Lab Submission

ESE 3005: EMBEDDED SYSTEMS ARCHITECTURE II

Lambton College in Toronto

Instructor: Takis Zourntos

STUDENT NAME & ID:

Vishal Hasrajani(C0761544)

Parth Patel(C0764929)

Goutham Reddy Alugubelly(C0747981)

Ratnajahnavi rebbapragada(C0762196)

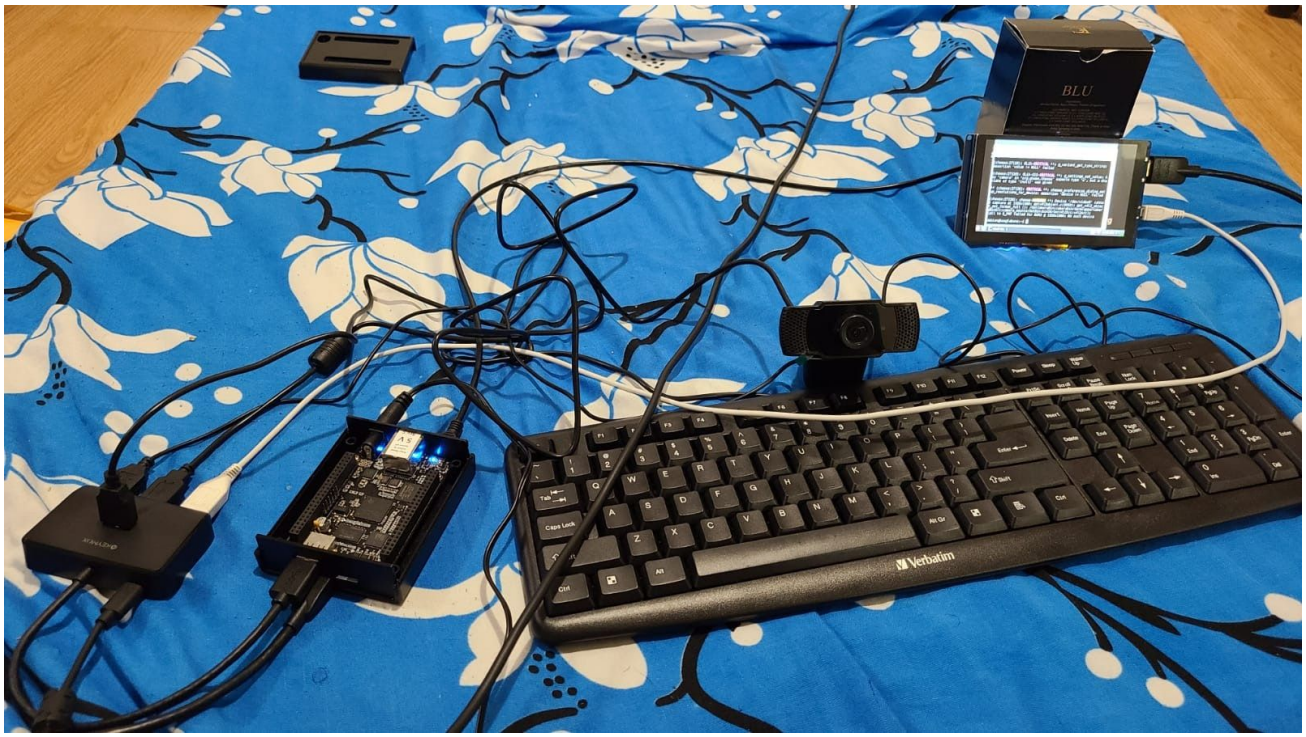
INTRODUCTION :

