Lab Submission

ESE 3005: EMBEDDED SYSTEMS ARCHITECTURE II

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Introduction:

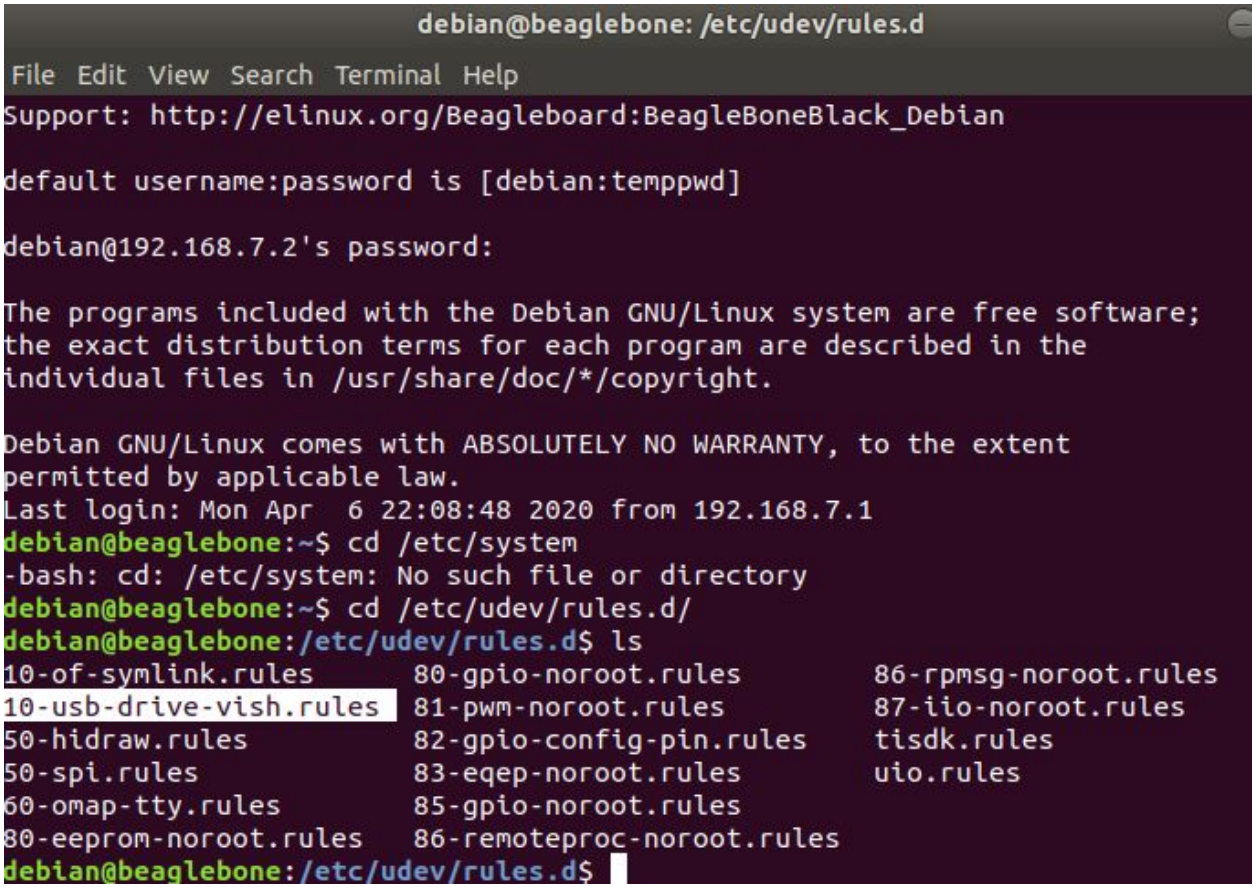
In our embedded linux platform,to automatically mount a micro-SD external device,we need udev rule,service file and a shell script.Udev rules determine how to identify devices that is constant through reboots.Udev receives device event and matches the rules with device attributes in sysfs to identify a particular device.

Description :

