SUMMER SCHOOL 2021

Introduction to the Shell

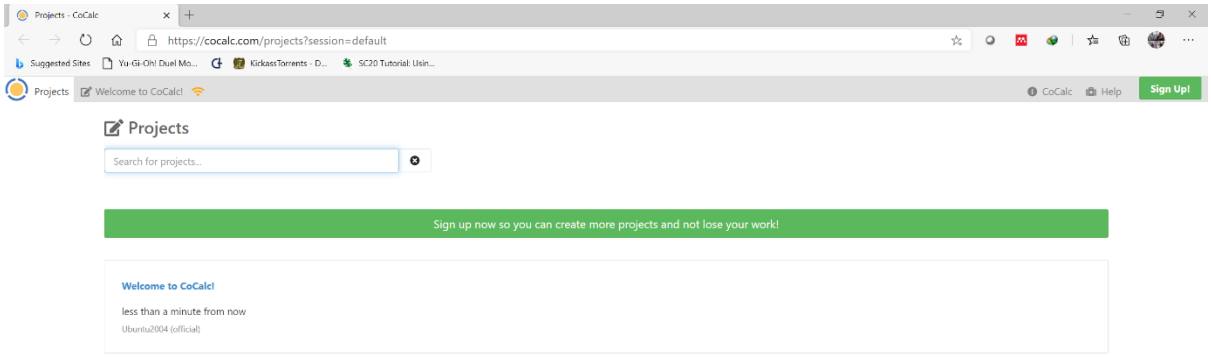
Dr Krishna K. Govender

Summary of commands used in this lecture

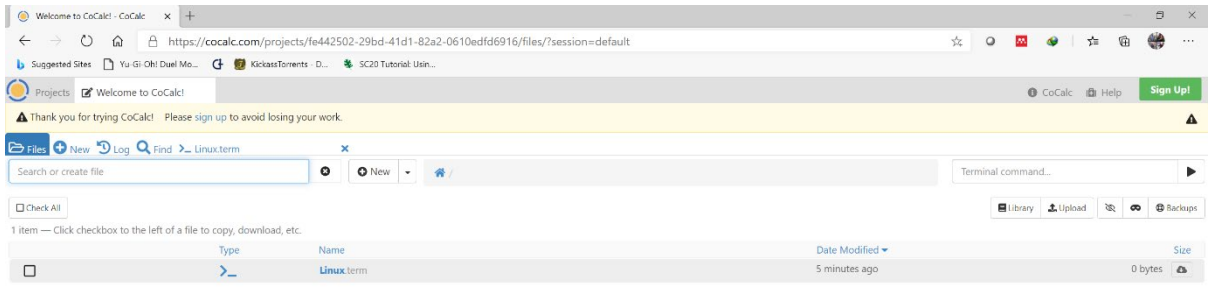
Command	Meaning
cal	Gives you a terminal view of the calendar
date	Provides the current date and time
clear	Clears the terminal screen
man	Display the manual page for a specific Linux command
pwd	Present working directory
ls	List items in current directory
echo	Print text to screen
df	Checks amount of free disk space
free	Checks the memory on a machine

- If you followed the steps outlined in the previous lecture (**Getting Set Up**) and you closed your browser, you will need to first navigate to:
  [CoCalc – Collaborative Calculation and Data Science]

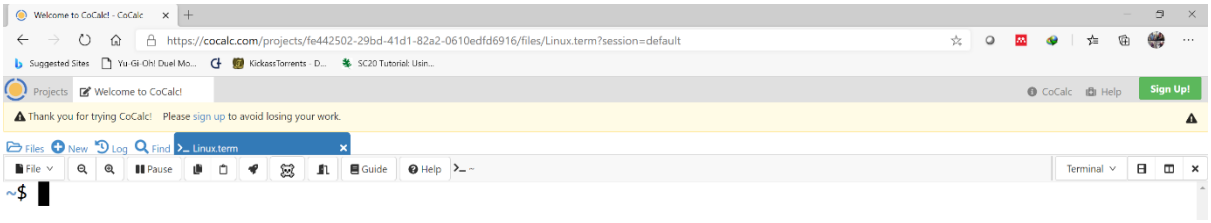
- You should see a page that looks like:



