

Exam 1 Improvement

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Q16:

The question was to divide the brighten code in 4 threads to operate and be able to brighten the image access 4 cores at least of the given processor. The code first defines a thread parameters by having the image to be resized and then divide the image into 4 parts with each having individual brightening . The image is resized to a default of 480x640 image size and then the image is divided into 4 quadrants to process. Then the threads are formed by using the attributes as given in the code with a scheduling FIFO policy. Then the code is using structures accesses each core for each of the threads and the net result is shown finally using imshow.

Q17:

The image brighten is done in a single thread and the attributes are kept NULL to ensure estimate the value. The code works in the same way as the above code but done in a single thread thus as well as the time taken by the code to execute is around 2 seconds.

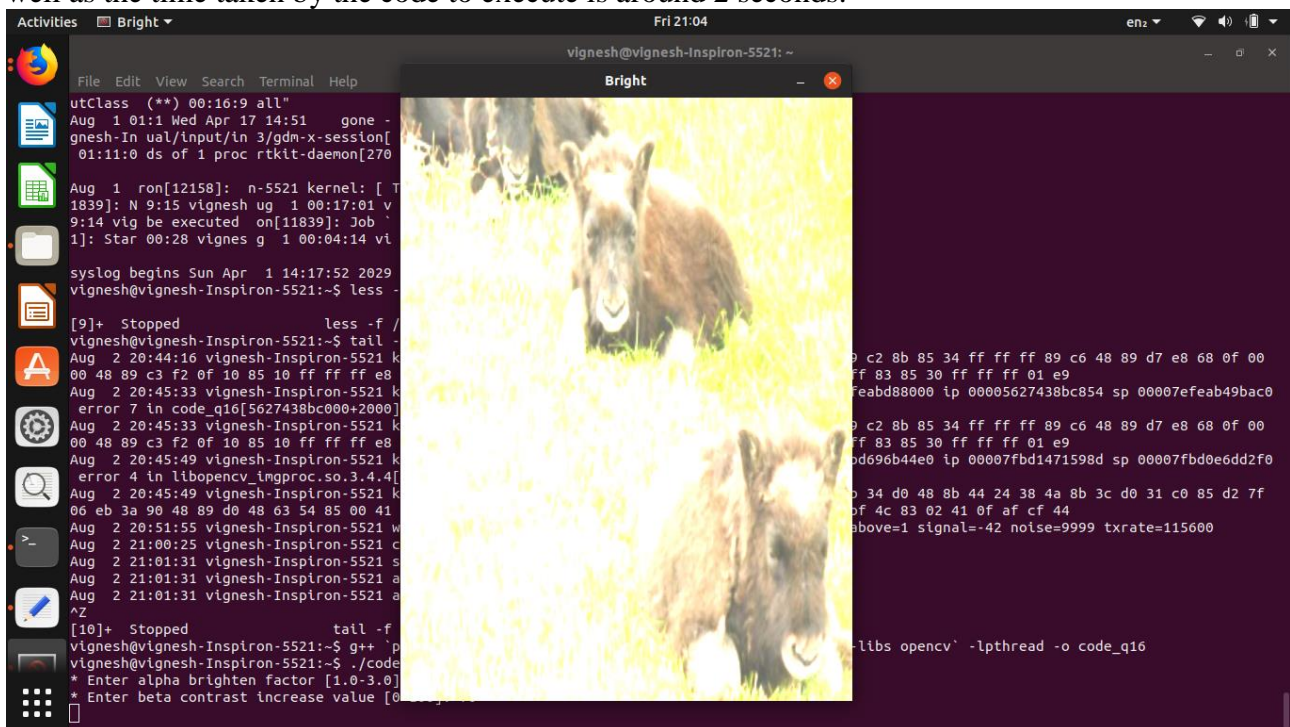


Figure 1 Brightened Image



Figure 2 Original Image

A comparison is made with the q16 for multithreaded application with the timing analysis. It was found that the single thread application takes 2 seconds to process while the multithread takes less than a second to process

```
Aug  2 21:15:36 vignesh-Inspiron-5521 code_q16: Frame=0,Time: sec=0, msec=863
Aug  2 21:15:40 vignesh-Inspiron-5521 code_q16: Frame=0,Time: sec=0, msec=710
```

Figure 3 Multi-thread timing analysis

```
Aug  2 21:17:50 vignesh-Inspiron-5521 systemd[1]: Started Hostname Service.
Aug  2 21:17:58 vignesh-Inspiron-5521 code_1_singlethread: Frame=0,Time: sec=2, msec=15
```

Figure 4 Single-thread timing analysis