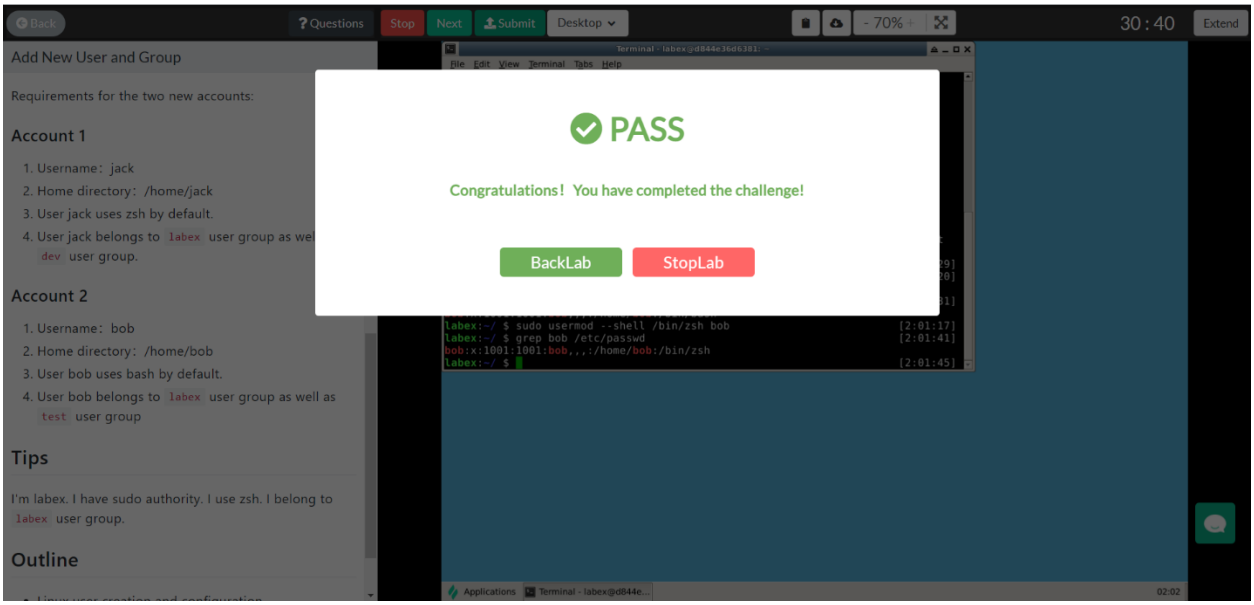
Challenge 1: Add New User and Group



Objectives:

1. Add new user Jack and Bob to the system
2. Create new groups called dev and test
3. Add user Jack to dev and labex groups
4. Add user Bob to test and labex groups
5. Change the users Jack and Bob shells from bash to zsh

Colour code key:

