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COURSE: DATA-613

HOMEWORK-1

Question 1: (10 Points)

What is the difference between shell and bash?

The answer is option **1**. The difference between a **shell** and **bash** is as follows:

- **Shell**: The shell is a command-line interpreter that provides a user interface for accessing an operating system's services. It allows users to execute commands, scripts, and programs. There are different types of shells such as sh, bash, zsh, csh, etc.

- **Bash**: Bash stands for **Bourne Again Shell**. It is one of the most used shell programs. It is an improved version of the original Bourne shell (sh), with additional features like better scripting capabilities, command history, tab completion, etc. Bash is both a command language and a scripting language.

Question 2: (10 Points)

To respond to this question, you need to open your terminal and run the following commands:

1. **What is your home directory?**


```
ai5244a@AU106773 MINGW64 /
$ echo $HOME
/c/Users/ai5244a

ai5244a@AU106773 MINGW64 /
$ |
```

2. What files/folders exist in it?


```
ai5244a@AU106773 MINGW64 /
$ echo $HOME
/c/Users/ai5244a

ai5244a@AU106773 MINGW64 /
$ ls
LICENSE.txt  ReleaseNotes.html  bin/  cmd/  dev/  etc/  git-bash.exe*  git-cmd.exe*  mingw64/  proc/  tmp/  unins000.dat  unins000.exe*  unins000.msg  usr/

ai5244a@AU106773 MINGW64 /
$ |
```

Question 3: (10 Points)

1. **Where does the command cd ../../ take you?**

   o The command cd ../../ navigates two directories up from your current location. For example, if you are in /home/user/documents, running this command would take you to /home.

   ```
   ai5244a@AU106773 MINGW64 /
   $ cd ../../

   ai5244a@AU106773 MINGW64 /
   $ pwd
   /

   ai5244a@AU106773 MINGW64 /
   $ |
   ```

2. **What does the command cd do?**

   • The command cd without any arguments takes you back to your home directory.

   ```
   ai5244a@AU106773 MINGW64 /
   $ cd

   ai5244a@AU106773 MINGW64 ~
   $ pwd
   /c/Users/ai5244a

   ai5244a@AU106773 MINGW64 ~
   $ |
   ```

Question 4: (10 Points)

1. **Read the manual page of ls. What does the -a flag do?**

   The -a flag stands for "all" and it shows all files, including hidden ones (files starting with a dot .).

2. **What does the -l flag do?**

   The -l flag stands for "long listing format", which displays detailed information about files, such as permissions, owner, file size, and modification date.

```
ai5244a@AU106773 MINGW64 ~
$ ls -al
total 15216
drwxr-xr-x 1 ai5244a 1049089        0 Sep 27 14:01  ./
drwxr-xr-x 1 ai5244a 1049089        0 Sep 19 16:44  ../
-rw-r--r-- 1 ai5244a 1049089      574 Sep 19 11:26  .bash_history
-rw-r--r-- 1 ai5244a 1049089      109 Sep 16 17:12  .gitconfig
-rw-r--r-- 1 ai5244a 1049089       20 Sep 23 16:40  .lesshst
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:12  .ms-ad/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 19 16:25  .ssh/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 16 16:51  .vscode/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  '3D Objects'/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  AppData/
lrwxrwxrwx 1 ai5244a 1049089       32 Jul 16 14:05  'Application Data' -> /c/Users/ai5244a/AppData/Roaming/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  Contacts/
lrwxrwxrwx 1 ai5244a 1049089       60 Jul 16 14:05  Cookies -> /c/Users/ai5244a/AppData/Local/Microsoft/Windows/INetCookies/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:07  Documents/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 29 20:08  Downloads/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  Favorites/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 23 16:37  HW_AdaezeIgboanugo/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 27 14:02  IntelGraphicsProfiles/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  Links/
lrwxrwxrwx 1 ai5244a 1049089       30 Jul 16 14:05  'Local Settings' -> /c/Users/ai5244a/AppData/Local/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  Music/
lrwxrwxrwx 1 ai5244a 1049089       26 Jul 16 14:05  'My Documents' -> /c/Users/ai5244a/Documents/
-rw-r--r-- 1 ai5244a 1049089 10485760 Sep 25 08:30  NTUSER.DAT
-rw-r--r-- 1 ai5244a 1049089    65536 Jul 20 05:38  NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TM.blf
-rw-r--r-- 1 ai5244a 1049089   524288 Jul 16 14:05  NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000001.regtrans-ms
-rw-r--r-- 1 ai5244a 1049089   524288 Jul 16 14:05  NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000002.regtrans-ms
lrwxrwxrwx 1 ai5244a 1049089       68 Jul 16 14:05  NetHood -> '/c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/Network Shortcuts'/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:07  OneDrive/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 27 14:42  'OneDrive - american.edu'/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 16 17:04  PRACTICE/
lrwxrwxrwx 1 ai5244a 1049089       68 Jul 16 14:05  PrintHood -> '/c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/Printer Shortcuts'/
lrwxrwxrwx 1 ai5244a 1049089       57 Jul 16 14:05  Recent -> /c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/Recent/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:05  'Saved Games'/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:06  Searches/
lrwxrwxrwx 1 ai5244a 1049089       57 Jul 16 14:05  SendTo -> /c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/SendTo/
lrwxrwxrwx 1 ai5244a 1049089       61 Jul 16 14:05  'Start Menu' -> '/c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/Start Menu'/
lrwxrwxrwx 1 ai5244a 1049089       60 Jul 16 14:05  Templates -> /c/Users/ai5244a/AppData/Roaming/Microsoft/Windows/Templates/
drwxr-xr-x 1 ai5244a 1049089        0 Jul 16 14:11  Videos/
drwxr-xr-x 1 ai5244a 1049089        0 Sep 19 00:18  Zotero/
-rw-r--r-- 1 ai5244a 1049089  2719744 Jul 16 14:05  ntuser.dat.LOG1
-rw-r--r-- 1 ai5244a 1049089  1163264 Jul 16 14:05  ntuser.dat.LOG2
-rw-r--r-- 1 ai5244a 1049089       20 Jul 16 14:05  ntuser.ini

ai5244a@AU106773 MINGW64 ~
$ |
```

