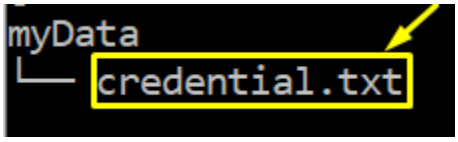
Assignment1: This assignment covers the topics that we learned during week1~5 of this course.

Question 1) You are asked to open a file from a remote machine and identify its permission settings. Complete the following steps: (1 marks)

- **Step1:** Formulate a command which opens the datafile:
  - The file located in My username: shahdad.shariatmadar , The datafile name is (credential.txt) and it is located in **myData** directory in my machine:



- **Step 2:** Formulate a command to display the permission setting of credential.txt.

Question 2) Using the filters (SED/GREP/AWK) and other string processing commands (cut, sort,…) and redirection commands in Unix, complete the followings (4 marks)

Step 1: Create a new file in ASN1-yourname directory, name it "dataset_yourname.txt", add the following data to "dataset_yourname.txt". The name of fields are in this order (left to right):

```
id,company_name,job,year,department

1,Feedmix,Actuary,2001,Support
2,Trunyx,Web Designer III,2009,Sales
3,Linklinks,Environmental Tech,1997,Marketing
4,Leenti,Paralegal,2004,Product Management
5,Layo,Senior Cost Accountant,1996,Accounting
6,Vinte,Research Associate,2008,Services
7,Avamba,Analyst Programmer,2011,Product Management
8,Katz,Occupational Therapist,2003,Research and Development
9,Gigazoom,Recruiting Manager,2013,Services
10,Youspan,Senior Developer,2007,Human Resources
11,Photobug,Database Administrator IV,1995,Accounting
12,Mynte,Computer Systems Analyst III,2011,Training
13,Jabberbean,Health Coach I,2012,Sales
14,Roombo,Staff Accountant II,2003,Support
15,Jaxworks,Civil Engineer,2002,Marketing
16,Browsezoom,Librarian,1992,Training
17,Skidoo,Payment Adjustment Coordinator,1974,Accounting
18,Kazu,Structural Analysis Engineer,2012,R&D
19,InnoZ,Cost Accountant,2007,Legal
20,Gabtype,Marketing Assistant,1995,Marketing
```

Step2: Formulate a command which displays record 9 ~12

Step3: Formulate a command which sort data based on "*job*".

Step 4: Formulate a command which displays all *departments*. Transform them into upper case. Store the output into a new file, named "output.txt"

Step5: Formulate a command which displays the number of character of last record/line of the given data.

Step5: Formulate a command which displays the rows that their job is *Marketing*.

Step6: Formulate a command which displays company_name and job that their year is *between 2007~2012*

Question 3) You are asked to develop a script which checks whether two given files (contents) are identical. Name the script as Q3-yourname.bash. (3 marks)

The script performs the following:

1) Check whether user provide the correct number of arguments. Display proper error message if requires.
2) Check whether both filenames are exists. Display proper error message if requires.
3) Calculate the number of bytes/characters in each file and if the number of characters in both files are the same, the script displays "Files are similar", otherwise it displays "Files are different"

   Note: **How to call script:** ./Q3-yourname.sh *filename1 filename2*

- *Make sure to handle errors, check file existence, and validate input/arguments*

Question 4) create a directory (A1_yourname) and a file (file1)

Try to following commands to observe how to change the advanced permissions:

- To change the SUID: `chmod 4775 file1`
- To change the GUID : `chmod 2775 file1`
- To change the Sticky bit: `chmod 1775 A1_yourname`

Check the permission of **file1** and **test**.

Also check the permission of the following system directories by running the following commands:

- `ls -l /usr/bin/passwd`
- `ls -ld /tmp`

Explain what you learn from this observation.