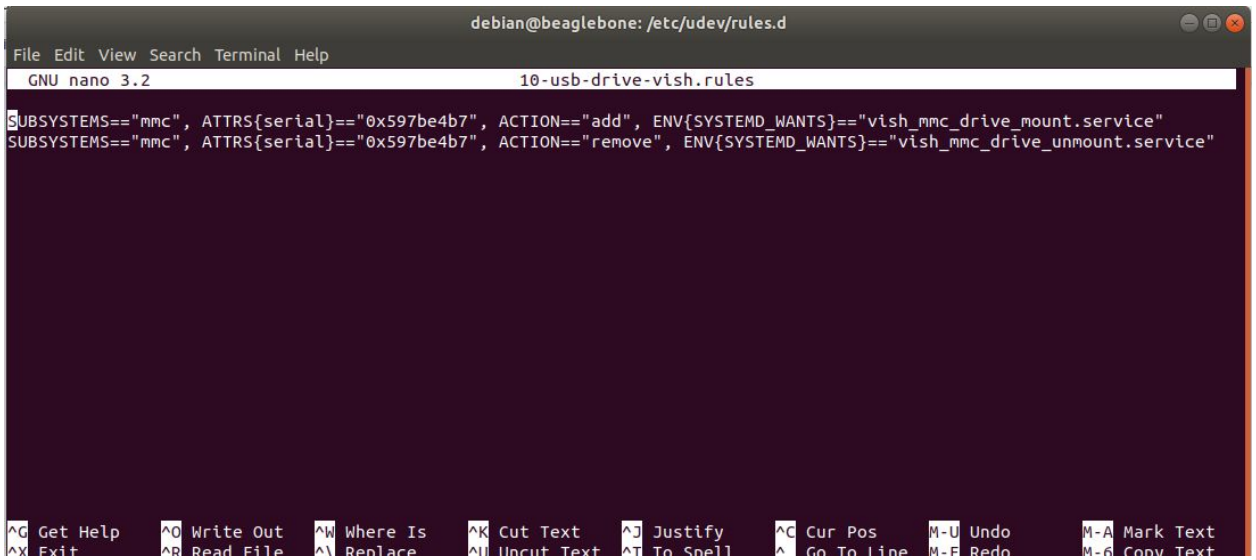
In order to mount a micro-Sd card on the beaglebone,we created udev rule,service file and shell script which are linking to each other.It can be seen as follows.

In order to copy udev rule(i.e **10-usb-drive-vish.rules**)to /etc/udev/rules.d/10-usb-drive-vish.rules, we used the command

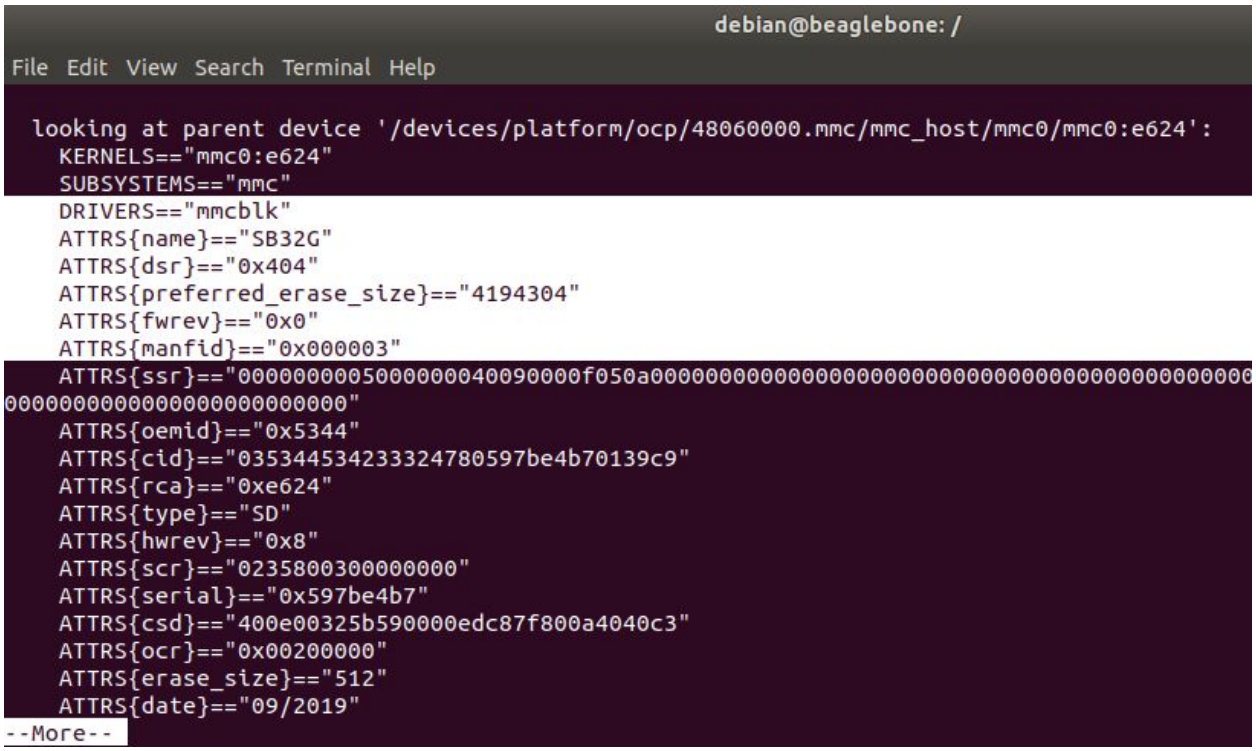
sudo cp 10-usb-drive-vish.rules /etc/udev/rules.d/10-usb-drive-vish.rules



10-usb-drive-vish.rules :



All the attributes are written with the help of **udevadm info -a -n /dev/mmcblk0p1 | more** command



