Home Work 1

Gloria Baidoo

```
knitr::opts_chunk$set(echo = TRUE)
library(tidyverse)
```

```
-- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
v dplyr     1.1.4     v readr     2.1.5
v forcats   1.0.0     v stringr   1.5.1
v ggplot2   3.5.1     v tibble    3.2.1
v lubridate 1.9.3     v tidyr     1.3.1
v purrr     1.0.2
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to becom
```

```
library(tinytex)
```

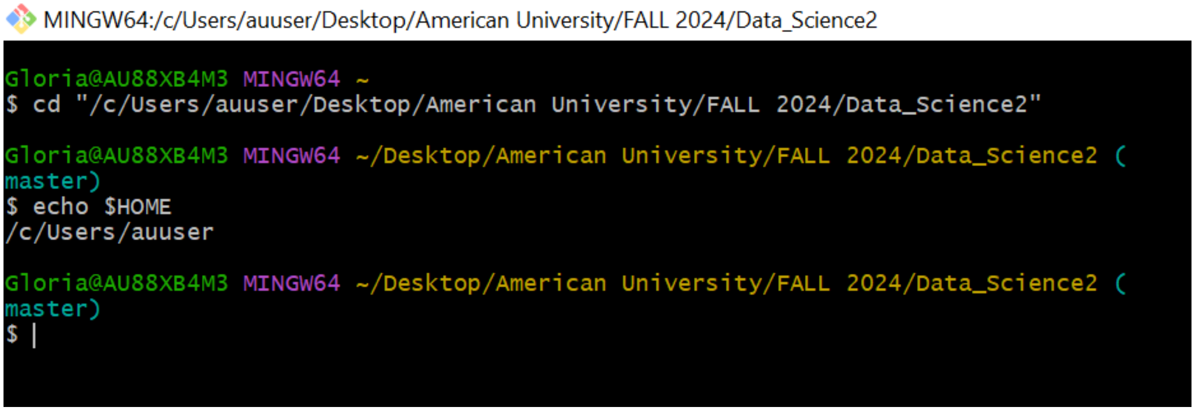
1. What is the difference between shell and bash?

A shell is a general term for a command-line interface (CLI) that allows users to interact with the operating system by running commands, scripts, and programs. It serves as an intermediary between the user and the system's kernel. examples of shells are Bash (Bourne Again Shell), sh (Bourne shell), csh (C shell), zsh (Z shell), ksh (Korn shell) and Bash Bash stands for Bourne Again SHell and is one of the most widely used shells in Unix-like systems (e.g., Linux). It is an improved version of the original Bourne shell (sh), providing more features, such as command history, improved scripting capabilities, and command-line editing.

2. To respond to this question, you need to use terminal/Bash and have a screenshot of your terminal/bash.

A. What is your home directory?

```r
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```

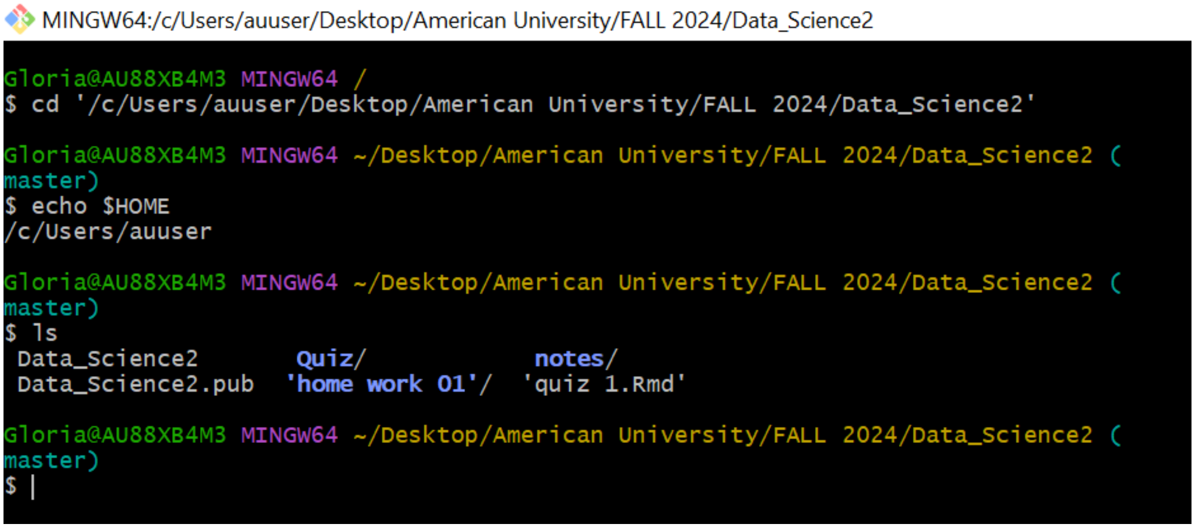


MINGW64:/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2