Blue – commands used to complete challenge

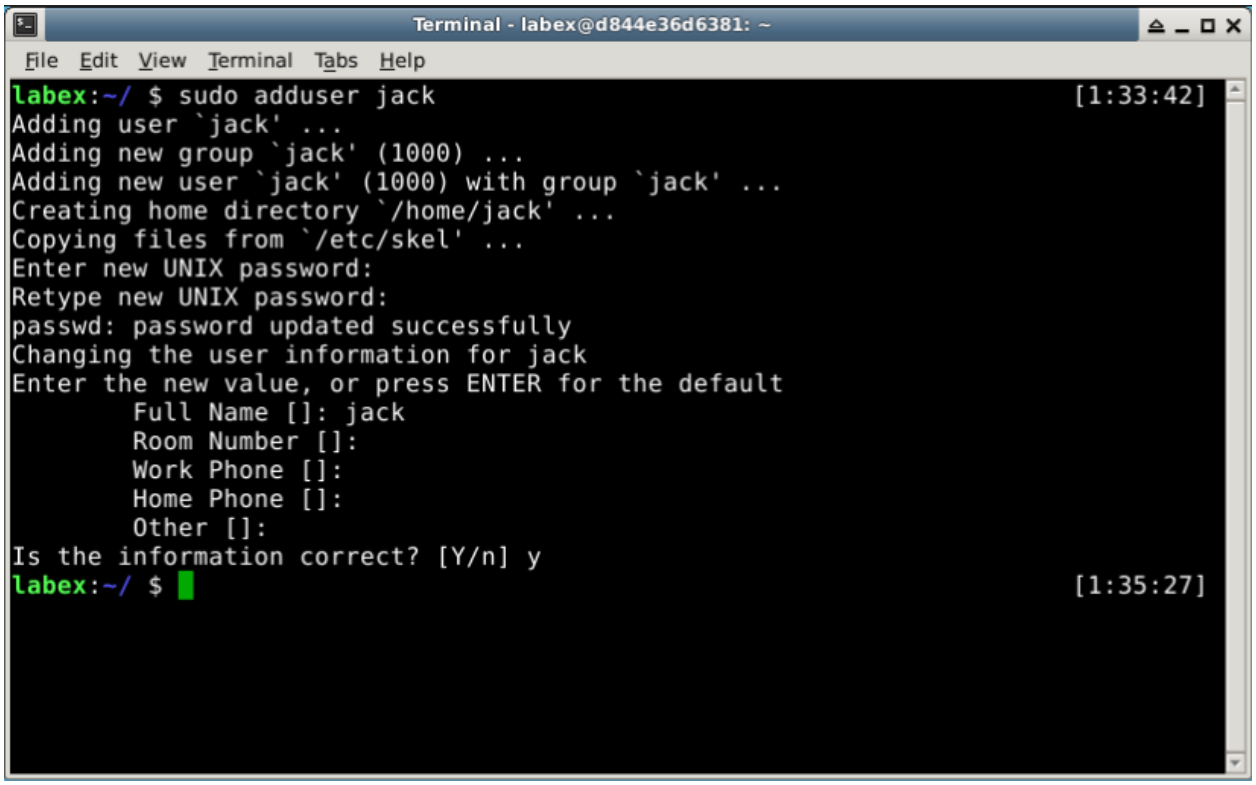
Red – basic commands explained

Steps to add User:

i. Start by making sure you are in the home directory by using the command ($ cd ~).
ii. While in the home directory type the command ($ sudo adduser jack) to add jack as a user.

NOTE The command adduser not only creates and adds a user to the system, but also creates a directory, and a password.

iii. The system will then ask you to fill in certain details about the user as shown in the figure below:



iv. Repeat to add user bob to the system. The command should look like this: ($ sudo useradd bob)

Steps for adding a Group:

i. By using the command ($ sudo groups) you'll see the groups that currently exist in the system. By using this command you'll see labex is present.

ii. To add the dev group to the system, use the command ($ sudo groupadd dev). This group was created since user Jack is a part of this group.

NOTE The groupadd command tells the system that the following group(s) should be added.

iii. Add the test group by using the command ($ sudo groupadd test). This group is made since bob is part of it.

Steps for adding user to multiple groups:

i. Using the command ($ sudo usermod -G dev jack) adds jack to the new dev group.

NOTE:

- usermod adds a user to a group and in doing so modifies the configurations for the specific user. Root privileges are needed when using this command hence why I started with the sudo command.
- The (-G) in the command is signifying that the group dev will be a secondary or supplementary group. If we use (-g) that would make group dev a primary group and it will cause issues later on when trying to add jack to other groups as it would override any other primary groups the user is a part of.

ii. Use the command ($ sudo usermod -aG labex jack) to jack to the labex group.

NOTE: The use of the (-aG) in the command means that you will be appending the user to a supplementary or secondary group. The (-a) stands for append. Again, this is done to avoid the issue of overriding primary groups and the append argument only works with the supplementary or secondary group argument, hence the (-aG) and not (-ag)