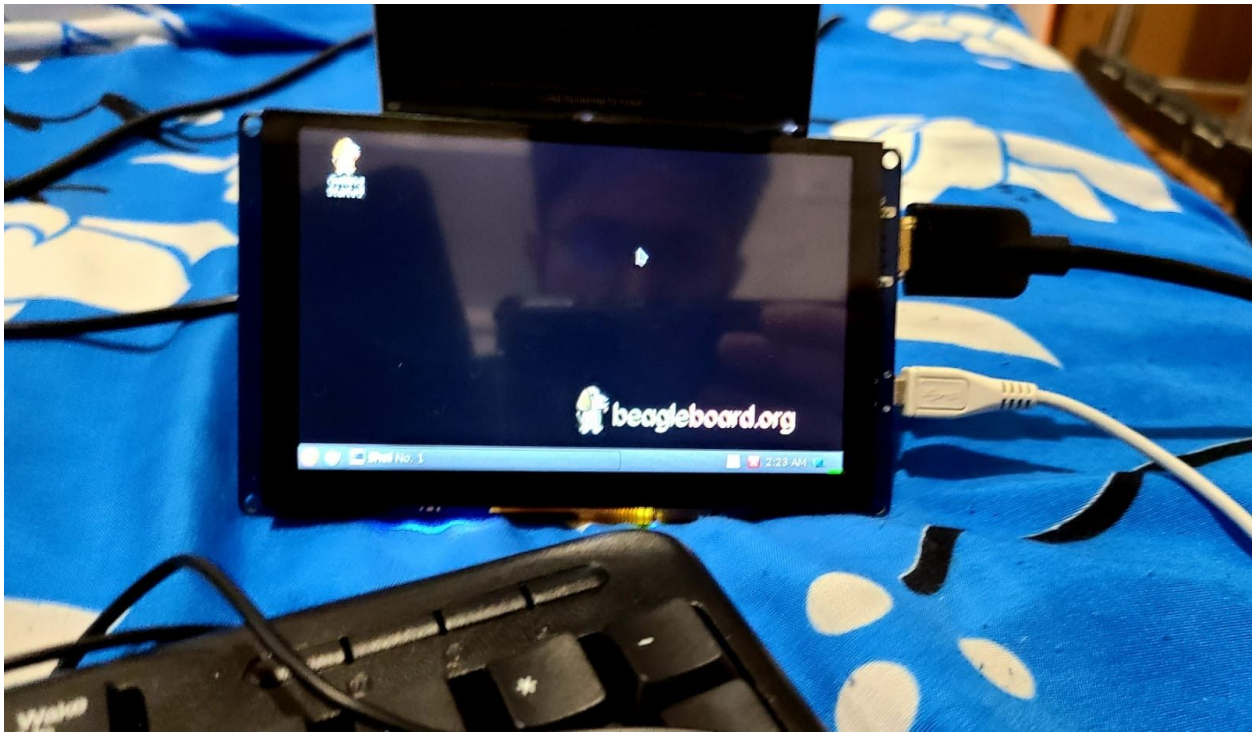
In this lab, we will discuss how to connect the USB Camera with the Beaglebone Black and we will show the steps how to configure it on our embedded platform (i.e. Beaglebone Black).At the end we will take the random footage and display it on Beaglebone's GUI Display.

DESCRIPTION :

To start up with, we connected Display, keyboard mouse and USB camera using a USB hub and then we powered it up with 5v external supply.

Setup picture :