```
Gloria@AU88XB4M3 MINGW64 ~
$ cd "/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2"

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ echo $HOME
/c/Users/auuser

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ |
```

B. What files/folders exist in it?

```r
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```



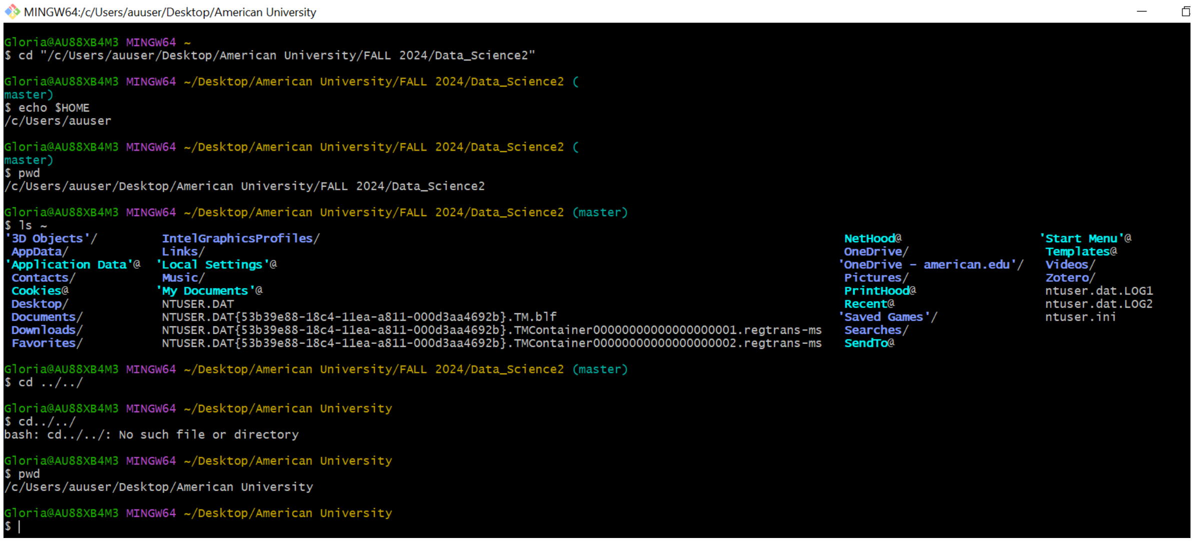
MINGW64:/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2

```
Gloria@AU88XB4M3 MINGW64 /
$ cd '/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2'

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ echo $HOME
/c/Users/auuser

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ ls
 Data_Science2       Quiz/            notes/
 Data_Science2.pub  'home work 01'/  'quiz 1.Rmd'

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ |
```

