**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project #6**

**Computer Applications in Meteorology Due: Fri. Feb. 28, 2020**

**Moving Data Exercises on Linux**

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_

* create an “atms261” desktop folder on your Windows machine
* launch Xming
* logon to “blizzard.atms.unca.edu” via PuTTY
* create a “project06” subdirectory underneath your “GroupNN” directory
* copy “makewave.f” from the directory “/home/atms261/programs” into your “project06” subdirectory
* compile the program “makewave.f” using the following command
  + gfortran ◊ makewave.f ◊ –o ◊ mkwav
* note below the ***new*** directory contents of “project06” after compiling the program (ls –lt | more)
* copy the “runprog04.sh” script shell from the directory “/home/atms261/programs” into your “project06” subdirectory
* modify the script shell to force ‘blizzard’ to run the executable “./mkwav” six times in your “project06” subdirectory, each time choosing a different option (1, 2, 3, 4, 5, and 6)
* note below the new filenames in “project06” after running the program with six different options
* note below the name and the size (in bytes) of the largest data file created after “./mkwav” was executed

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_

* create a shell script based off the testscript.sh located in the “/home/atms261/programs” directory (copy it to your “project06” subdirectory)
  + Your script should do:
    1. Copy the largest file from Part (a) into a file called “bigfile.dat” ***into a final data directory*** named “dfiles” underneath your “project06” subdirectory
    2. Compress the file using gzip bigfile.dat
    3. Copy the rest of the files to the final data (“dfiles”) sub-directory
* note the file size of “bigfile.dat” ***after*** compression:

**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project #6**

**Computer Applications in Meteorology Due: Fri. Feb. 28, 2020**

**Moving Data Exercises in Linux (continued)**

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_

* click on WinSCP to initiate a Secure FTP (SFTP) session to “blizzard.atms.unca.edu”
  + type “blizzard.atms.unca.edu” into the “Host name:” window
  + type your username into the “User Name:” window
  + click on “Login”
  + enter the appropriate password under “Password:” in the new “Password” window
* select “Open directory/bookmark” folder at the right side of the WinSCP window and choose “Open directory” typing ‘/home/atms261’ in the window and select “Binary” transfer in the “Transfer Settings” drop-down menu in the center-top of the WinSCP window
* click on the correct “GroupNN” file in the right-hand window to get into your Group subdirectory on “blizzard”
* click on the “project06” file in the right-hand window to get into your subdirectory on “blizzard”
* click on the “dfiles” file in the right-hand window to get into your subdirectory on “blizzard”
* left click individually each of the “output\*.txt” files (there should be a total of six files) and drag them to your Windows group desktop “atms261” folder in the left-hand side of the file transfer window
* end the SFTP session
* open MS Excel and ingest each of the “output\*.txt” files into ***separate*** Excel files using the sequence
* Open (All Files) 🡪 outputNNNNNN.txt
* Click “Next” multiple times under the “Text Import Wizard” window until “Finish” is the final option
* highlight columns “B” and “C” and create an “XY (scatter)” plot using the option “with data points connected with lines”
* save file using “save as” option with the “Microsoft Excel Workbook” file format
* you should have six different Excel files for each of the six “outputNNNNNN.txt” files with a scatter plot corresponding to the data of each of the files
* note below the challenges you have, if any, with trying to create scatter plots for the data files “output040000.txt” and “output400000.txt”
* use MS Powerpoint to create \*.gif images of the XY scatter plots corresponding to files “output000004.txt”, “output000040.txt”, “output000400.txt”, and “output004000.txt” naming them “gp0004.gif”, “gp0040.gif”, “gp0400.gif”, and “gp4000.gif”, respectively
* sftp the four \*.gif images to your “/home/atms261/GroupNN/project06/” directory on “blizzard”
* compare the four different plots to answer the following questions
  + Are four grid points adequate to capture the mathematical function? Can you tell what type of function is displayed in the “gp0004.gif” image?

**Names: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Group Project #6**

**Computer Applications in Meteorology Due: Fri. Feb. 28, 2020**

**Moving Data Exercises in Linux (continued)**

* For which numbers of grid points can you no longer tell the difference between plots (4v.40, 40v.400, or 400v.4000)?
* What type of mathematical function was used for the “./mkwav” command?
* How might the grid point sampling problem be related to sampling atmospheric structures in the real atmosphere using RAOB stations at widely spaced locations?

1. Driver Initials:\_\_\_\_\_\_\_\_ Passenger Initials:\_\_\_\_\_\_\_\_

* create a shell script based on the script ‘wget\_images\_a261.csh’ located in the “/home/atms261/programs” directory (copy it to your “project06” subdirectory)
* create an “images” and “model” subdirectory underneath your “project06” subdirectory for storing radar image files (in “images”) and RUC GEMPAK format files (in “model”)
* go to <http://www2.mmm.ucar.edu/imagearchive/> to find radar imagery file locations valid for the period 1500 – 2100 UTC 26 February 2020 for the mid-Atlantic region
* go to <http://mtarchive.geol.iastate.edu/> to find RUC (ruc130) GEMPAK format files valid for the period 1500 – 2100 UTC 26 February 2020
* modify the ‘wget\_images\_a261.csh’ script file to
  1. bring the files from the remote web site locations to your local “/home/atms261/GroupNN/project06/…” “images” and “model” subdirectories ***AND***
  2. create an animated GIF image of the radar imagery for the 1500 – 2100 UTC 26 February 2020 period of the mid-Atlantic radar mosaic region in the “images” subdirectory

# Final deliverables for Group Project #6:

1. written responses
2. written responses
3. files “gp0004.gif”, “gp0040.gif”, “gp0400.gif”, and “gp4000.gif” at “blizzard” directory “/home/atms261/GroupNN/project06/” & written responses
4. mid-Atlantic radar imagery and animated GIF loop for 1500 - 2100 UTC 26 February 2020 period and RUC (ruc130) GEMPAK format files covering same 6-h period

**Next week:** MS Excel