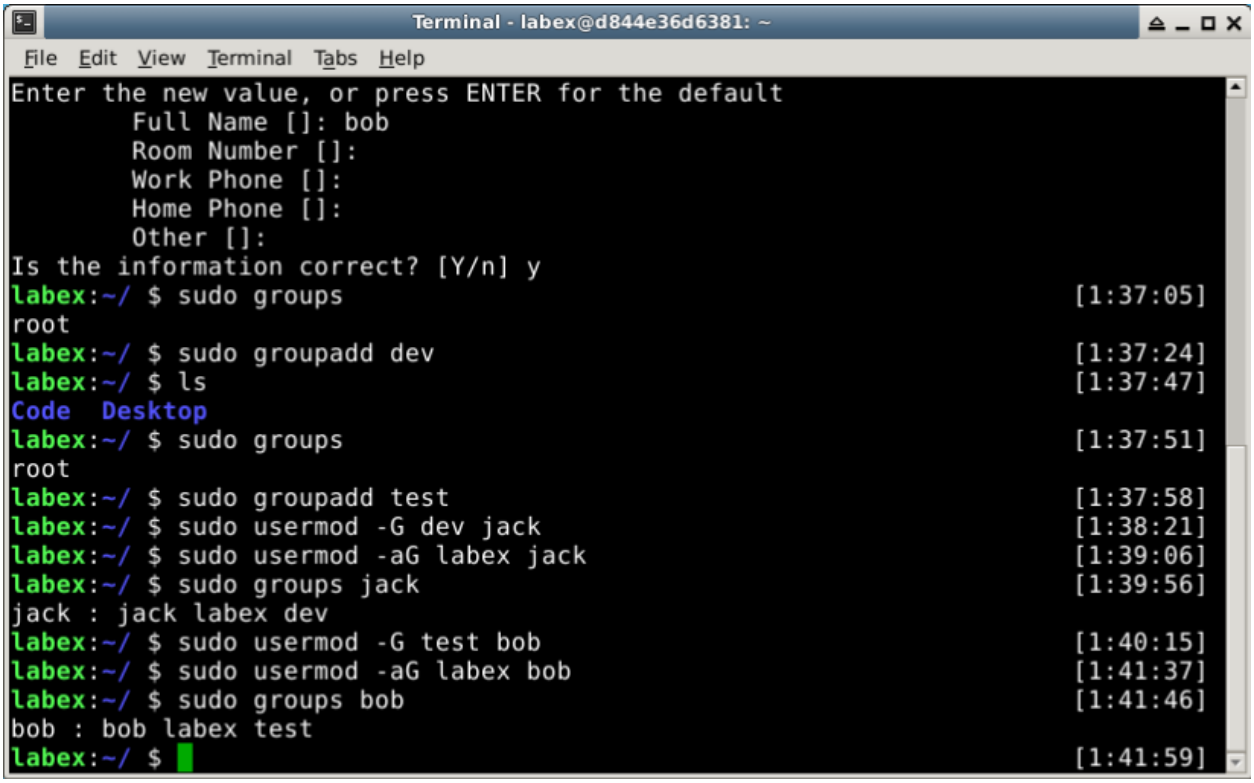
iii. The command ($ sudo groups jack) to views all the groups the user jack is a part of. *This command can be used for any user, by simply swapping out the user's name to the desired one.*

iv. Repeat the steps to add the user bob to labex and test groups. Remember to change the groups names for the names of the groups pertaining to the user bob. Your command should look like this: ($ sudo usermod -G test bob) to add the user bob to the test group.

NOTE:

- ($ sudo usermod -aG labex bob) adds the user bob to the labex group.
- ($ sudo groups bob) - verifies that the user bob is in the correct groups.

Your commands and results should look like this as seen in the figure below:



Steps for changing the user shell:

i. Since there are different shells stored in the /etc directory you can use the command ($ cat /etc/shells) to see what shells are installed.

ii. To see the existing user shell that the user is currently in you can use the command ($ grep jack /etc/passwd). The results should look like this:

iii. Since we're found the shell that the user is in and realized that we want the user in a different shell, use the command ($ sudo usermod --shell /bin/zsh jack).

NOTE:

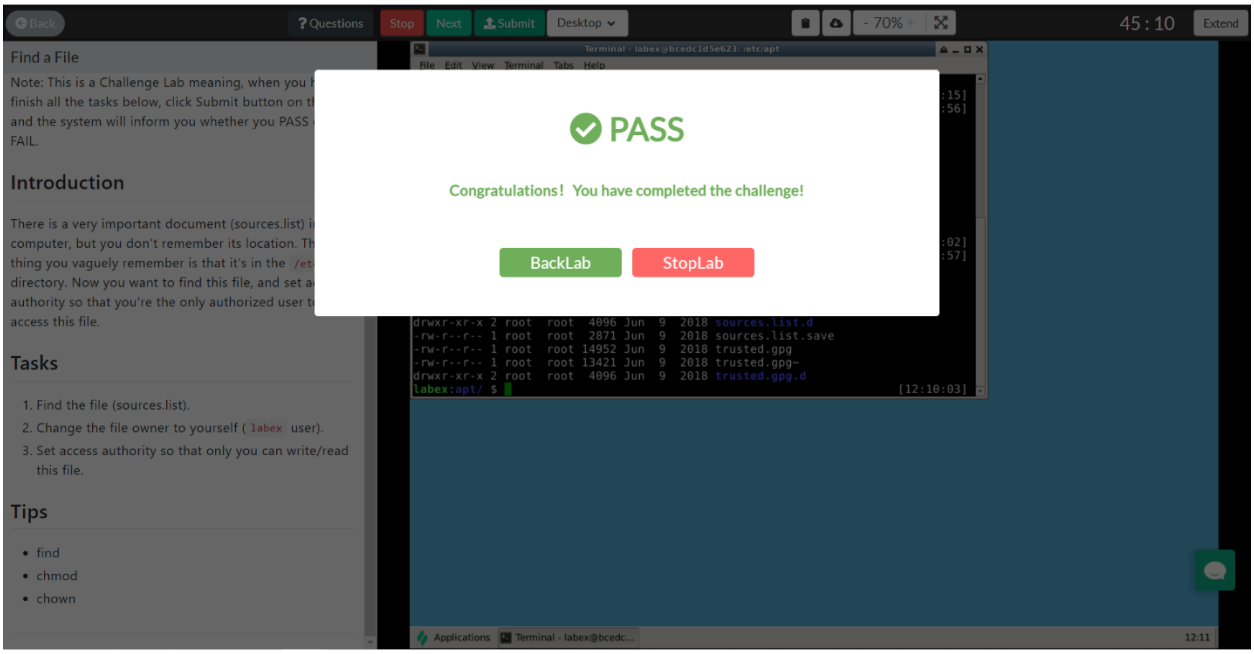
- --shell is referencing the terminal shell as that is what we are trying to modify for
- /bin/zsh is calling the shell type with /bin being the directory where it is stored and /zsh being the specific shell type.
- We are making the configuration change for the user account named jack. This is swapped out for the name of the desired user account the change is required for.