Question 5: (A and B each have 5 points, and C has 10 points. The total is 20 points.) To respond to this question, you need to use terminal/Bash and have a screenshot of your terminal/bash.

A. Create a folder within your home directory, which was identified in Question 2, and name it 'temp_bash'.

B. Create a new file using the command `touch` and name it `myfile.txt` inside the new folder `temp_bash` and run `ls` to show that the file is inside the folder.

C. Run the `stat myfile.txt` command and explain the information retrieved from the output. Here is an example of what should be included in the output and a brief explanation for each part.

- `Blocks: 0 `   The number of blocks for the file.

- `IO Block: 65536`   The size of each block.

ANSWER:

The stat command gives detailed information about the file, including:

- **Blocks**: Number of blocks used for the file.

- **IO Block**: The size of each block.

```
ai5244a@AU106773 MINGW64 ~
$ mkdir ~/temp_bash

ai5244a@AU106773 MINGW64 ~
$ cd ~/temp_bash

ai5244a@AU106773 MINGW64 ~/temp_bash
$ touch myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ ls
myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ stat myfile.txt
stat: cannot stat 'myfile.txt': No such file or directory

ai5244a@AU106773 MINGW64 ~/temp_bash
$ stat myfile.text
  File: myfile.text
  Size: 0               Blocks: 0          IO Block: 65536  regular empty file
Device: d678f318h/3598250776d   Inode: 7036874417913342  Links: 1
Access: (0644/-rw-r--r--)  Uid: (2631547/ ai5244a)   Gid: (1049089/ UNKNOWN)
Access: 2024-09-30 11:57:01.326693000 -0400
Modify: 2024-09-30 11:57:01.326693000 -0400
Change: 2024-09-30 11:57:01.326273000 -0400
 Birth: 2024-09-30 11:57:01.326273000 -0400

ai5244a@AU106773 MINGW64 ~/temp_bash
$ |
```

Question 6: (40 Points) To respond to this question, you need to use terminal/Bash and have a screenshot of your terminal/bash.

    A. Use the command `>>` and add the following line This line is my first line. Now add the following line This line is my second line. Then, run cat myfile.txt to show that the line has been added.

    B. Copy the file myfile.txt to file copy_myfile.txt with the command `cp`

    C. Use the command `>` and add the following line This line is a new line to copy_myfile.txt. Then run cat copy_myfile.txt to show the line is added.

    D. Explain the difference between `>` and `>>` based on the result of the Question 6.

ANSWER:

```
ai5244a@AU106773 MINGW64 ~/temp_bash
$ echo "This is my first line" >> myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ echo "This is my second line" >> myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ cat myfile.text
This is my first line
This is my second line

ai5244a@AU106773 MINGW64 ~/temp_bash
$ cp myfile.text copy_myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ echo "This is a new line." >  copy_myfile.text

ai5244a@AU106773 MINGW64 ~/temp_bash
$ cat copy_myfile.text
This is a new line.

ai5244a@AU106773 MINGW64 ~/temp_bash
$ |
```

Difference between > and >>:

- >: Overwrites the file.

- >>: Appends to the file.