

# System Operations Lab Assignment

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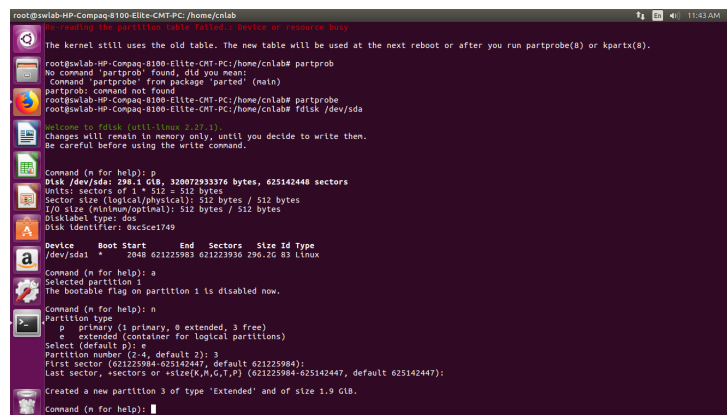
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## 1 Installation with creation of file system using fdisk (manual) with at least one logical partition

We will first list all the existing partitions. Then add a partition with the help of fdisk GUI. Then again list the partitions.

### Steps to Follow

Step 1 : List the partitions



```
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# partprob
The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(s) or kpartx(s).
No command 'partprob' found, did you mean:
Command 'partprobe' from package 'parted' (main)
partprob: command not found
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# partprobe
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# fdisk /dev/sda

Welcome to fdisk (util-linux 2.27.1).
Changes will remain in memory only, until you decide to write them.
Be careful before using the write command.

Command (m for help): p
Disk /dev/sda: 298.1 GiB, 320072933376 bytes, 625142448 sectors
Units: sectors of 1 * 512 = 512 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disklabel type: dos
Disk identifier: 0xc5c61749

Device Boot Start End Sectors Size Id Type
/dev/sda1 * 2048 621225983 621223936 296.2G 83 Linux

Command (m for help): a
Selected partition 1
The bootable flag on partition 1 is disabled now.

Command (m for help): n
Partition type
  p primary (1 primary, 0 extended, 3 free)
  e extended (container for logical partitions)
Select (default p): e
Partition number (2-4, default 2): 3
First sector (621225984-625142447, default 621225984):
Last sector, +sectors or +size(K,M,G,T,P) (621225984-625142447, default 625142447):
Created a new partition 3 of type 'Extended' and of size 1.9 GiB.

Command (m for help):
```

Step 2: Adding a new partition

```
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab#  
[Command (n for help): p]  
Disk /dev/sda: 299.1 GiB, 32007293376 bytes, 625142448 sectors  
Units: sectors of 1 * 512 = 512 bytes  
Sector size (logical/physical): 512 bytes / 512 bytes  
I/O size (minimum/optimal): 512 bytes / 512 bytes  
Disklabel type: dos  
Disk identifier: 0xc5ca1749  
  
Device      Boot Start      End  Sectors  Size Id Type  
/dev/sda1 *    2048 621225983 621223936 298.2G 83 Linux  
  
[Command (n for help): a]  
Selected partition 1  
The bootable flag on partition 1 is disabled now.  
  
[Command (n for help): n]  
Partition type  
p primary (1 primary, 0 extended, 3 free)  
e extended (container for logical partitions)  
Select (default p): e  
Partition number (2-4, default 2): 3  
First sector (621225984-625142447, default 621225984):  
Last sector, +sectors or +size(K,M,G,T,P) (621225984-625142447, default 625142447):  
Created a new partition 3 of type 'Extended' and of size 1.9 GiB.  
  
[Command (n for help): w]  
The partition table has been altered.  
Calling ioctl() to re-read partition table.  
WARNING: Re-reading the partition table failed. Device or resource busy.  
The kernel still uses the old table. The new table will be used at the next reboot or after you run partprobe(s) or kpartx(s).  
  
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# partprobe  
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# mkfs -t ext4 /dev/sda3  
mkfs: 1.42.13 (17-May-2015)  
Found a dos partition table in /dev/sda3  
Proceed anyway? (y,n) y  
mkfs.ext4: inode_size (128) * inode_count (9) too big for a  
filesystem with 0 blocks, specify higher inode_ratio (-i)  
or lower inode count (-N).  
  
root@swlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab#
```