- Clicking on Welcome to CoCalc! will take you here:



- Now click on Linux.term and you will end up on a terminal, where we will be executing our commands:

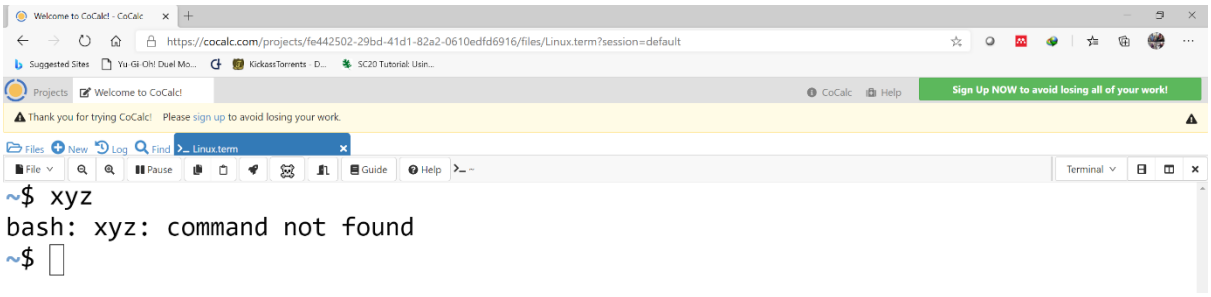


- If you are working offline, then you should have your **MobaXterm terminal** (Windows users) or a **local terminal** (Linux and MacOS users) open. Please refer to the **Getting Set Up** lecture if you are not sure about how to do this.

- All commands that will be provided in **BOLD** and center aligned from here onwards are commands that can be typed/executed directly in a terminal.

- Let's begin with some random command (any command typed in a terminal should always be followed by the **Enter** key for the command to take effect):

