrds unix help document is also very helpful:

<http://wrds-web.wharton.upenn.edu/wrds/support/Accessing%20and%20Manipulating%20the%20Data/_002Unix%20Access/UNIX%20Quick%20Reference%20Sheet.cfm>

**Practice some of these commands**

* 1. Check the status of the wrds unix system using the command top
     + - 1. The default sort is by CPU usage. You can also sort on other columns. For instance, you can use the command top – o %MEM to sort on memory usage.
         2. Use CTRL/c to stop execution
  2. Create and go to a directory called fin514
     + - 1. Using putty, create a file called test
         2. Using leapftp, move sas data called temperature1.sas7bdat in your local computer to fin514 folder at WRDS
         3. Copy the file to another file named test using the cp command (cp temperature1.sas7bdat test/ temperature2.sas7bdat)
         4. Use diff to compare the file temperature1.sas7bdat to the file temperature2.sas7bdat at test folder. For this, go to fin514 folder and hit the command (diff temperature1.sas7bdat test/temperature2.sas7bdat)
         5. Remove sas data temperature2.sas7bdat using the rm command
         6. Create a file called temperature\_local in notepad and save to a local directory. Transfer the file to WRDS using leap file transfer.
  3. List the files in the fin514 directory using ls and ls –la

Information on user, group, size, file save date and time, file name

**Creating / executing a simple SAS programs** (유닉스에서 프로그램 실행)

1. Write and execute a program that reads in a set of Fahrenheit temperatures and converts to Celsius, outputting the results.
2. Create a new directory called sasprogram. Transfer the file temperature\_local.sas from your local computer to your unix account using **FTP file transfer**. Put the file in your sasprogram folder.
3. Execute the program

>> qsas temperature*.sas*

1. Three files (log, lst, sas): 로그창, 결과창, 사스 프로그램. Cat 명령어를 이용하여 log, lst 파일을 read.

2. Let’s examine the structure of this simple SAS program

options nocenter;

data temperature;

input fahrenheit;

cards;

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data temperature; set temperature;

celsius = (fahrenheit - 32)/1.8;run;

proc print data=temperature; run;

proc means data=temperature; run;

1. Global options on first line: (option no center 먼저 돌려보자)
2. Data step – create dataset named “temperature” with one variable called “fahrenheit”
3. The data
4. Another data step – create a new variable called “celsius”
5. Procedures: proc ‘print, reg, means, univariats’

Using the cards (or datalines statement): Use the cards statement with an INPUT statement to read data that you enter directly in the program, rather than data stored in an external file.

Cards: 원자료를 프로그램 내부에 입력

INFILE: 원자료를 외부 파일로부터 읽는 경우

Reference

* + 1. Top: <https://sabarada.tistory.com/146>
    2. Infile, cards statement: <https://communities.sas.com/t5/SAS-Tech-Tip/SAS-%ED%99%9C%EC%9A%A9-%EB%85%B8%ED%95%98%EC%9A%B0-INPUT-%EB%AC%B8/ta-p/791789>
    3. WRDS Clouds: <https://wrds-www.wharton.upenn.edu/pages/support/programming-wrds/programming-sas/sas-wrds-cloud/>
    4. Data dictionary(cloud에 있는 데이터의 path를 보여줌): https://wrds-www.wharton.upenn.edu/pages/about/data-vendors/