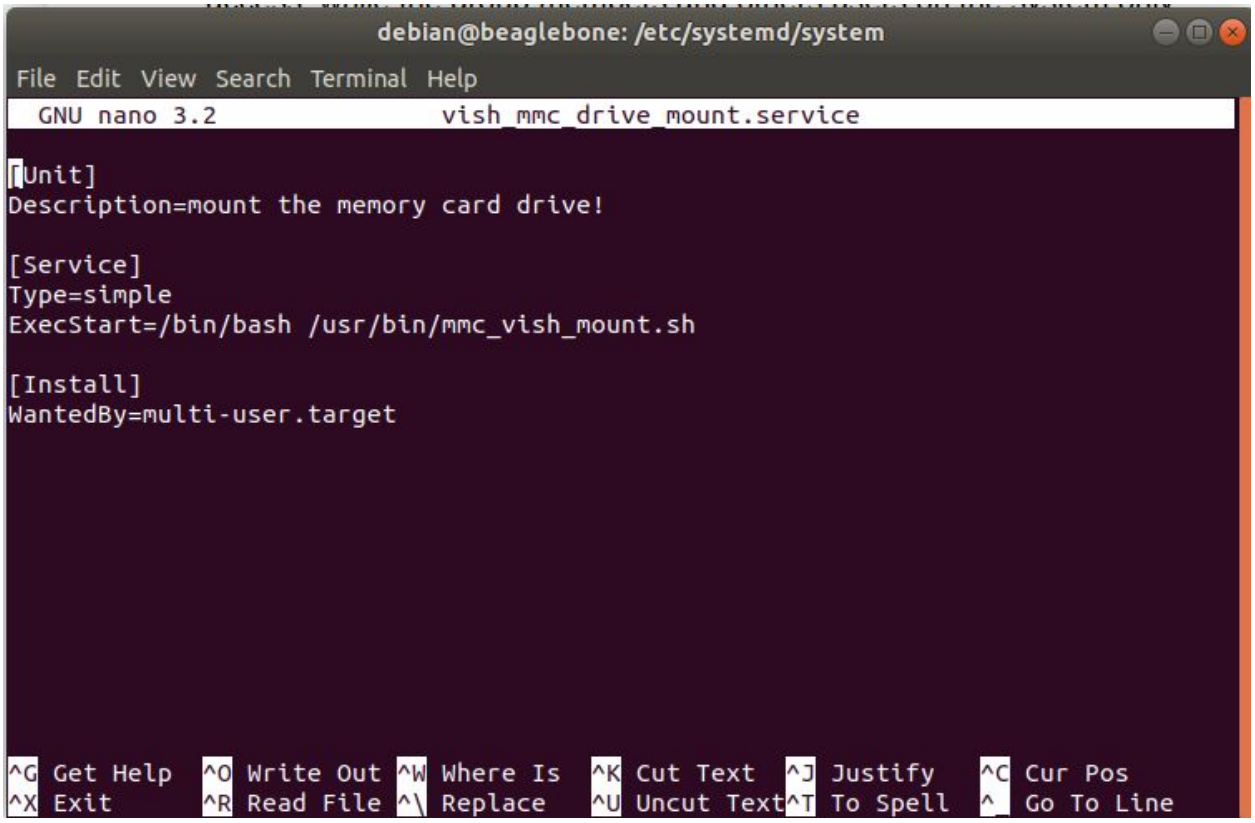
Now coming to the systemd service file,we copied **vish_mmc_drive_mount.service** to /etc/systemd/system/vish_mmc_drive_mount.service using the command **sudo cp vish_mmc_drive_mount.service /etc/systemd/system/vish_mmc_drive_mount.service**

Then we made that file executable and gave 644 permissions to that file.

sudo chmod 644 /etc/systemd/system/vish_mmc_drive_mount.service

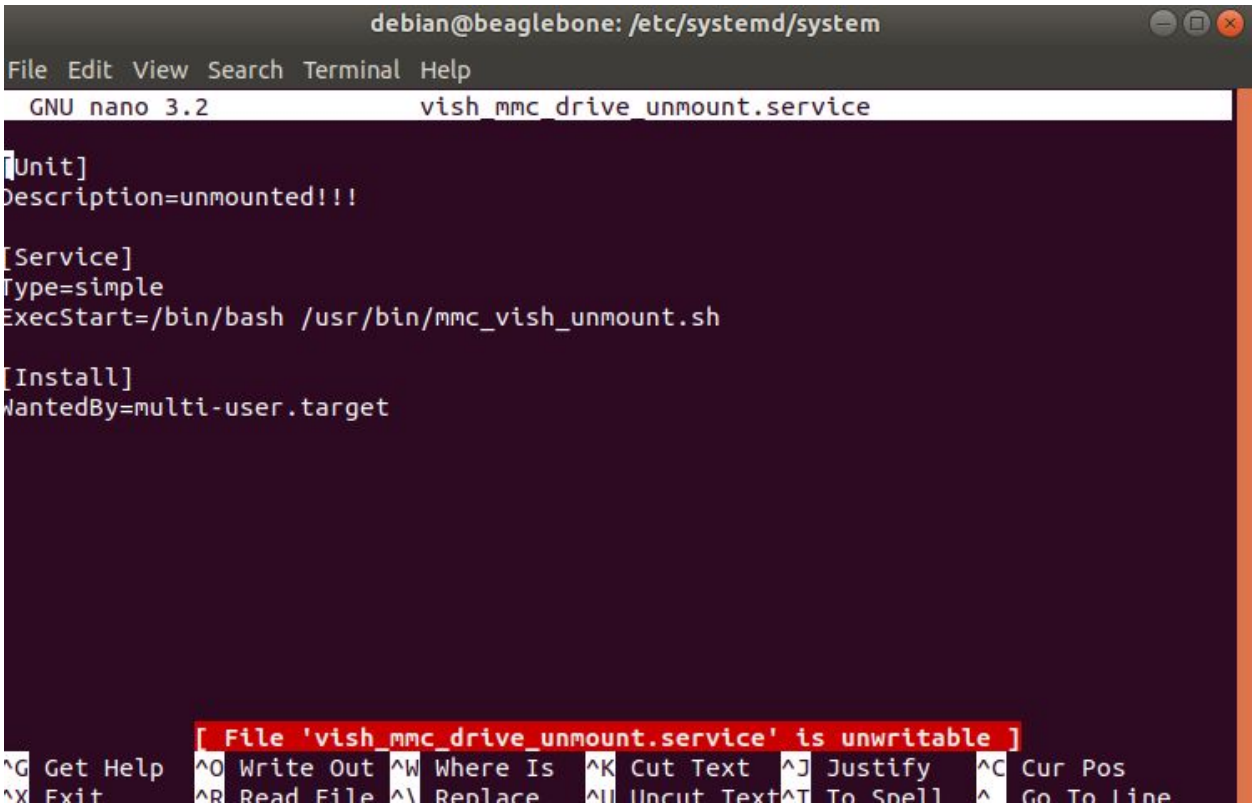
Here 644 permission means the owner of the file has read and write access, while the group members and others users on the system only have read access.