3. You need to use terminal/Bash and have a screenshot of your terminal/bash.

A. Where does the command `cd../../` take you? Run the command `pwd` and explain the output!

```r
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```

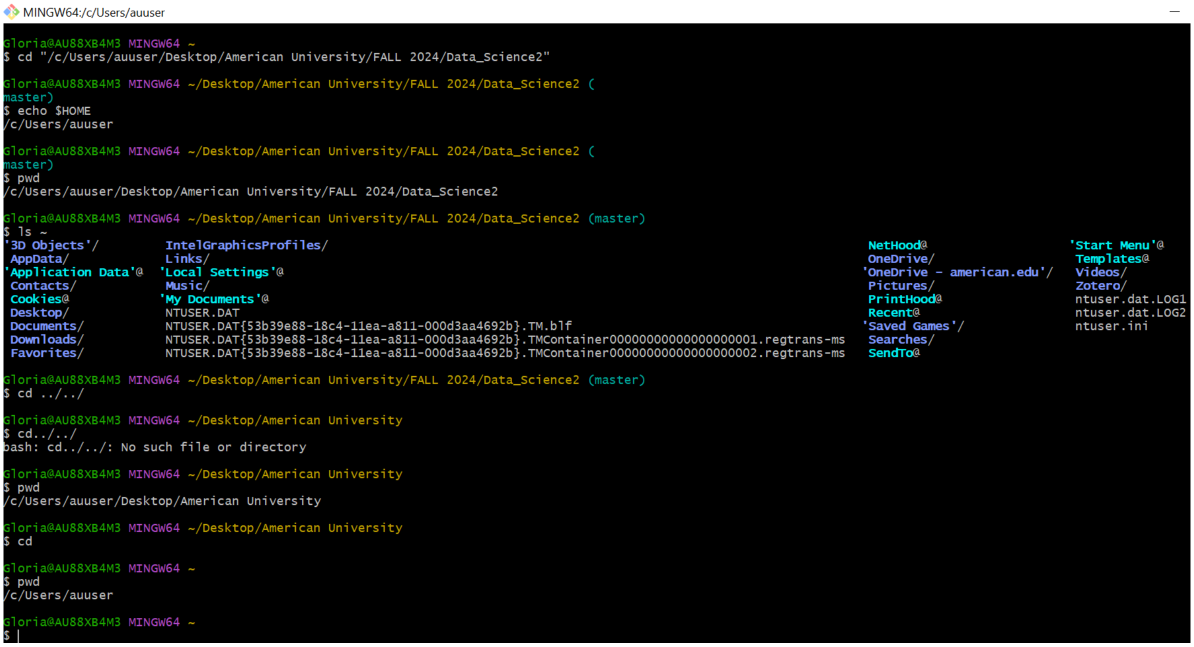


```
Gloria@AU88XB4M3 MINGW64 ~
$ cd "/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2"

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ echo $HOME
/c/Users/auuser

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ pwd
/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ ls ~
'3D Objects'/         IntelGraphicsProfiles/                                                                          NetHood@                    'Start Menu'@
 AppData/             Links/                                                                                          OneDrive/                   Templates@
'Application Data'@  'Local Settings'@                                                                               'OneDrive - american.edu'/   Videos/
 Contacts/            Music/                                                                                          Pictures/                   Zotero/
 Cookies@            'My Documents'@                                                                                  PrintHood@                  ntuser.dat.LOG1
 Desktop/             NTUSER.DAT                                                                                      Recent@                     ntuser.dat.LOG2
 Documents/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TM.blf                                        'Saved Games'/               ntuser.ini
 Downloads/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000001.regtrans-ms    Searches/
 Favorites/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000002.regtrans-ms    SendTo@

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ cd ../../

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ cd../../
bash: cd../../: No such file or directory

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ pwd
/c/Users/auuser/Desktop/American University