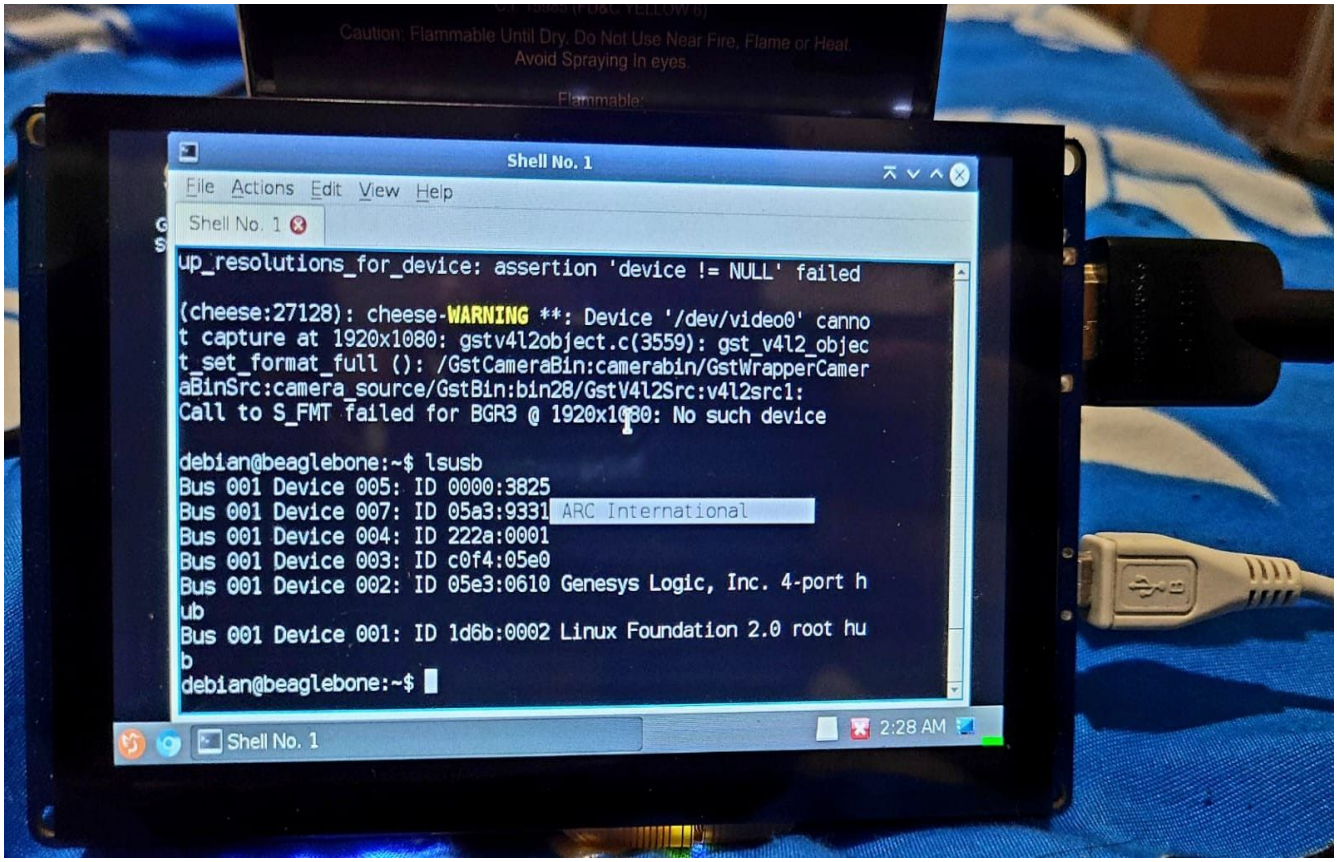




Then we listed all the devices connected to beaglebone using the command :

```
$ lsusb
```

The image you can see below :
|
|
|
.
.



Here among all the listed devices, the USB camera listed here is **ARC International.**

Further, moving on we checked the available drivers for our device using the command :

```
$ lsmod
```

"uvcvideo" is what we are looking for: this module works with USB-based cameras

Now to Capture the Simple picture we followed the steps that are mentioned below:

1)

```
$ sudo apt update # prepare for installation
```

2)