Question 5) Using the filters (SED/GREP/AWK) and other string processing commands (cut, sort,…) and redirection commands in Unix, complete the followings:

1. Run this command: `netstat > report_yourname`
2. What happen? Display what is inside report_your_name.
3. Formulate a command to display only those rows which have "/run/dbus/system_bus_socket"
4. Formulate a command to display only "tcp" data as follow (highlighted part):

```
[shahdad.shariatmadar@mtrx-node04pd ~]$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp       32      0 mtrx-node04pd.dcm:60632 tm-sp1.senecacoll:https CLOSE_WAIT
tcp        0      0 matrix.senecacolleg:ssh 10.29.0.144:53509       ESTABLISHED
tcp       32      0 mtrx-node04pd.dcm:60618 tm-sp1.senecacoll:https CLOSE_WAIT
tcp        0      0 mtrx-node04pd.dcm.s:850 mtrx-home01pd.dcm.s:nfs ESTABLISHED
tcp        0      0 matrix.senecacolleg:ssh 10.30.0.75:56757        ESTABLISHED
tcp        0      0 mtrx-node:nimcontroller dc-log01pd.dcm.se:shell ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  3      [ ]         DGRAM                    11798    /run/systemd/notify
unix  2      [ ]         DGRAM                    11800    /run/systemd/cgroups-agent
unix  5      [ ]         DGRAM                    11821    /run/systemd/journal/socket
unix  19     [ ]         DGRAM                    11823    /dev/log
```

5. Redirect the output of previous command into a new file: **filter-data**
6. Using **filter-data** file, formulate a command to display only "Foreign Address"
7. Using **filter-data** file, formulate a command to display data sorted by "Recv-Q" value.
8. Using **report_yourname**, try to filter "Active Unix domain socket" and display the data as follow (having a header, place "*" instead of I-Node values)

```
Proto RefCnt Flags       Type       State         I-Node   Path
-------------------------------------------------------------------------------
unix  3      [ ]         DGRAM                    *****    /run/systemd/notify
unix  2      [ ]         DGRAM                    *****    /run/systemd/cgroups-agent
unix  5      [ ]         DGRAM                    *****    /run/systemd/journal/socket
unix  25     [ ]         DGRAM                    *****    /dev/log
unix  2      [ ]         DGRAM                    *****    /run/systemd/shutdownd
unix  3      [ ]         STREAM     CONNECTED     *****    /run/systemd/journal/stdout
unix  3      [ ]         STREAM     CONNECTED     *****
unix  3      [ ]         STREAM     CONNECTED     *****
```

Submission:

1) Please take screenshot of the output of each question and save it into MS-Word file and submit it. In addition, please submit all the scripts that you developed during this Assignment.

2) Please submit a recorded-video which explains how you did the Assignment and demonstrate your solutions. This will give everyone the opportunity to present their solution. Please record a video (2~10 minutes) with the following contents:

- Introduce yourself

- Show/demonstrate how your assignment works.
- Explain your code (walkthrough), how you design it (a quick/detailed walk-through of the programming code , running the commands in Matrix)
- Speak about challenges that you have faced during this Assingment.
- Evaluate yourself. Have you implemented all requirements of the lab? how do you evaluate yourself out of 10 for this Assignment.

NOTE: You can record the video using some screen-capture software (like OBS : https://obsproject.com/) or your cellphone. To submit the video:

1. You can upload the video on the youtube (you may make it unlisted) and submit the link here.
2. You can also directly upload the video to the BB.

Important Note:

1) Add the following declaration at the top of your word file

```
/*************************************************************************
* UNX510 – Assignment 1
* I declare that this assignment is my own work in accordance with Seneca Academic
* Policy.
* No part of this assignment has been copied manually or electronically from any other
* source (including web sites) or distributed to other students.
*
* Name: _____ Student ID: _____ Date: _____
*
*
*************************************************************************/
```

2) There is a deduction of 10% per day for late submissions up to 5 days and after 5 days, no mark .