xyz

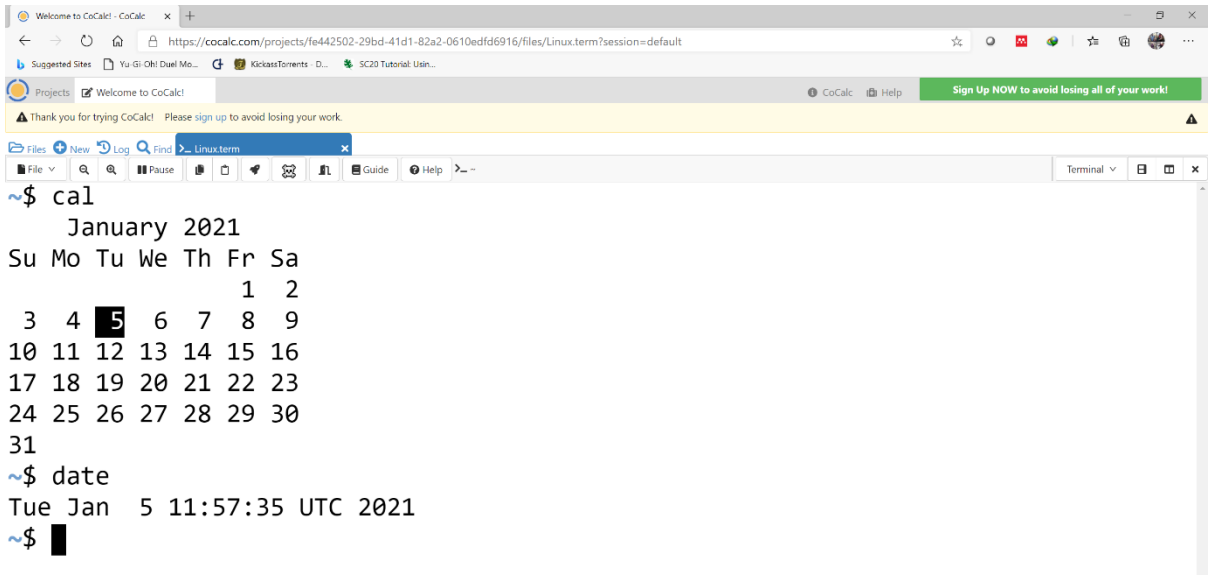


- As you can see the terminal will accept anything you type, however in the current case the command **xyz** is one that is not recognized and produces a command not found error.

- Now let's display the calendar and the current date and time:

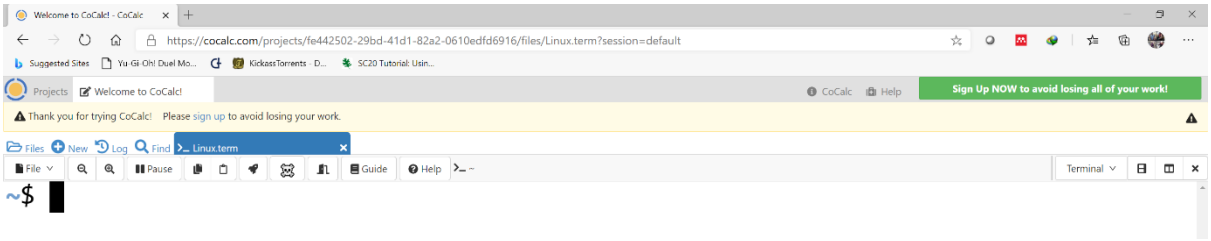
cal

date



- Should you wish to remove the contents displayed on the current screen you can use:

clear



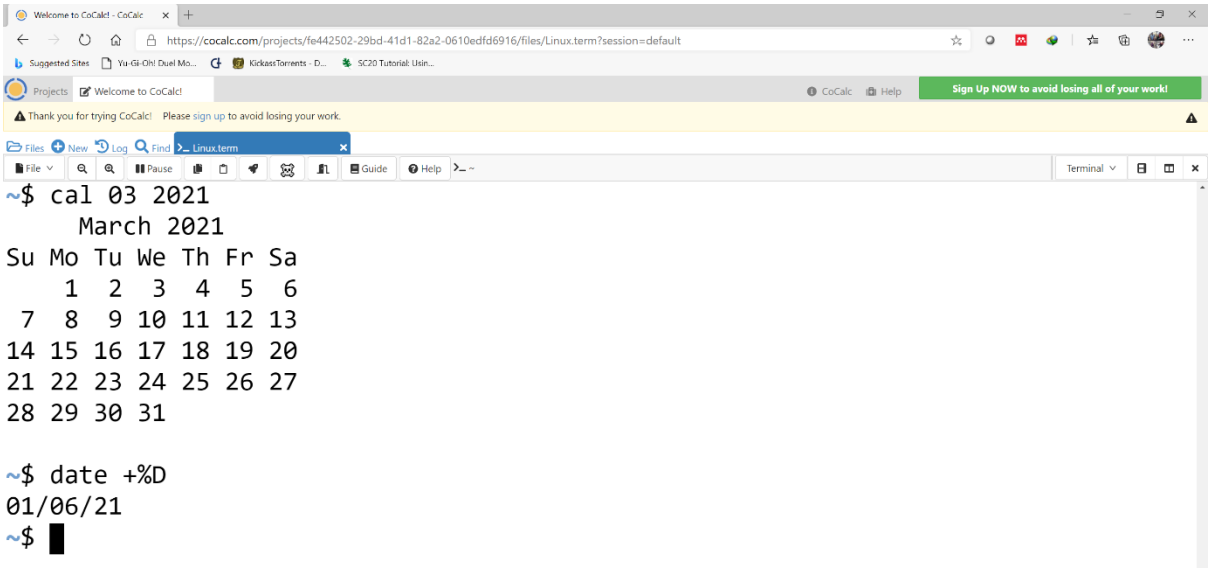
- **clear** merely clears the screen so that we can work on a fresh new screen. Don't worry the commands you typed up to this point are not lost. I will show you, later in the course, how you can retrieve all the commands that have been executed on the terminal.