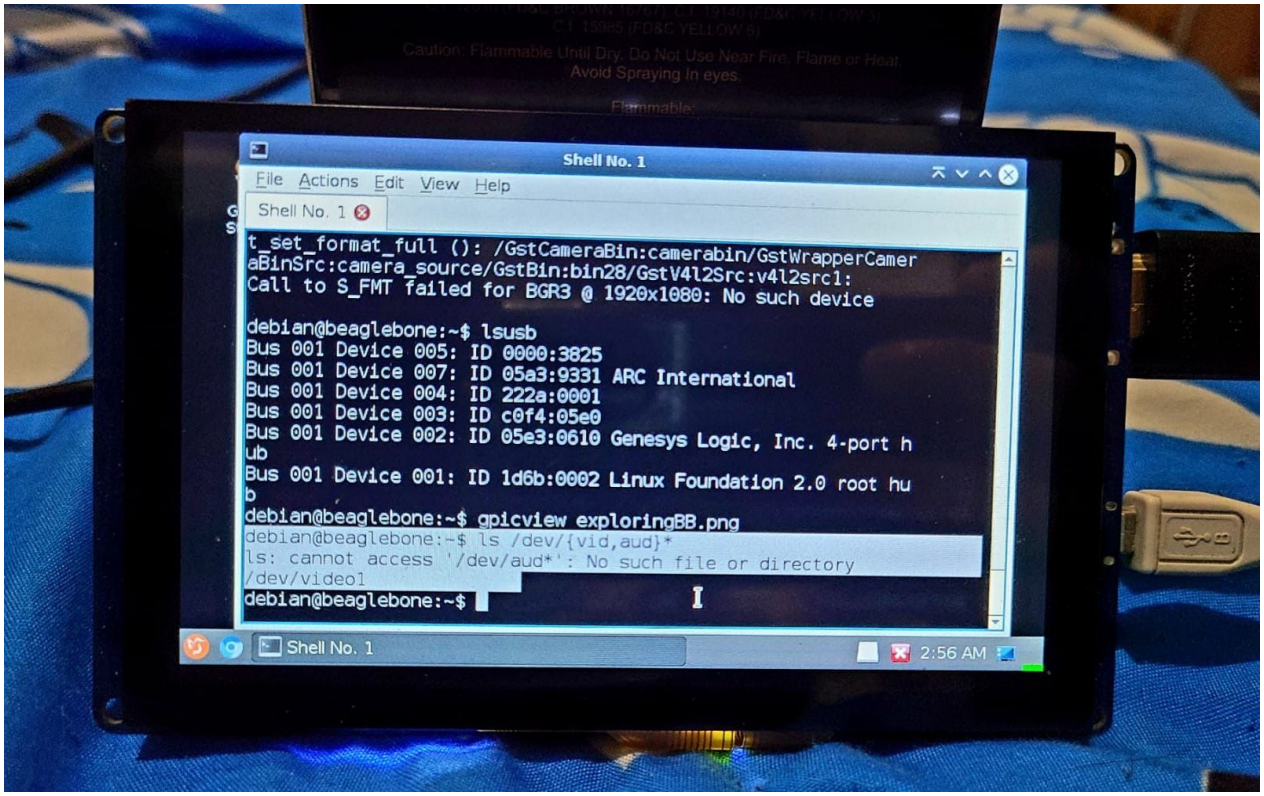
```
$ apt-cache search v4l2
```

3)
Install the packages that are required

```
$ sudo apt install fswebcam gpicview libav-tools libv4l-dev
```

4)
Now, The **uvcvideo** LKM supports UVC (USB video class) compliant devices, such as the webcam that is attached.
To check it command is shown below:

```
$ ls /dev/{vid,aud}*
```



After performing the above steps,we then cloned the repository from the Derek molloy repository of Exploring-BBB.