vish_mmc_drive_mount.service



Similarly we wrote a service file for unmounting micro-SDcard .

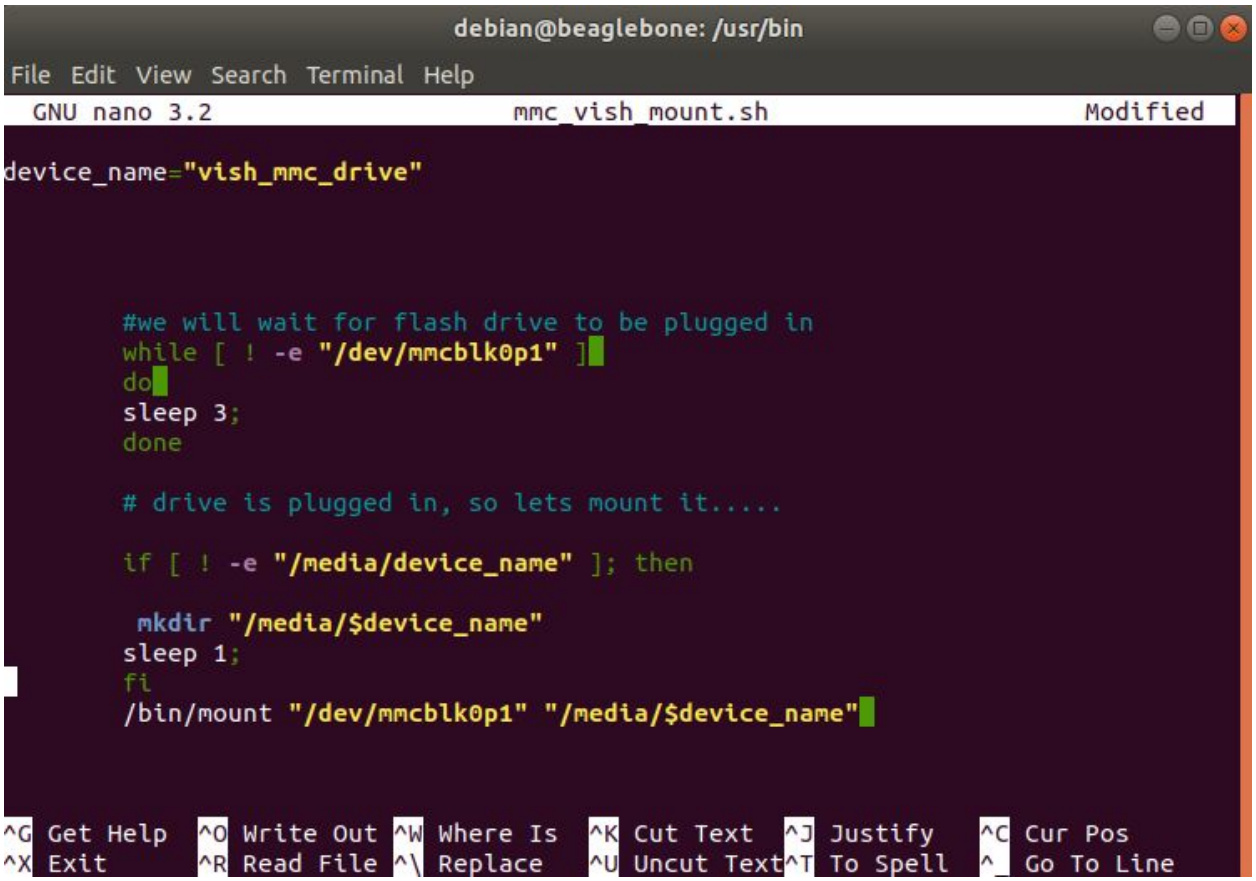
vish_mmc_drive_unmount.service



Finally, we copied 2 bash scripts (mount and unmount scripts) to **/usr/bin** and made that executable.