Step 3 : List partitions again to view the new added partition

## 2 Root Password change using boot loader options

Since everything happens during the boot time. It's unable to click screen shots. So I would just lay out the steps of changing the password during boot.

### Steps to Follow

Step 1: Restart the computer

Step 2: Open the Grub GUI during boot up.

Step 3: Highlight the OS in which you want to change the root password.

Step 4: Press E to edit that OS.

Step 5: Edit the line starting with linux. By appending **rw init=/bin/bash**

Step 6: Now you will be taken to the root shell.

Step 7: Run command **passwd**. and change the passwd

Step 8: Run **exec=/sbin/init**.

GNU GRUB version 2.02~beta2-36ubuntu10

```
insmod part_msdos
insmod ext2
set root='hd0,msdos1'
if [ x$feature_platform_search_hint = xy ]; then
    search --no-floppy --fs-uuid --set=root --hint-bios=hd0,msdos1\
--hint-efi=hd0,msdos1 --hint-baremetal=ahci0,msdos1 aaa7b378-92a3-4b7c\
-9465-f2d95b25d107
else
    search --no-floppy --fs-uuid --set=root aaa7b378-92a3-4b7c-946\
5-f2d95b25d107
fi
linux      /boot/vmlinuz-4.4.0-34-generic root=UUID=aaa7b378-9\
2a3-4b7c-9465-f2d95b25d107 ro quiet splash $vt_handoff init=/bin/bash_
initrd     /boot/initrd.img-4.4.0-34-generic
```

GNU GRUB version 2.02~beta2-36ubuntu10

\*Ubuntu

Advanced options for Ubuntu

Memory test (memtest86+)

Memory test (memtest86+, serial console 115200)

### 3 Directory creation in which all can write but only owner can delete files.

This can be done via sticky bit. This helps only the owner of the files to delete from that particular folder. No one else can delete the files in that folder.

#### Steps to Follow

Step 1 : Making a folder named **newFold**. Creating a file named **file.txt**.

Step 2 : Switching to another user. Then trying to delete this file.

```
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol
cmlab@aqswlab-HP-Compaq-8100-Elite-CMT-PC:~$ su
Password:
root@aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# adduser a
Adding user 'a' ...
Adding new group 'a' (1002) ...
Adding new user 'a' (1002) with group 'a' ...
Creating home directory /home/a ...
Copying files from /etc/skel ...
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
Changing the user information for a
Enter the new value, or press ENTER for the default
Full Name []:
Room Number []:
Work Phone []:
Home Phone []:
Other []:
Is the information correct? [Y/n] y
root@aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab# su a
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab$ ls -l
total 264
-rwxr-xr-x 1 cnlab cnlab 126 Sep 12 11:07 demo.sh
drwxr-xr-x 4 cnlab cnlab 4096 Nov 14 11:48 Desktop
-rw-r--r-- 1 cnlab cnlab 216862 Nov 14 11:53 dm.txt
drwxr-xr-x 2 cnlab cnlab 4096 Nov 12 15:00 Documents
drwxr-xr-x 2 cnlab cnlab 4096 Aug 7 22:44 Downloads
-rw-r--r-- 1 cnlab cnlab 8980 Aug 7 16:22 examples.desktop
drwxr-xr-x 2 cnlab cnlab 4096 Aug 7 22:44 Music
drwxr-xr-x 2 cnlab cnlab 4096 Nov 14 11:49 Pictures
drwxr-xr-x 2 cnlab cnlab 4096 Aug 7 22:44 Public
drwxr-xr-x 2 cnlab cnlab 4096 Aug 7 22:44 Templates
drwxr-xr-x 2 cnlab cnlab 4096 Aug 7 22:44 Videos
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab$ cd Desktop
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop$ ls -l
total 1625616
-rw-r--r-- 1 cnlab cnlab 284 Sep 12 17:35 kb.c
drwxr-xr-x 2 cnlab cnlab 4096 Aug 14 10:45
drwxr-xr-x 1 cnlab cnlab 4096 Nov 14 11:48
-rwxr-xr-x 1 cnlab cnlab 1664014400 Nov 12 14:39 ubuntu-16.04.1-desktop-1386.iso
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop$ cd sol
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ cd ..
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop$ su
Password:
root@aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop$ cd sol
root@aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ touch file
root@aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ ls -l
total 0
-rw-r--r-- 1 root root 0 Nov 14 11:54 file
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ rm file
rm: remove write-protected regular empty file 'file'?
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ ls -l
total 0
-rw-r--r-- 1 root root 0 Nov 14 11:54 file
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$ rm file
rm: remove write-protected regular empty file 'file'? y
rm: cannot remove 'file': Permission denied
aqswlab-HP-Compaq-8100-Elite-CMT-PC:/home/cnlab/Desktop/sol$
```