https://github.com/derekmolloy/exploringBB/tree/version2/chp14/fswebcam

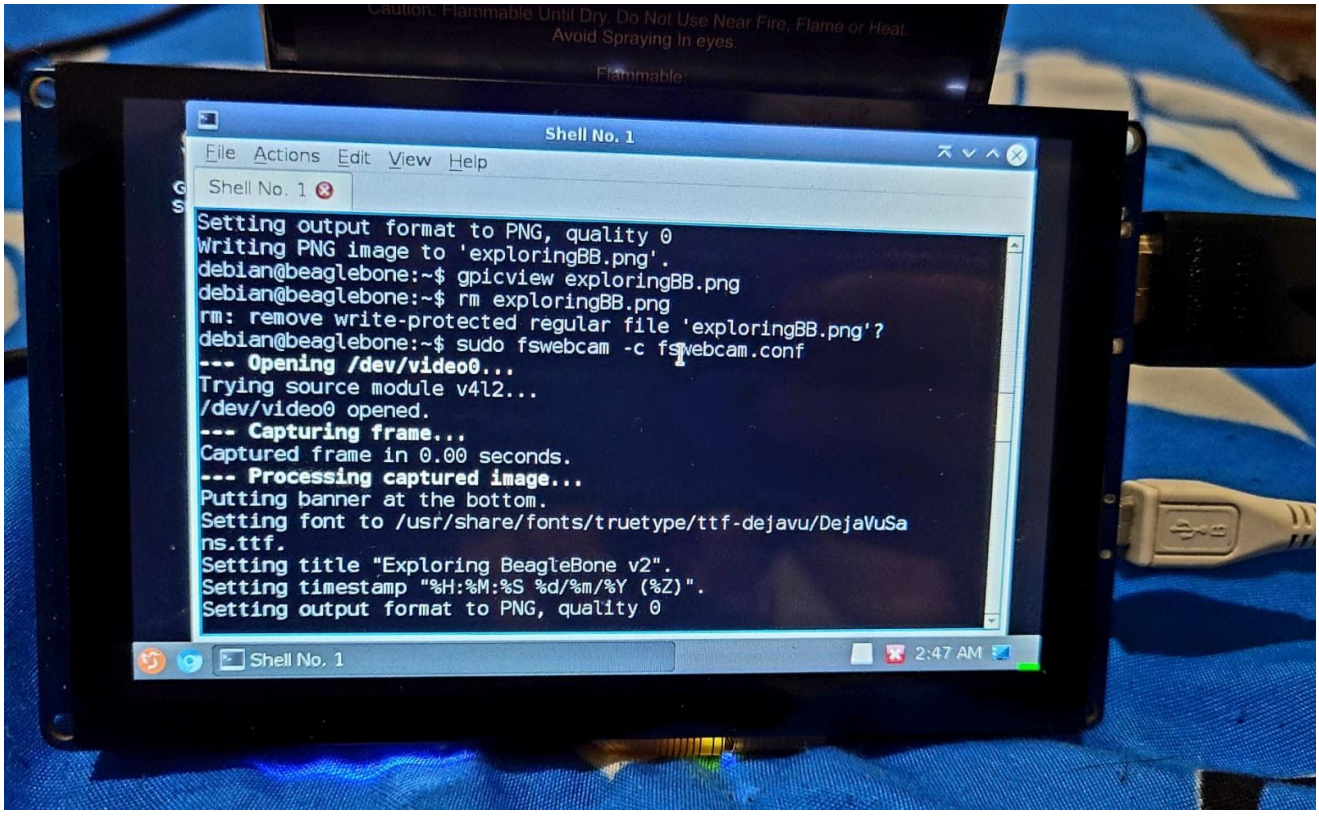
fswebcam.config

```
device /dev/video0
input 0
resolution 1280x720
bottom-banner
font /usr/share/fonts/truetype/ttf-dejavu/DejaVuSans.ttf
title "Exploring BeagleBone v2"
timestamp "%H:%M:%S %d/%m/%Y (%Z)"
png 0
save exploringBB.png
```

Then we transferred the file **fswebcam.config** to Beaglebone using sftp.