sudo cp mmc_vish_mount.sh /usr/bin/mmc_vish_mount.sh
sudo chmod +x /usr/bin/mmc_vish_mount.sh

mmc_vish_mount.sh



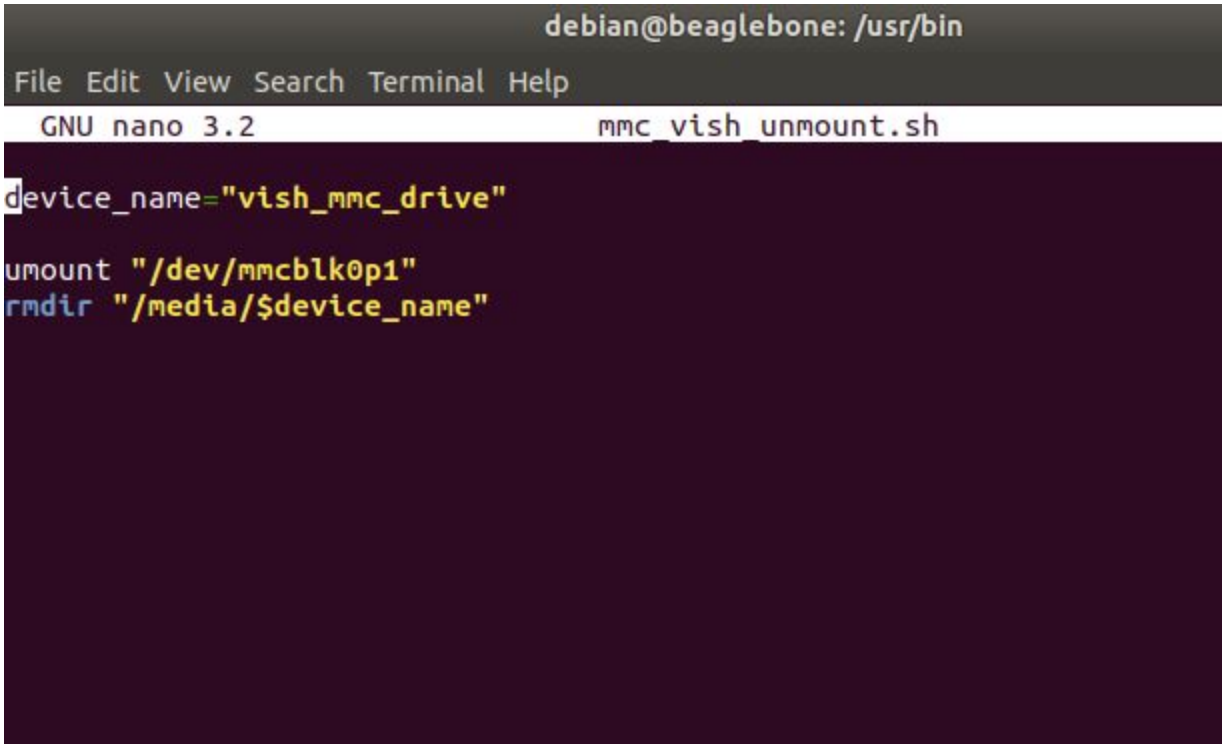
Working :

First of all we will wait for the SD card to be plugged in.Here, while loop checks whether /dev/mmcblk0p1 exists or not. If it doesn't exist then sleep for 3sec.

Then using the if condition, we will make a directory called vish_mmc_drive and then sleep for 1sec.

Finally we mount the micro SD-card using /bin/mount “/dev/mmcblk0p1” “/media/vish_mmc_drive.

Similarly **mmc_vish_unmount.sh** is implemented



Working :