iv. Using the command ($ grep jack /etc/passwd) verifies that the user account shell has been successfully changed to zsh. See figure below:

v. After the expected results are shown, repeat the same steps for they user bob, swapping out the variables for the next user name required. Your commands should be:

- ($ grep bob /etc/passwd) views the current shell user bob is in.
- ($ sudo usermod --shell /bin/zsh bob) changes bob's terminal shell to zsh.
- ($ grep bob /etc/passwd) verifies that user bob's shell has been changed.

Challenge 2: Find a file



Objectives:

1. Find the location of the file named “sources.list”
2. Change the owner of the file to myself (labex user)
3. Change permissions so that only the new owner can write or read the file

Colour code key:

Blue – commands used to complete challenge

Red – basic commands explained

Steps to find the given file:

i. Start by making sure you are in the root directory by using the command ($ cd /).
ii. While in the root directory type the command ($ sudo find etc -name sources.list) to find the location of the file names sources.list.

NOTE The command find etc -name searches for the name of the file located in the etc directory as shown in the figure below:

```
labex:~/ $ cd /                                                    [11:57:35]
labex:// $ sudo find etc -name sources.list                        [11:57:48]
etc/apt/sources.list
```

Steps to change ownership and permissions of the given file:

i. To change ownership by modifying the file, enter into the /etc/apt directory using the command ($ cd /etc/apt).

ii. Once in the correct directory use the command ($ sudo chown labex sources.list)

NOTE: The chown command allows a person to change the user and/or group ownership of a file or directory. Labex is the user being given ownership of the file named sources.list.

iii. Then use the command ($ ls -l) to list all the file permissions in that directory. There you'll see if the ownership has changed. This can be seen in the figure below:

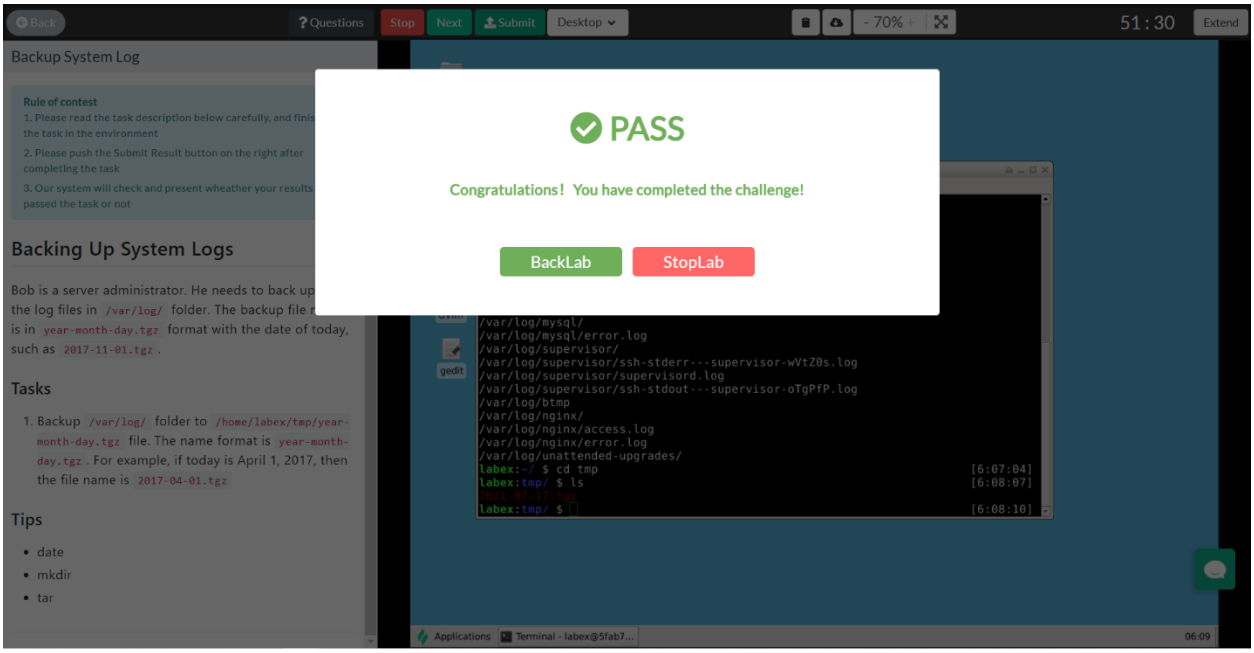
```
labex:// $ cd /etc/apt                                             [11:58:22]
labex:apt/ $ sudo chown labex sources.list                         [11:58:30]
labex:apt/ $ ls -l                                                 [11:59:05]
total 56
drwxr-xr-x 2 root  root  4096 Jun  9  2018 apt.conf.d
drwxr-xr-x 2 root  root  4096 Apr 14  2016 preferences.d
-rw-r--r-- 1 labex root   815 Jun  9  2018 sources.list
drwxr-xr-x 2 root  root  4096 Jun  9  2018 sources.list.d
-rw-r--r-- 1 root  root  2871 Jun  9  2018 sources.list.save
-rw-r--r-- 1 root  root 14952 Jun  9  2018 trusted.gpg
-rw-r--r-- 1 root  root 13421 Jun  9  2018 trusted.gpg~
drwxr-xr-x 2 root  root  4096 Jun  9  2018 trusted.gpg.d
```