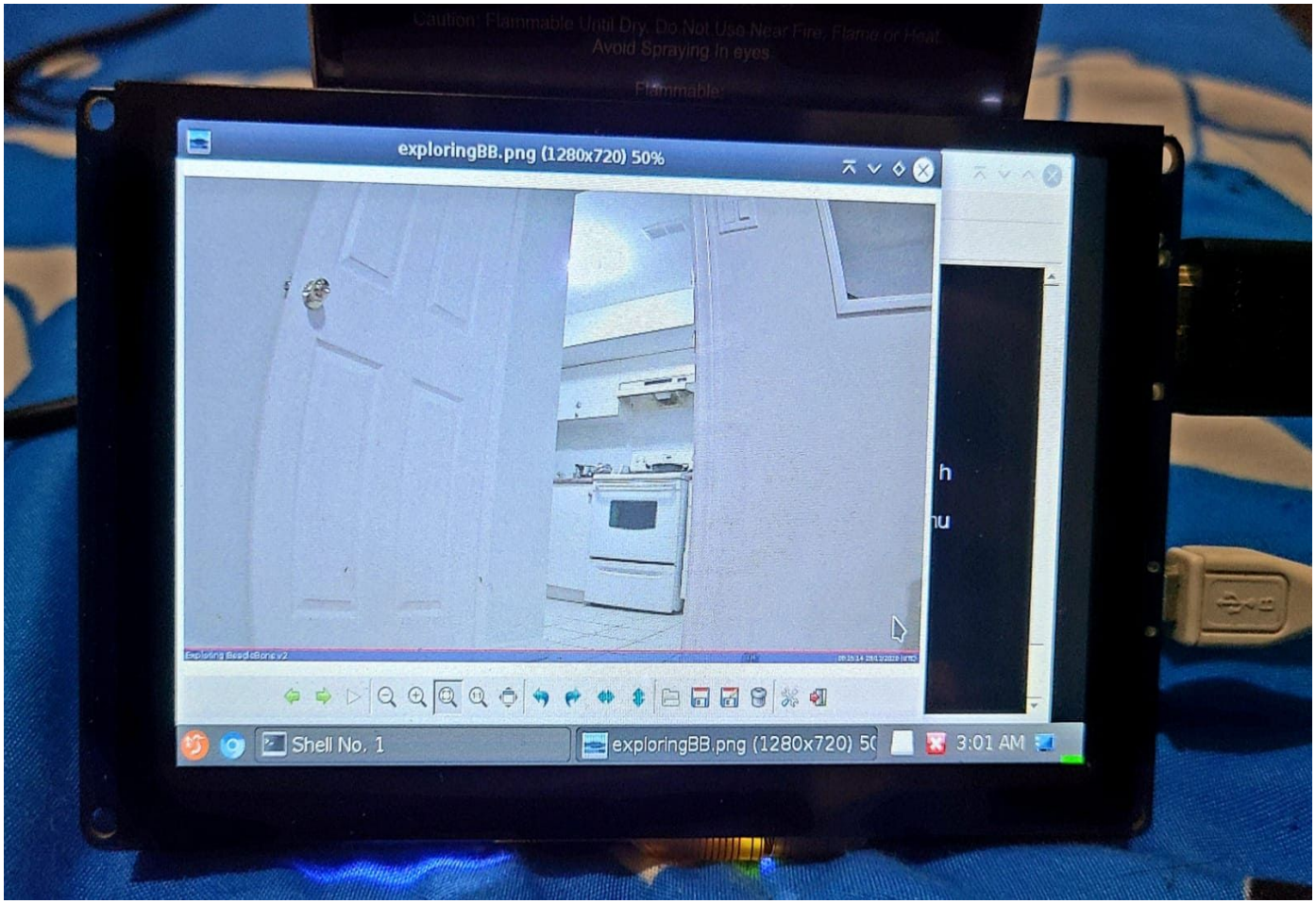
5)
Finally to click the picture and save it we used the command :

```
$ sudo fswebcam -c fswebcam.conf
```



To see the saved picture :(The picture is saved by the default name exploringBB.png)

```
gpicview exploringBB.png
```



For the video feed, we can install cheese on beaglebone using the command :

```
$ sudo apt install cheese
```

Youtube link :

https://www.youtube.com/watch?v=SY1cEqU47_o

CONCLUSION:

Overall, we learned how to connect and configure USB camera on our embedded platform (i.e. Beaglebone Black). And we also clicked the random footage using that USB camera.