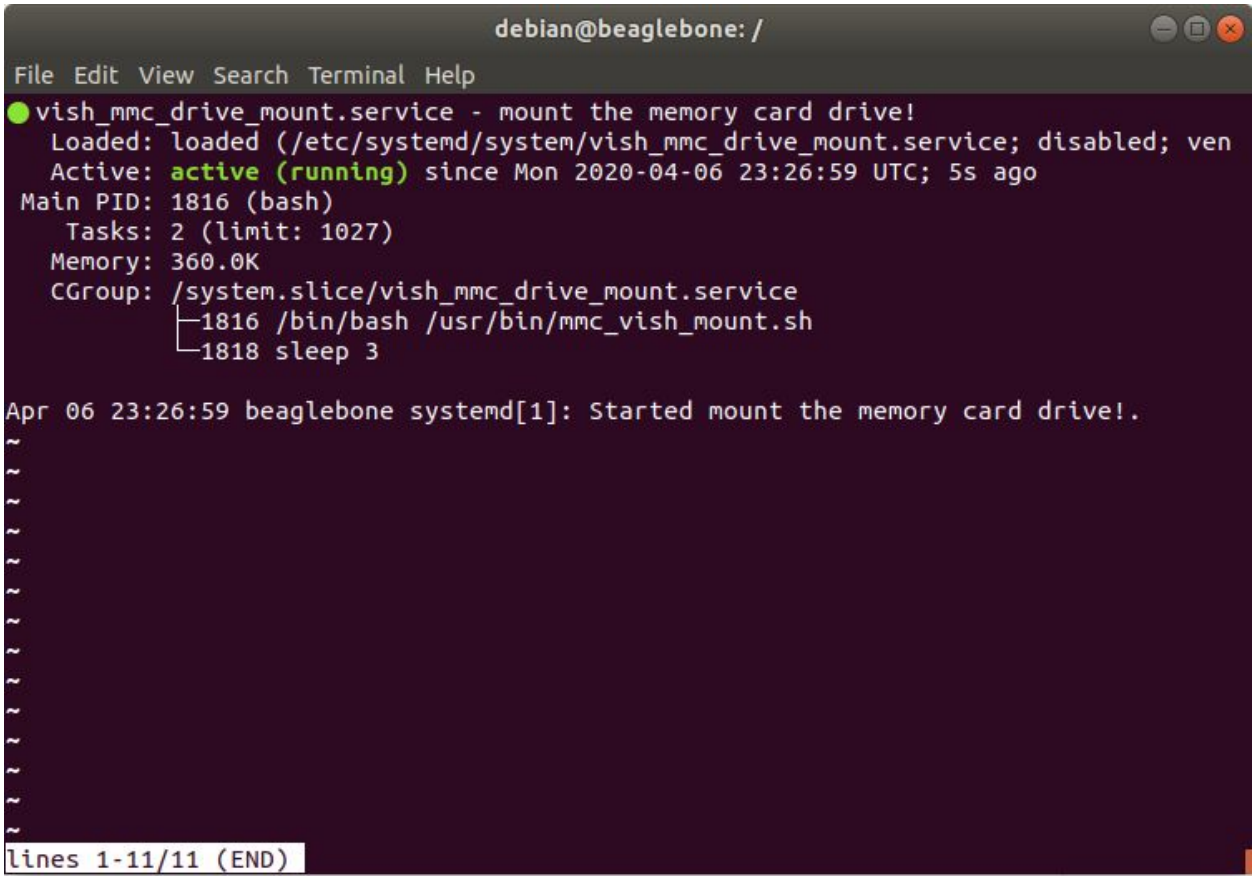
Unmounting of flash drive using umount “/dev/mmcblk0p1”
Removing the created directory using rmdir.
Rmdir “/media/vish_mmc_drive.

Now let's start the service **(**vish_mmc_drive_mount.service**).**

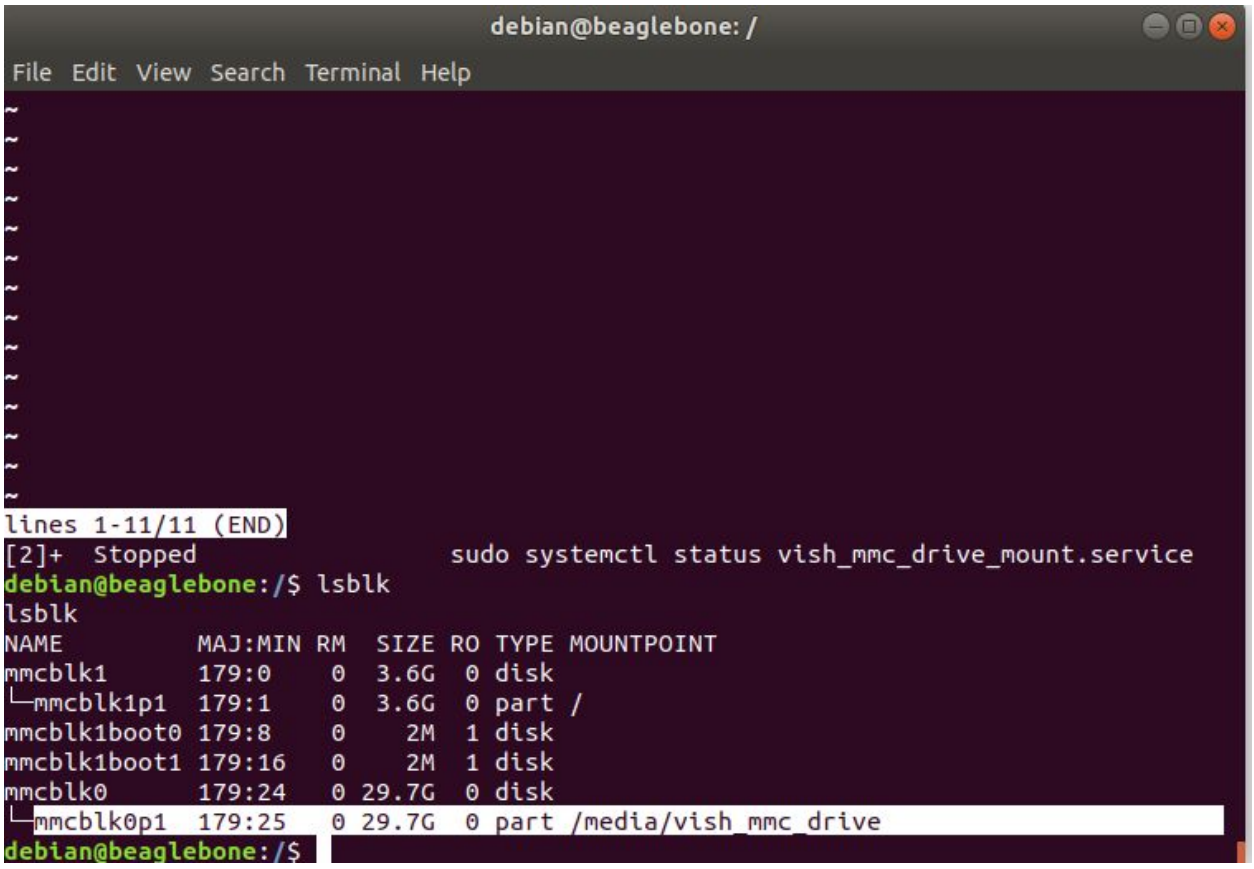
sudo systemctl start vish_mmc_drive_mount.service