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ |
```

#**The command cd ../../ in a terminal or Bash shell moves you up two directory levels from your current working directory. Before cd../../, the working directory was Desktop/American University/FALL 2024/Data_Science2 and after i initiated the command it moved the FALL 2024 and Data_Science2. When I used pwd it printed the current directory after initiating the cd../../ command

B. What does the command `cd` do? Run the command `pwd` and explain the output** The command cd stands for "change directory". It is used in the terminal to navigate between directories (folders) in a file system. When you run cd followed by the path of a directory, it moves you from your current working directory to the specified directory. running a cd without a path takes you to your home directory.This is like setwd() in R. As when we specified paths in R,using two periods mean "move back a folder"

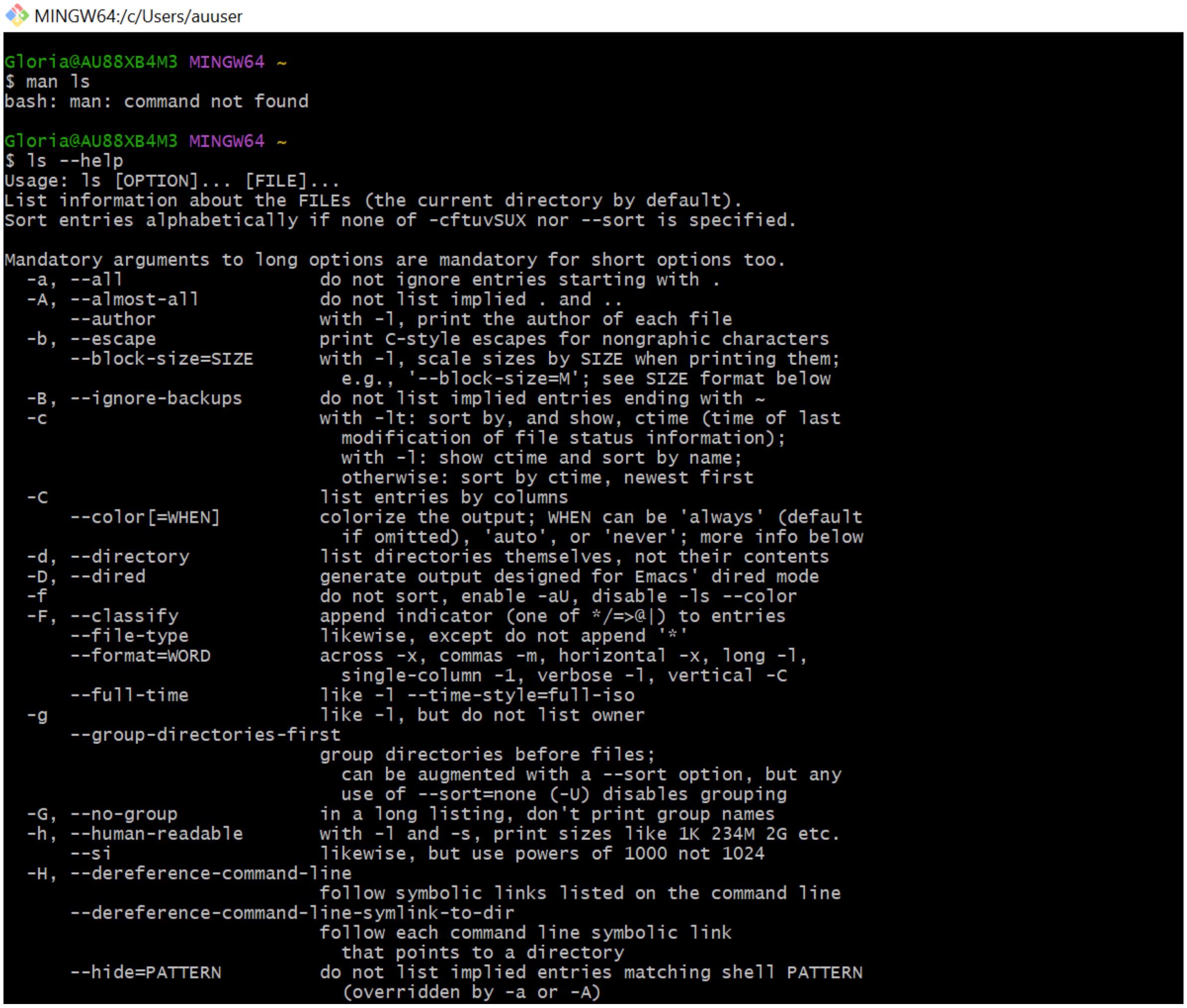
```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sci
```



```
Gloria@AU88XB4M3 MINGW64 ~
$ cd "/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2"

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ echo $HOME
/c/Users/auuser

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (
master)
$ pwd
/c/Users/auuser/Desktop/American University/FALL 2024/Data_Science2

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ ls ~
'3D Objects'/         IntelGraphicsProfiles/                                                                    NetHood@                     'Start Menu'@
 AppData/             Links/                                                                                    OneDrive/                     Templates@
'Application Data'@  'Local Settings'@                                                                         'OneDrive - american.edu'/     Videos/
 Contacts/            Music/                                                                                    Pictures/                     Zotero/
 Cookies@            'My Documents'@                                                                            PrintHood@                    ntuser.dat.LOG1
 Desktop/             NTUSER.DAT                                                                                Recent@                       ntuser.dat.LOG2
 Documents/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TM.blf                                  'Saved Games'/                 ntuser.ini
 Downloads/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000001.regtrans-ms   Searches/
 Favorites/           NTUSER.DAT{53b39e88-18c4-11ea-a811-000d3aa4692b}.TMContainer00000000000000000002.regtrans-ms   SendTo@

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ cd ../../

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ cd../../
bash: cd../../: No such file or directory

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ pwd
/c/Users/auuser/Desktop/American University

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University
$ cd

Gloria@AU88XB4M3 MINGW64 ~
$ pwd
/c/Users/auuser

Gloria@AU88XB4M3 MINGW64 ~
$ |
```

4. You need to use terminal/Bash and have a screenshot of your terminal/bash Read the manual page of ls. What does the a flag do? What does the l flag do?