iv. Now the file permissions needs to be changed so that only the owner can read and write using the chmod command. You can do this by using the command ($ sudo chmod 700 sources.list)

NOTE: The chmod command controls who can access files, search directories and run scripts. The number 700 is used because 7 represents all 3 permissions (read, write and execute) given to the owner and the zeros (0) denies permissions to both groups and users. **NB: I did pass using 777 (which is why it is in the figure below) however that meant that everyone had permissions to the file**

```
drwxr-xr-x 2 root  root  4096 Jun  9  2018 trusted.gpg.d
labex:apt/ $ sudo chmod 777 sources.list                          [11:59:15]
labex:apt/ $ ls -l                                                [11:59:56]
total 56
drwxr-xr-x 2 root  root  4096 Jun  9  2018 apt.conf.d
drwxr-xr-x 2 root  root  4096 Apr 14  2016 preferences.d
-rwxrwxrwx 1 labex root   815 Jun  9  2018 sources.list
drwxr-xr-x 2 root  root  4096 Jun  9  2018 sources.list.d
-rw-r--r-- 1 root  root  2871 Jun  9  2018 sources.list.save
-rw-r--r-- 1 root  root 14952 Jun  9  2018 trusted.gpg
-rw-r--r-- 1 root  root 13421 Jun  9  2018 trusted.gpg~
drwxr-xr-x 2 root  root  4096 Jun  9  2018 trusted.gpg.d
labex:apt/ $ sudo chmod 700 sources.list                          [12:00:02]
labex:apt/ $ ls -l                                                [12:09:57]
total 56
drwxr-xr-x 2 root  root  4096 Jun  9  2018 apt.conf.d
drwxr-xr-x 2 root  root  4096 Apr 14  2016 preferences.d
-rwx------ 1 labex root   815 Jun  9  2018 sources.list
drwxr-xr-x 2 root  root  4096 Jun  9  2018 sources.list.d
-rw-r--r-- 1 root  root  2871 Jun  9  2018 sources.list.save
-rw-r--r-- 1 root  root 14952 Jun  9  2018 trusted.gpg
-rw-r--r-- 1 root  root 13421 Jun  9  2018 trusted.gpg~
drwxr-xr-x 2 root  root  4096 Jun  9  2018 trusted.gpg.d
labex:apt/ $                                                      [12:10:03]
```

Challenge 3: Backing up System Logs



Objectives:

- Backup /var/log/ folder to a tgz file in the format year-month-day after creating a tmp folder located in the labex directory in the home directory.

Colour code key:

Blue – commands used to complete challenge

Red – basic commands explained

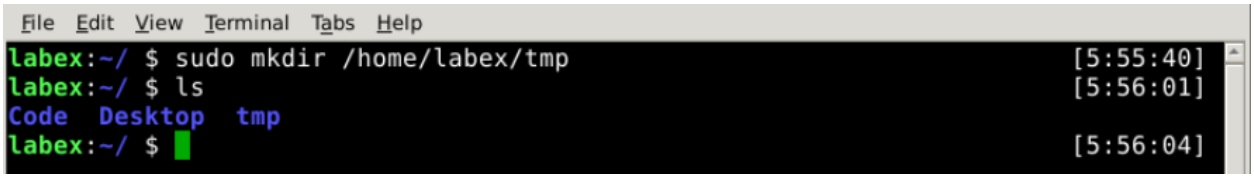
Steps:

i. While in the home directory create a tmp directory in the labex directory. Use the command ($ sudo mkdir /home/labex/tmp).