Status :

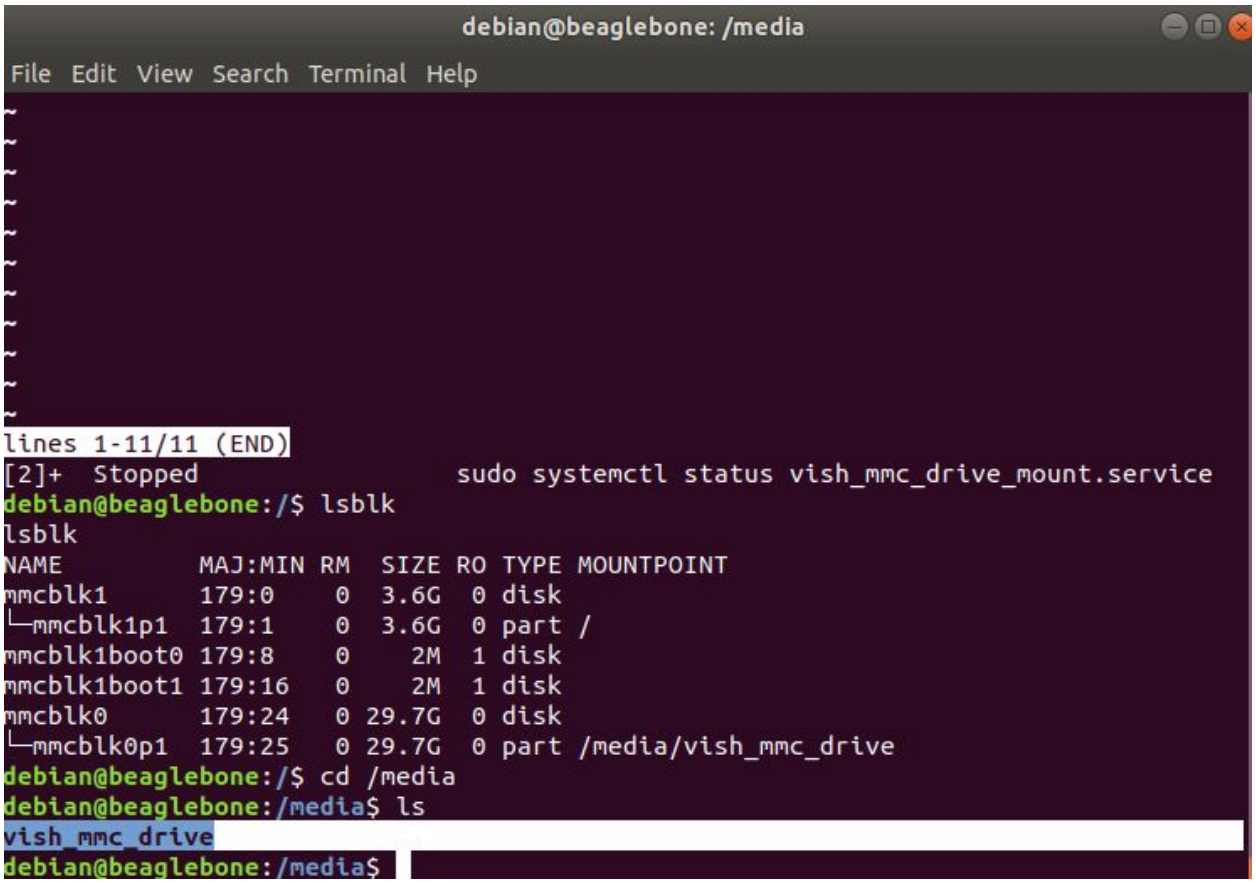
sudo systemctl status vish_mmc_drive_mount.service