```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sci
```



MINGW64:/c/Users/auuser

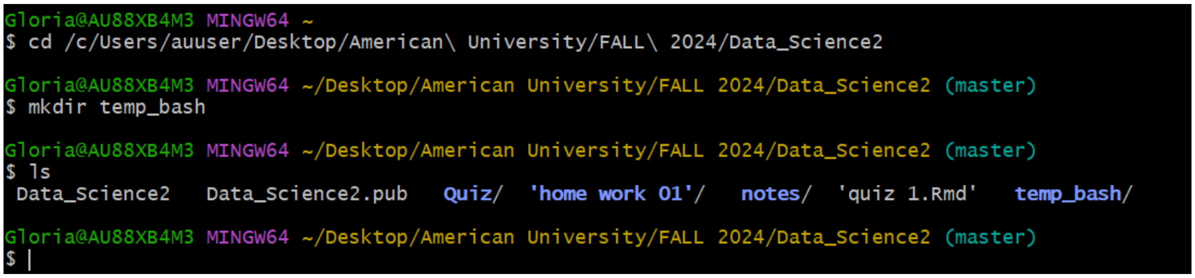
```
Gloria@AU88XB4M3 MINGW64 ~
$ man ls
bash: man: command not found

Gloria@AU88XB4M3 MINGW64 ~
$ ls --help
Usage: ls [OPTION]... [FILE]...
List information about the FILEs (the current directory by default).
Sort entries alphabetically if none of -cftuvSUX nor --sort is specified.

Mandatory arguments to long options are mandatory for short options too.
  -a, --all                  do not ignore entries starting with .
  -A, --almost-all           do not list implied . and ..
      --author               with -l, print the author of each file
  -b, --escape               print C-style escapes for nongraphic characters
      --block-size=SIZE      with -l, scale sizes by SIZE when printing them;
                               e.g., '--block-size=M'; see SIZE format below
  -B, --ignore-backups       do not list implied entries ending with ~
  -c                         with -lt: sort by, and show, ctime (time of last
                               modification of file status information);
                               with -l: show ctime and sort by name;
                               otherwise: sort by ctime, newest first
  -C                         list entries by columns
      --color[=WHEN]         colorize the output; WHEN can be 'always' (default
                               if omitted), 'auto', or 'never'; more info below
  -d, --directory            list directories themselves, not their contents
  -D, --dired                generate output designed for Emacs' dired mode
  -f                         do not sort, enable -aU, disable -ls --color
  -F, --classify             append indicator (one of */=>@|) to entries
      --file-type            likewise, except do not append '*'
      --format=WORD          across -x, commas -m, horizontal -x, long -l,
                               single-column -1, verbose -l, vertical -C
      --full-time            like -l --time-style=full-iso
  -g                         like -l, but do not list owner
      --group-directories-first
                             group directories before files;
                               can be augmented with a --sort option, but any
                               use of --sort=none (-U) disables grouping
  -G, --no-group             in a long listing, don't print group names
  -h, --human-readable       with -l and -s, print sizes like 1K 234M 2G etc.
      --si                   likewise, but use powers of 1000 not 1024
  -H, --dereference-command-line
                             follow symbolic links listed on the command line
      --dereference-command-line-symlink-to-dir
                             follow each command line symbolic link
                               that points to a directory
      --hide=PATTERN         do not list implied entries matching shell PATTERN
                               (overridden by -a or -A)
```

#**The -a flag (or –all) is used to list all files, including hidden files (those whose names begin with a dot .) It also means do not ignore entries starting with. The -l flag stands for long listing format or do not list implied entries matching shell PATTERN. When used with ls, it displays detailed information about each file or directory, including:Permissions,Number of links, Owner of the file, Group the file belongs to and File size

5. 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’.

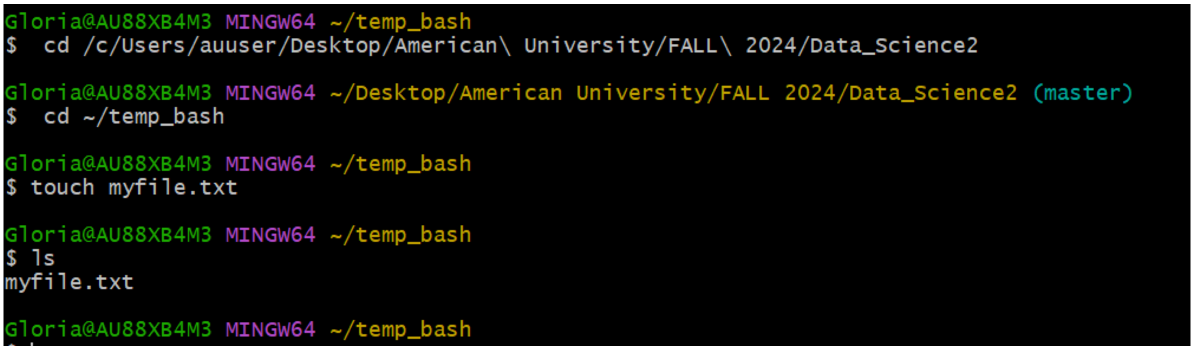
```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```



```
Gloria@AU88XB4M3 MINGW64 ~
$ cd /c/Users/auuser/Desktop/American\ University/FALL\ 2024/Data_Science2

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ mkdir temp_bash

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ ls
 Data_Science2    Data_Science2.pub    Quiz/   'home work 01'/    notes/   'quiz 1.Rmd'    temp_bash/

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$ |
```