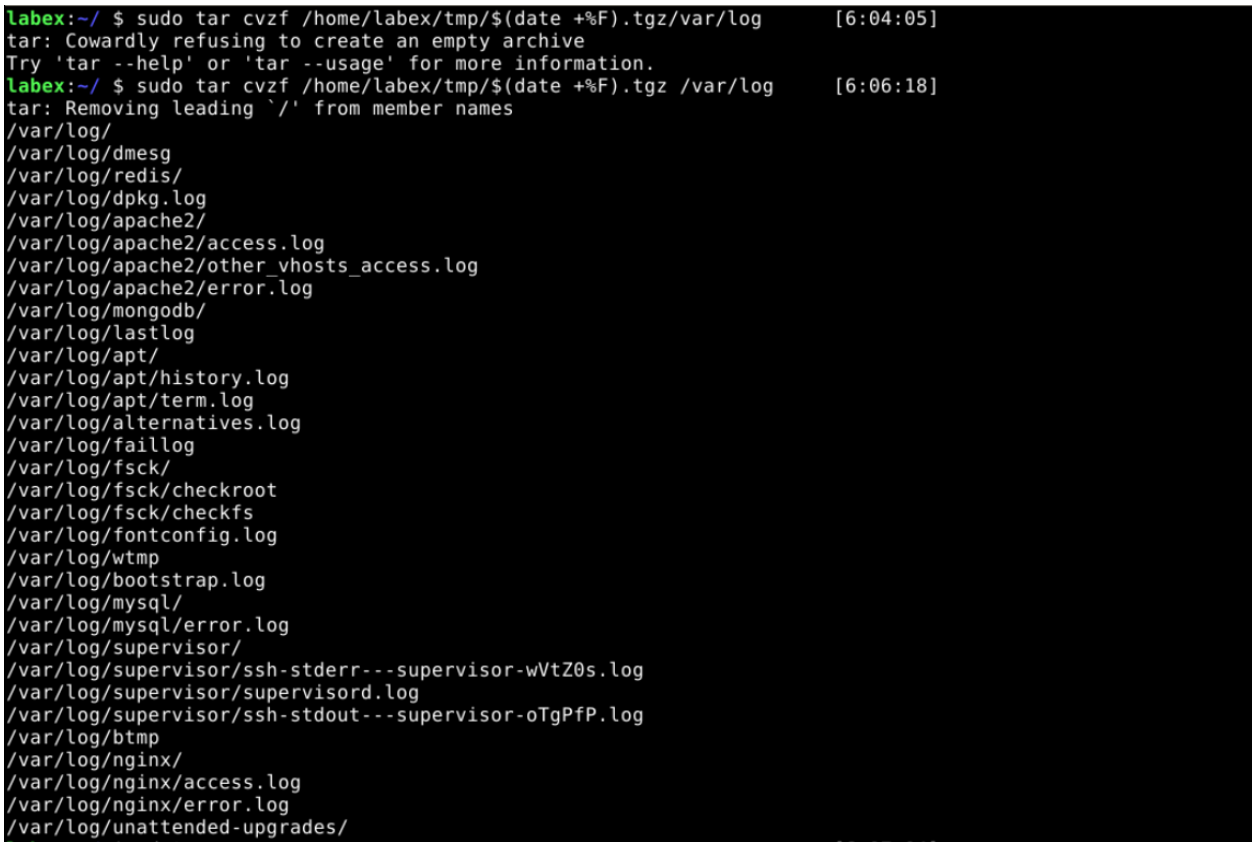
NOTE: - sudo – grants temporary authority to create a file or folder while not being the root user.

- mkdir – allows a user to create a folder.
- /home/labex/tmp – tells the location that the folder will be placed.

ii. After use the ($ ls) command to list the contents of the current (home) directory to see if the folder was created. This can be seen in the figure below:



iii. To create the backup of the logs use the command ($ sudo tar cvzf /home/labex/tmp/$(date +%F).tgz /var/log). The command and results should look like the figure below:

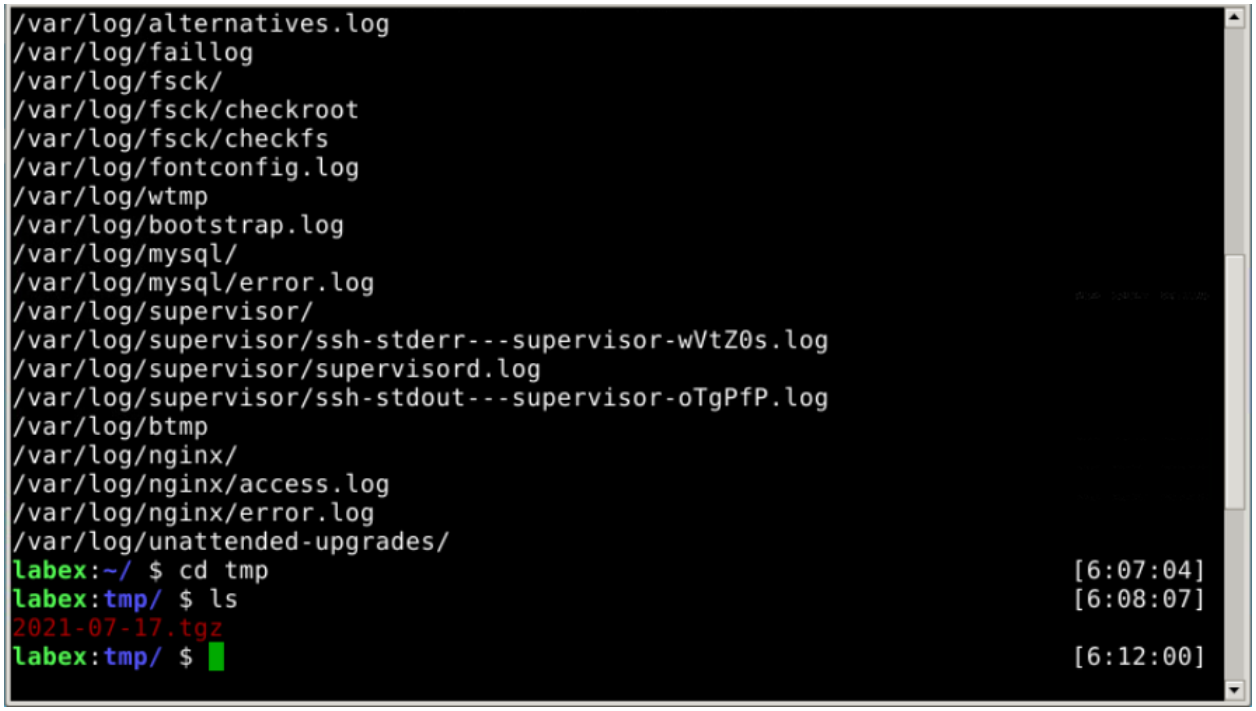


NOTE:

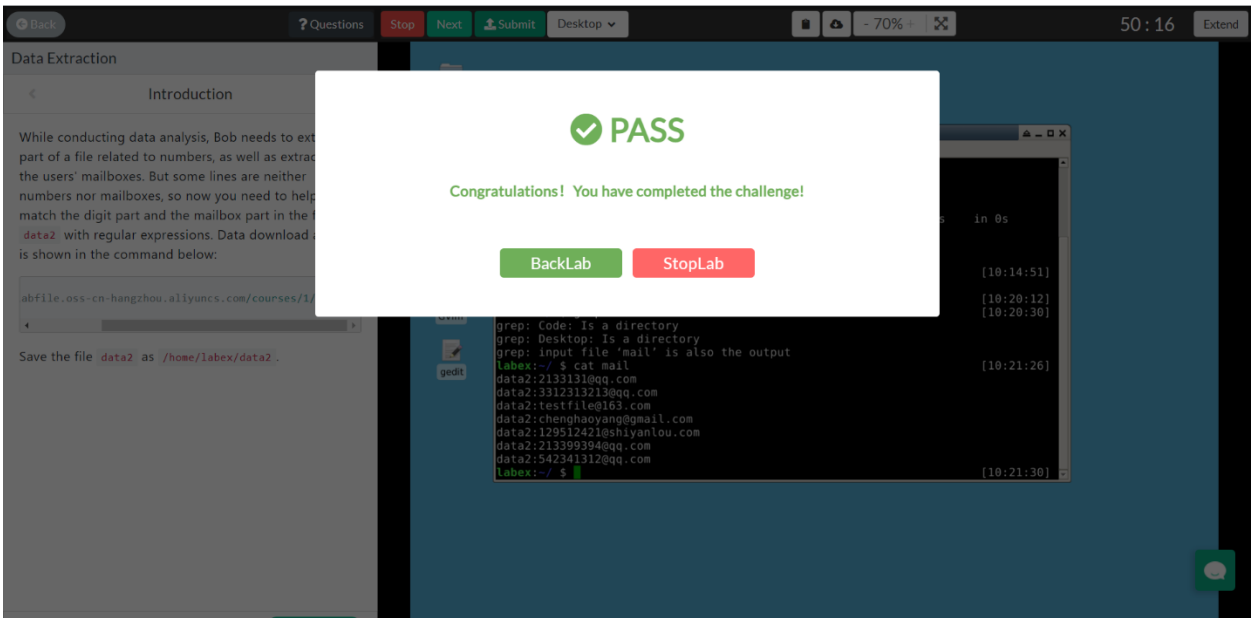
- tar – this command creates tar files by converting a group of files into an archive.
- cvzf – this tar command creates and shows files using gzip and shows information while it's being processed.
- /home/labex/tmp/ - location of the folder