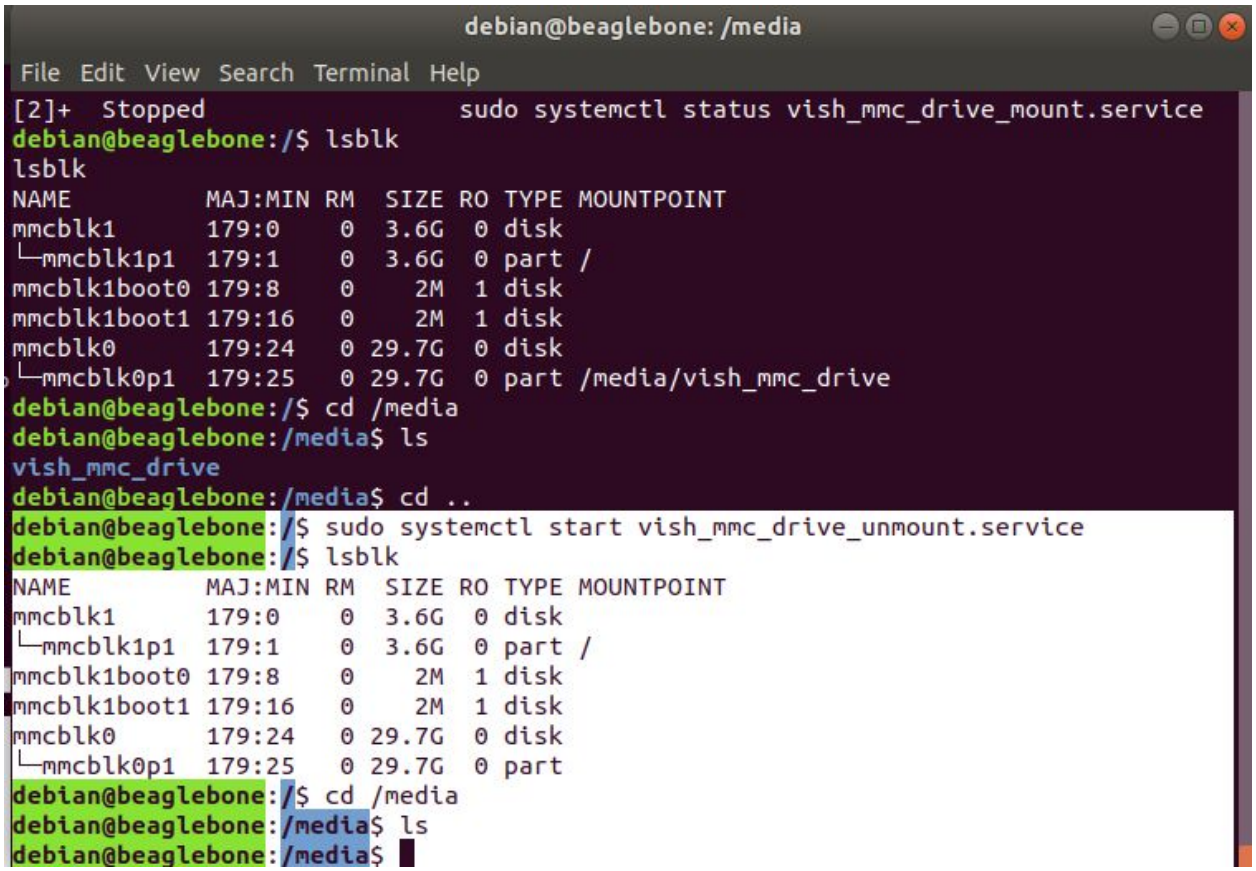
After starting the service ,we have to insert our micro SD-card and check whether it is mounted or not.



Checking whether directory is created in /media or not as follows :



To unmount the micro SD-card we will run our service i.e **vish_mmc_drive_unmount.service**



So,unmounting the SD-card is done successfully and the directory is also deleted after unmounting it.

CONCLUSION :

To summarize, we can say that mounting and unmounting of a particular device can be done by adding particular rule in the udev rules.d folder and then linking it to the *.service and *.sh file.

APPENDIX:

10-usb-drive-vish.rules

```
SUBSYSTEMS=="mmc", ATTRS{serial}=="0x597be4b7", ACTION=="add",
ENV{SYSTEMD_WANTS}=="vish_mmc_drive_mount.service"
SUBSYSTEMS=="mmc", ATTRS{serial}=="0x597be4b7", ACTION=="remove",
ENV{SYSTEMD_WANTS}=="vish_mmc_drive_unmount.service"
```

vish_mmc_drive_mount.service

```
[Unit]
Description=mount the memory card drive!

[Service]
Type=simple
ExecStart=/bin/bash /usr/bin/mmc_vish_mount.sh

[Install]
WantedBy=multi-user.target
```

vish_mmc_drive_unmount.service

```
[Unit]
Description=unmounted!!!

[Service]
Type=simple
ExecStart=/bin/bash /usr/bin/mmc_vish_unmount.sh

[Install]
WantedBy=multi-user.target
```

mmc_vish_mount.sh

```
device_name="vish_mmc_drive"



        #we will wait for flash drive to be plugged in
        while [ ! -e "/dev/mmcblk0p1" ]
        do
        sleep 3;
        done

        # drive is plugged in, so lets mount it.....

        if [ ! -e "/media/device_name" ]; then

         mkdir "/media/$device_name"
        sleep 1;
        fi
        /bin/mount "/dev/mmcblk0p1" "/media/$device_name"
```

mmc_vish_unmount.sh

```
device_name="vish_mmc_drive"

umount "/dev/mmcblk0p1"
rmdir "/media/$device_name"
```