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.

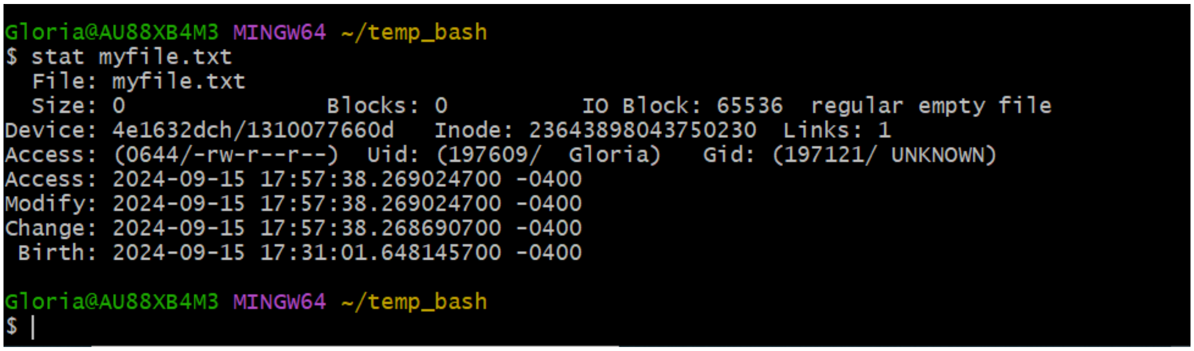
```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```



```
Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$  cd /c/Users/auuser/Desktop/American\ University/FALL\ 2024/Data_Science2

Gloria@AU88XB4M3 MINGW64 ~/Desktop/American University/FALL 2024/Data_Science2 (master)
$  cd ~/temp_bash

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ touch myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ ls
myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
```

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.

```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sci
```



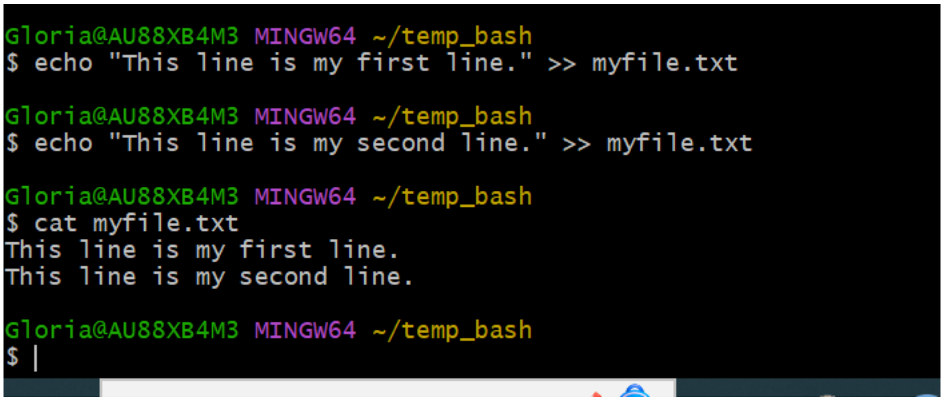
```
Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ stat myfile.txt
  File: myfile.txt
  Size: 0               Blocks: 0          IO Block: 65536  regular empty file
Device: 4e1632dch/1310077660d   Inode: 23643898043750230  Links: 1
Access: (0644/-rw-r--r--)  Uid: (197609/  Gloria)   Gid: (197121/ UNKNOWN)
Access: 2024-09-15 17:57:38.269024700 -0400
Modify: 2024-09-15 17:57:38.269024700 -0400
Change: 2024-09-15 17:57:38.268690700 -0400
 Birth: 2024-09-15 17:31:01.648145700 -0400