- Most Linux commands have additional flags that you can specify after the command to provide additional/less information.

  Let's use the calendar and date commands again, but this time we will add in some extra flags:

cal 03 2021

date +%D



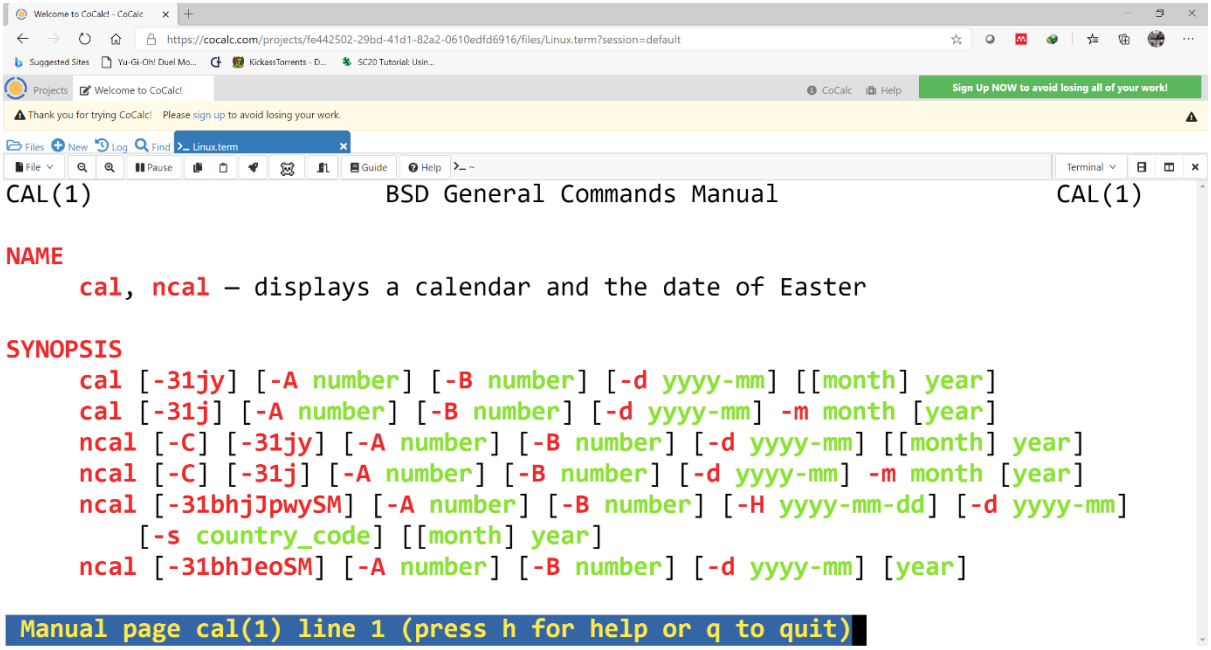
- The calendar command now provides information for the 3rd month of 2021 (March) and date provides the date in the format mm/dd/yy.

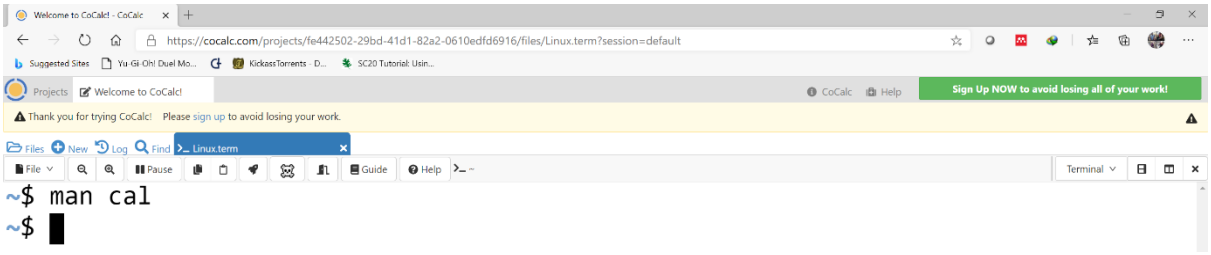
- There are various other flags that can be used for **cal** and **date**.

