1. Install –lowlatency kernel

-lowlatency kernel is already in the official Ubuntu repositories. Therefore, it is extremely easy to install –lowlatency kernel.

1.1 Find them in the official Ubuntu repositories

```
apt-cache search linux-lowlatency
```

```
kai@heater:~$ apt-cache search linux-lowlatency
linux-image-4.4.0-21-lowlatency - Linux kernel image for version 4.4.0 on 64 bit x86 SMP
linux-lowlatency - Complete lowlatency Linux kernel
linux-lowlatency-lts-utopic - Complete lowlatency Linux kernel (dummy transitional package)
linux-lowlatency-lts-vivid - Complete lowlatency Linux kernel (dummy transitional package)
linux-lowlatency-lts-wily - Complete lowlatency Linux kernel (dummy transitional package)
linux-lowlatency-lts-xenial - Complete lowlatency Linux kernel (dummy transitional package)
linux-image-4.10.0-14-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-19-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-20-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-21-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-22-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-24-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-26-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-27-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-28-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
linux-image-4.10.0-30-lowlatency - Linux kernel image for version 4.10.0 on 64 bit x86 SMP
```

```
apt-cache search linux-headers-lowlatency
```

```
kai@heater:~$ apt-cache search linux-headers-lowlatency
linux-headers-lowlatency - lowlatency Linux kernel headers
linux-headers-lowlatency-lts-utopic - lowlatency Linux kernel headers (dummy transitional package)
linux-headers-lowlatency-lts-vivid - lowlatency Linux kernel headers (dummy transitional package)
linux-headers-lowlatency-lts-wily - lowlatency Linux kernel headers (dummy transitional package)
linux-headers-lowlatency-lts-xenial - lowlatency Linux kernel headers (dummy transitional package)
linux-headers-lowlatency-hwe-16.04 - lowlatency Linux kernel headers
linux-headers-lowlatency-hwe-16.04-edge - lowlatency Linux kernel headers
kai@heater:~$
```

Both packages we need are in the official repositories. Great!

1.2 Install them

Two commands below will be enough.

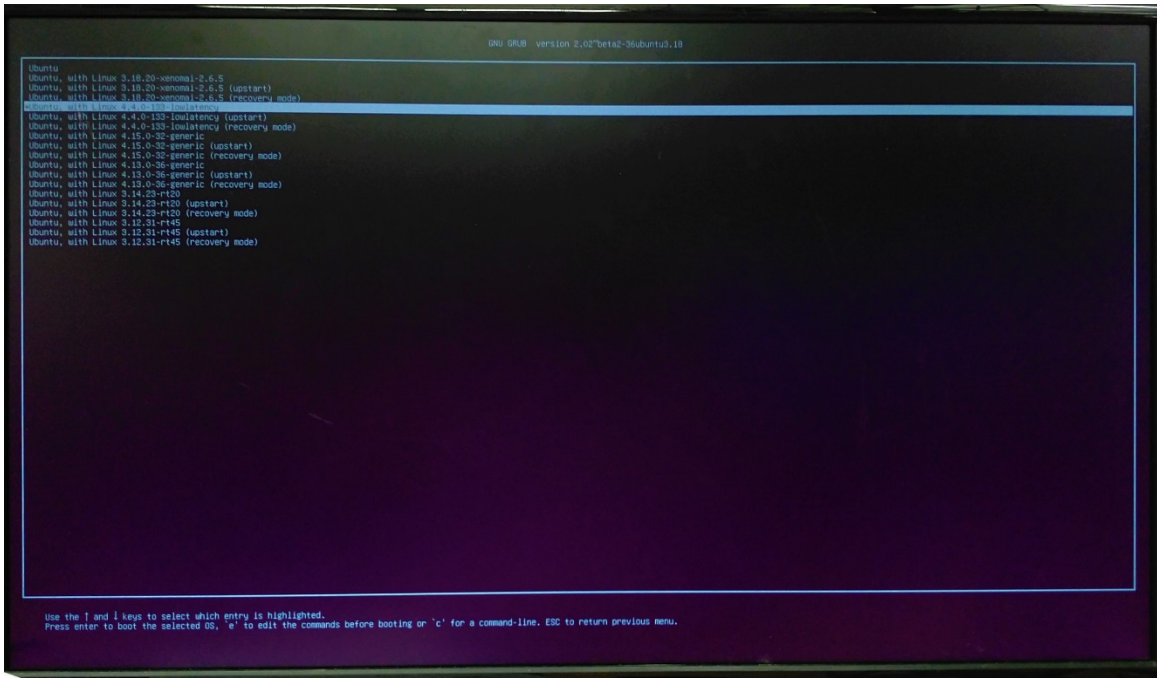
```
sudo apt-get update

sudo apt-get install linux-lowlatency linux-headers-lowlatency
```