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ |
```

#**Blocks: Number of blocks allocated to the file (0 for an empty file).** IO Block: Size of each block, which in this case is 65536 bytes. **Inode: An identifier for the file on the disk.** Access, Modify, Change: Show the last times the file was accessed, modified, or had metadata changes.

6

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.

```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sci
```

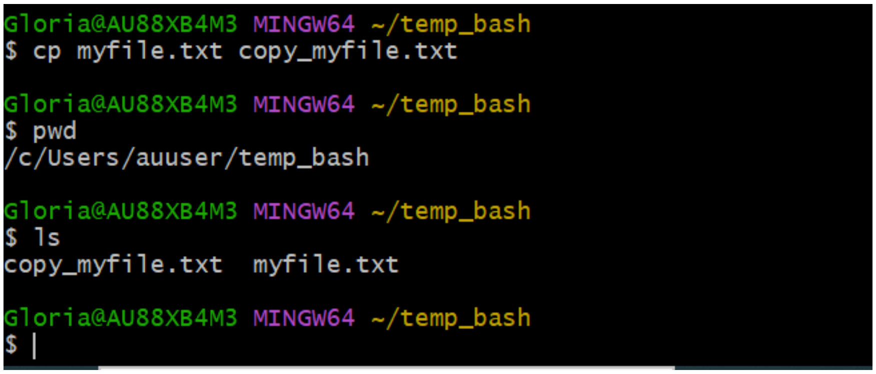


```
Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ echo "This line is my first line." >> myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ echo "This line is my second line." >> myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ cat myfile.txt
This line is my first line.
This line is my second line.

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ |
```

#** echo “text” » file: Appends the specified text to the file. The » operator adds the text to the end of the file without overwriting the existing content.cat file: Displays the content of the file.

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

```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```

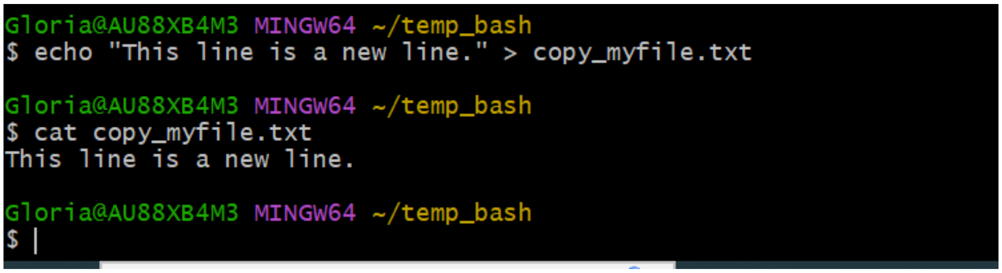


```
Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ cp myfile.txt copy_myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ pwd
/c/Users/auuser/temp_bash

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ ls
copy_myfile.txt  myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ |
```

#** This command will create a copy of myfile.txt named copy_myfile.txt in the same directory.

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.

```
knitr::include_graphics("C:\\Users\\auuser\\Desktop\\American University\\FALL 2024\\Data_Sc
```



```
Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ echo "This line is a new line." > copy_myfile.txt

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ cat copy_myfile.txt
This line is a new line.

Gloria@AU88XB4M3 MINGW64 ~/temp_bash
$ |
```

D. Explain the difference between > and >> **The > operator redirects output to a file, overwriting the file's existing content if the file already exists. If the file exists, its content is replaced with the new output. If the file does not exist, it is created and the output is written to it whiles The » operator redirects output to a file, appending the new content to the end of the file.If the file exists, the new output is added to the end of the existing content. If the file does not exist, it is created and the output is written to it.