- (date +%F).tgz – this command will name the .tgz file in the given format year-month-day when showing the current date.
- /var/log – indicates what is being achieved.

iv. Then use the command ($ cd tmp) to changed into the tmp directory. Then use the ($ ls) command to see if the .tgz file was made as shown in the figure below:



Challenge 4: Data Extraction



N.B: although I got a pass (I consider this a fail) it's incomplete.

Objectives:

1. Download data and save it as Data2 in the labex directory.
2. Sort the Data2 file for digits and mailbox and save them to num and mail file.

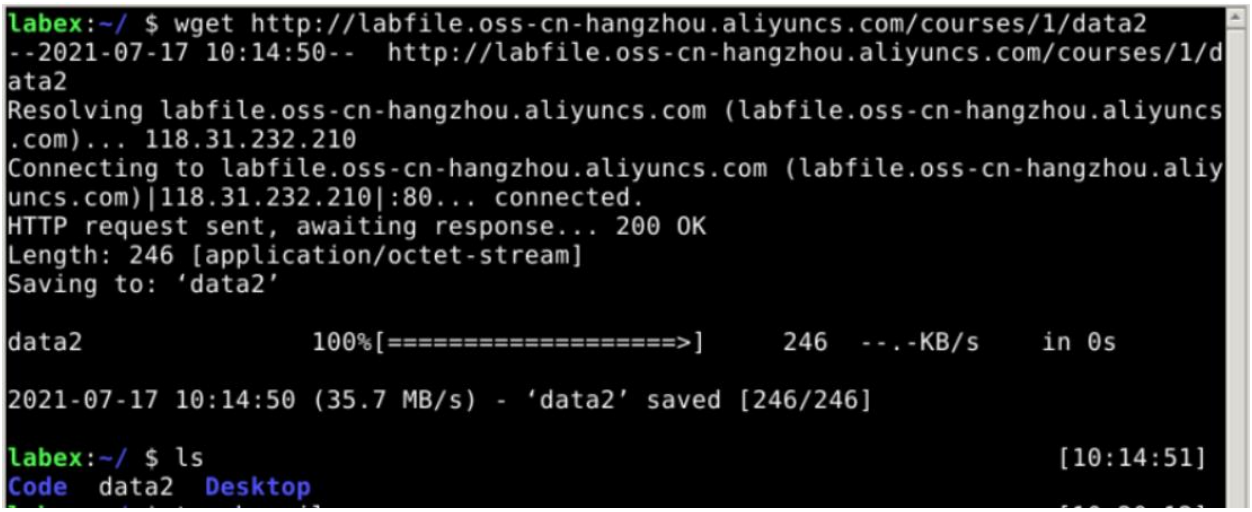
Colour code key:

Blue – commands used to complete challenge

Red – basic commands explained

Steps:

i. Download the file by using the command ($ wget http://labfile.oss-cn-hangzhou.aliyuncs.com/courses/1/data2). Data2 will automatically be saved in the /home/labex directory as shown in the figure below:



NOTE:

- wget – allowers users to download files through the terminal
- http://labfile.oss-cn-hangzhou.aliyuncs.com/courses/1/data2 - link given to download the file
- /data2 – name of the file on the server

ii. Then create a mail file using the command ($ touch mail).

iii. Then use ($ grep ".com" * > mail) to sort the given information

NOTE:

- grep -
- ".com" -
- * -
- > -
- mail -

iv. After use the command ($ cat mail) to see the contents in the mail file as seen in the figure below:


labex:~/ $ ls [10:14:51]
Code data2 Desktop
labex:~/ $ touch mail [10:20:12]
labex:~/ $ grep ".com" * > mail [10:20:30]
grep: Code: Is a directory
grep: Desktop: Is a directory
grep: input file 'mail' is also the output
labex:~/ $ cat mail [10:21:26]
data2:2133131@qq.com
data2:3312313213@qq.com
data2:testfile@163.com
data2:chenghaoyang@gmail.com
data2:129512421@shiyanlou.com
data2:213399394@qq.com
data2:542341312@qq.com
labex:~/ $ [10:21:30]