  These can be viewed by making use of the manual pages (man pages) for these commands:

man cal

q





- The man page for **cal** provides you with a list of additional flags that can be used.

  You should be able to scroll through this document using the arrow keys on your keyboard.

  One can exit a man page by using **q** and you will end up back on the terminal where you can type commands again.

For those using **MobaXterm**, the man pages look very different to that displayed above. It is for this reason that it would be best for **Windows** users to Google "man cal linux" and obtain the relevant information from the first link provided by Google.

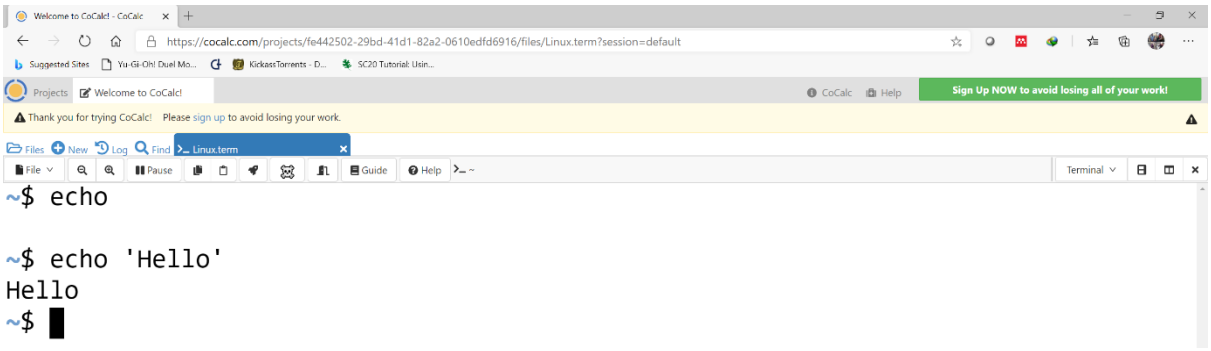
A similar approach should be followed for the man pages of any other Linux command used in this course.

- I will leave it up to you to try out some flags for **cal** to see what they do.
  You should also have a look at the man page for **date** and test a few of those flags as well.

- To print something to the screen you can **echo** the statement:

echo

echo 'Hello'



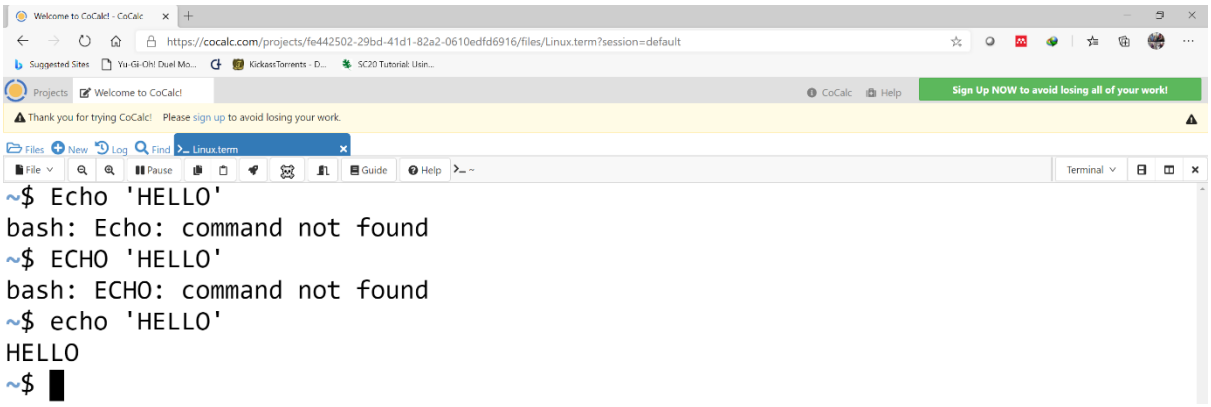
- If you use **echo** on its own then nothing will appear on the screen, whereas if you put in a statement like Hello after the **echo** then the word Hello will display on screen.