## 4 Write a cron job to remote power up a system in a LAN

For this assignment we need to have the MAC address of the other system on the LAN for which we have to perform this cron job.

### Steps to Follow

Step 1 : First open the file `/etc/crontab`

```
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
#
# For example, you can run a backup of all your user accounts
# at 5 a.m every week with:
# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
#
# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow   command
* * * * * ./script.sh
```

Step 2 : Edit the file.

```
while true; do
    echo "$(date)" >> date.txt
    sleep 5;
done
```

## 5 Write a cron job to remotely shutdown a Linux system.

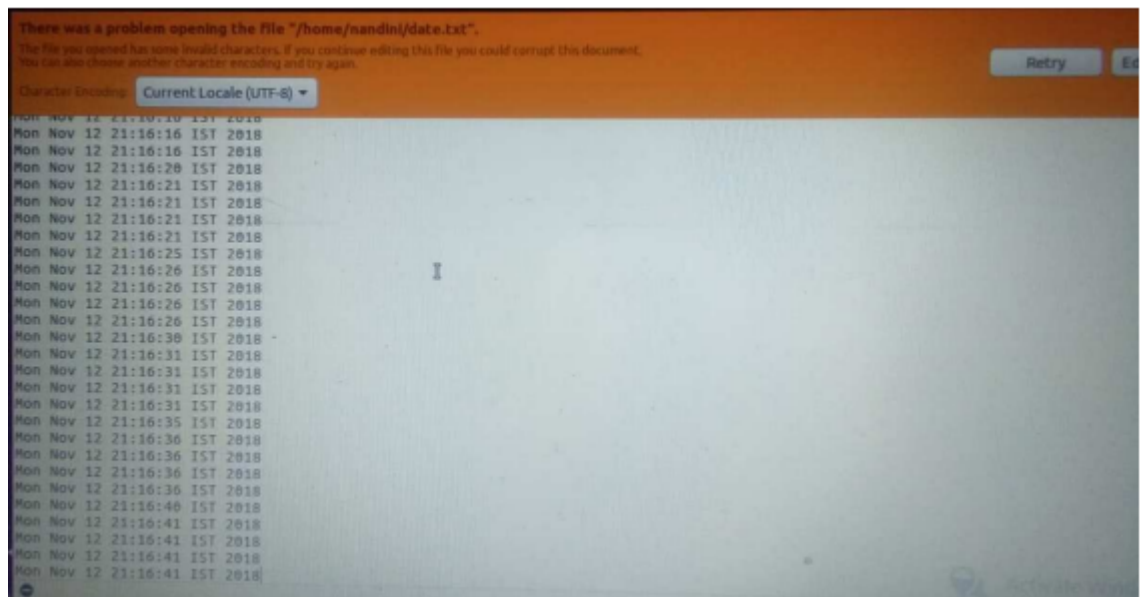
For this assignment we need to have the MAC address of the other system on the LAN for which we have to perform this cron job.