- At this point it is important to take note that Linux commands are case sensitive.
  To test this, we will run a few commands:

Echo 'HELLO'

ECHO 'HELLO'

echo 'HELLO'



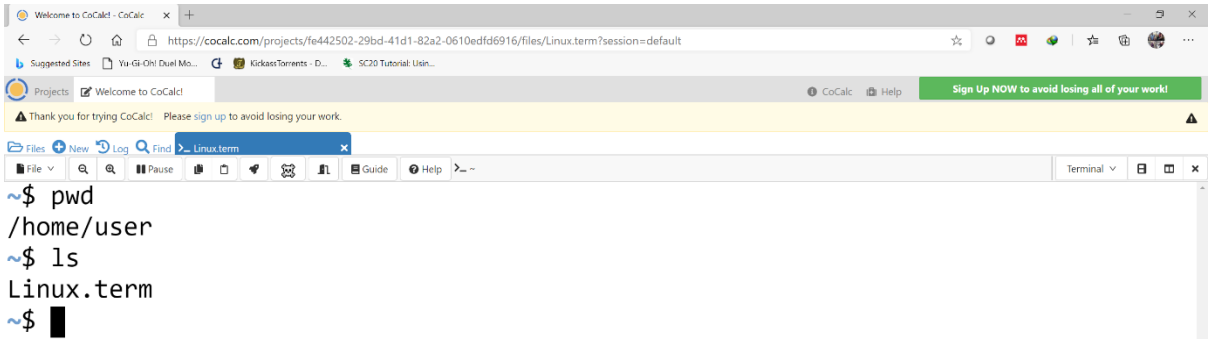
- The first two commands produce command not found errors, while the last prints out the text as expected.

This means that Linux commands should always be in lowercase, while things that appear after the Linux command (HELLO, in the example above) need not be only in lowercase.

- Often you will want to determine your **p**resent **w**orking **d**irectory and list the items in the current directory.
  This can be done by using:

pwd

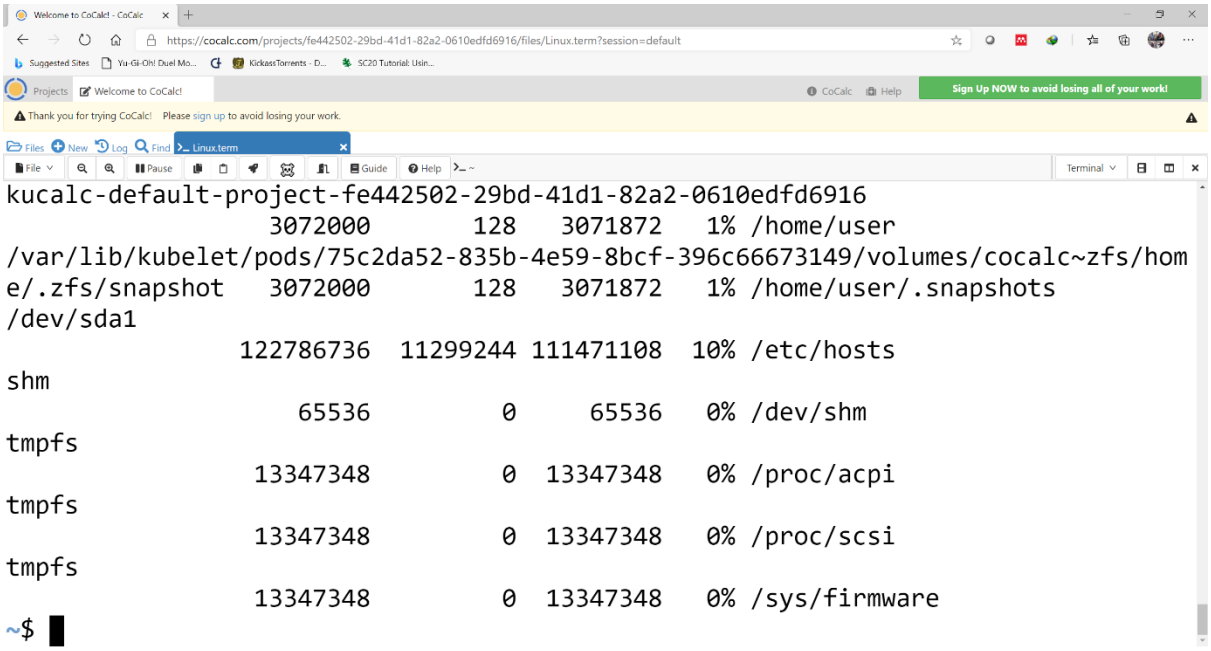
ls



- **pwd** shows that I am working in the folder **/home/user** and **ls** shows that I have a file in my directory called Linux.term.
  If you chose to work in CoCalc as I am doing you should see something similar however, if you are working offline in either Windows, Linux or MacOS then your output might be slightly different.

- When you wish to determine the amount of space you have on your system you can make use of:

df

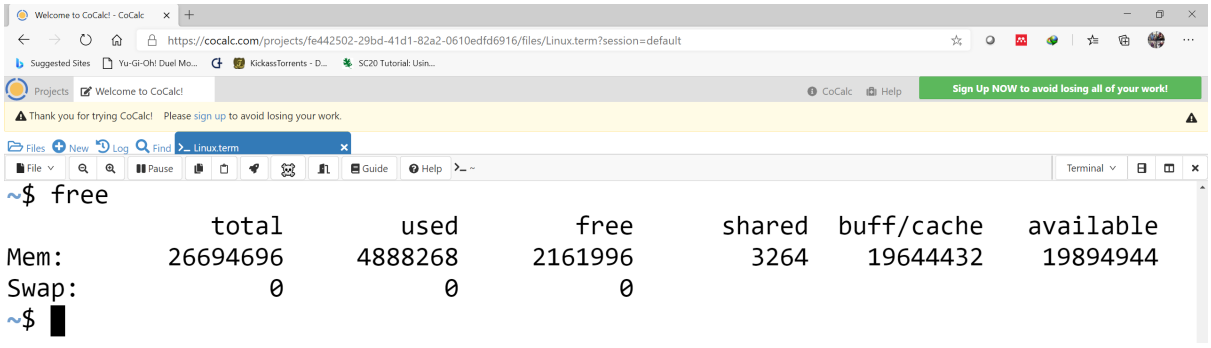


- There are several entries above the ones that I display here, but I want us to focus on the **/home/user** located at the top of the image shown.

  What is shown is that the size of the drive is 3072000 KB, 128 KB of space is being used and 3071872 KB are still available, equating to 1% of space currently being used. You can scroll to the top of the output to see the labels for the different columns.

- There is also a command that can be used to check the available memory on a system:

free



- The command above shows us that there is 26694696 KB of memory in total, 4888268 KB being used and 2161996 KB of free memory.

- If you are running these commands locally using Windows, Linux or MacOS then the numbers you see will differ from those that I provided above, but the primary column headings should be the same.

- This brings us to the end of **Introduction to the Shell**.

- At this point you should give **Exercise 1** a try and see if you can find the appropriate flags needed to provide the desired outcome.