### Steps to Follow

Step 1 : First open the file `/etc/crontab`

```
#
# To define the time you can provide concrete values for
# minute (m), hour (h), day of month (dom), month (mon),
# and day of week (dow) or use '*' in these fields (for 'any').#
# Notice that tasks will be started based on the cron's system
# daemon's notion of time and timezones.
#
# Output of the crontab jobs (including errors) is sent through
# email to the user the crontab file belongs to (unless redirected).
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# For example, you can run a backup of all your user accounts
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# 0 5 * * 1 tar -zcf /var/backups/home.tgz /home/
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# For more information see the manual pages of crontab(5) and cron(8)
#
# m h dom mon dow  command
* * * * * ./script.sh
```

Step 2 : Edit the file.



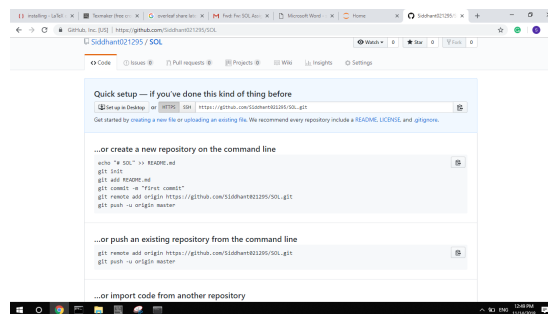


## 6 In Git account add new project and shows commits.

For this assignment we need to have an github account and create an repository.

### Steps to Follow

Step 1 : Create a repository. `/etc/crontab`



Step 2 : Create a folder and run git init.

```
HP@Siddhant MINGW64 ~/Desktop/sid
$ git init
Initialized empty Git repository in C:/Users/HP/Desktop/sid/.git/
HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ |
```

Step 3 : Create different file you want to commit and

```
HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ git add .
warning: LF will be replaced by CRLF in t1.tex.
The file will have its original line endings in your working directory.
warning: LF will be replaced by CRLF in tex1.tex.
The file will have its original line endings in your working directory.
HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ |
```

Step 4 : Add files to the staging area. Run git add .

```
HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ git commit -m "1st commit"
[master (root-commit) 32781d6] 1st commit
29 files changed, 498 insertions(+)
create mode 100644 PARTISON2.PNG
create mode 100644 cron1.png
create mode 100644 cron2.png
create mode 100644 cron3.PNG
create mode 100644 dhcp1.PNG
create mode 100644 dhcp2.PNG
create mode 100644 dhcp3.PNG
create mode 100644 dhcp4.PNG
create mode 100644 dhcp5.PNG
create mode 100644 dhcp6.PNG
create mode 100644 dhcp7.PNG
create mode 100644 git1.png
create mode 100644 git2.PNG
create mode 100644 partison1.PNG
create mode 100644 partison3.PNG
create mode 100644 pass.PNG
create mode 100644 pass2.PNG
create mode 100644 sticky2.png
create mode 100644 sticky3.png
create mode 100644 stickybit.png
create mode 100644 t1.aux
create mode 100644 t1.log
create mode 100644 t1.synctex.gz
create mode 100644 t1.tex
create mode 100644 tex1.aux
create mode 100644 tex1.log
create mode 100644 tex1.pdf
create mode 100644 tex1.synctex.gz
create mode 100644 tex1.tex
```

Step 5 : Commit the changes. Run `git commit -m "message"` .

```
HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ git remote add origin https://github.com/Siddhant021295/SOL.git

HP@Siddhant MINGW64 ~/Desktop/sid (master)
$ |
```