1.3 Reboot Ubuntu system

```
sudo reboot
```

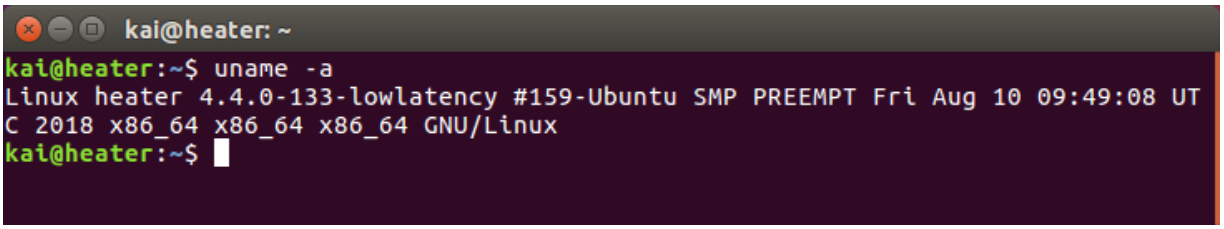
After reboot, select “Advanced options for Ubuntu”. See the picture below.

Under this directory, you should be able to see one option end with “–lowlatency”. Use ↑ ↓ to select it and press “ENTER” key. Now, wait for it to finish the rebooting.



After the reboot, let's see your current kernel with the following command.

```
uname -a
```



If it matches the one you chose, then your installation is succeed! Congratulations !

2. **Test your latency**

To test your latency, first make sure that you have cyclictest_run.sh and cyclictest_plot.sh and made them executable using chmod +x command.

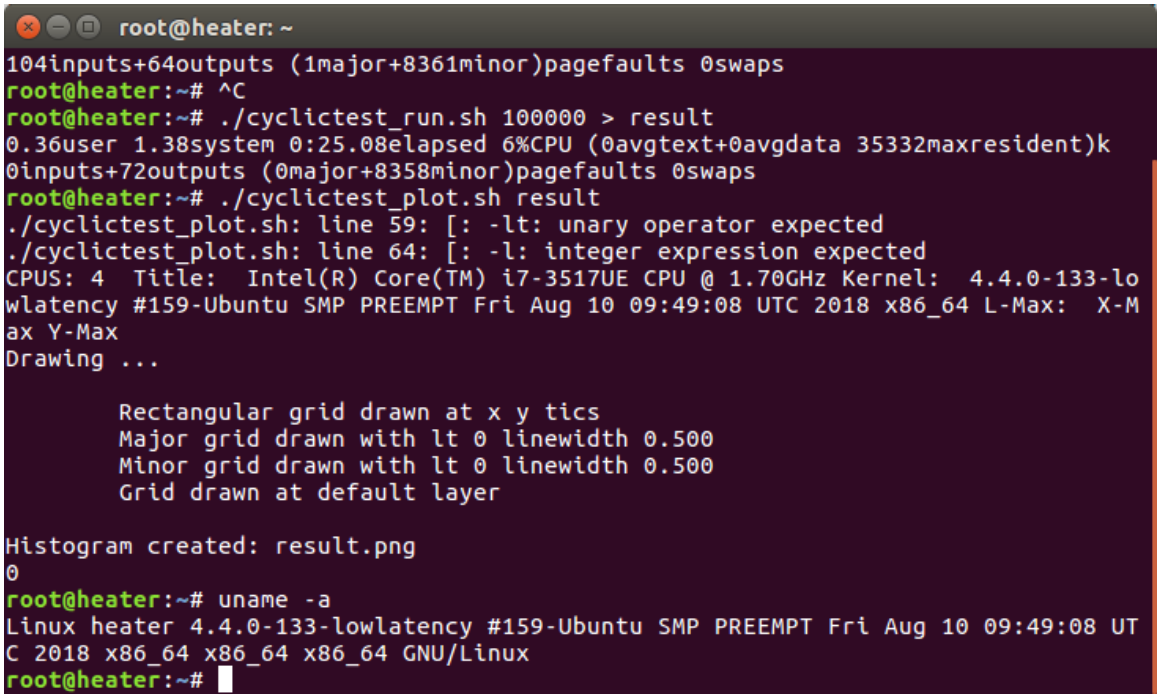
Now let's run it.

```
sudo -s #we need root permission

./cyclictest_run.sh 100000 > result
```

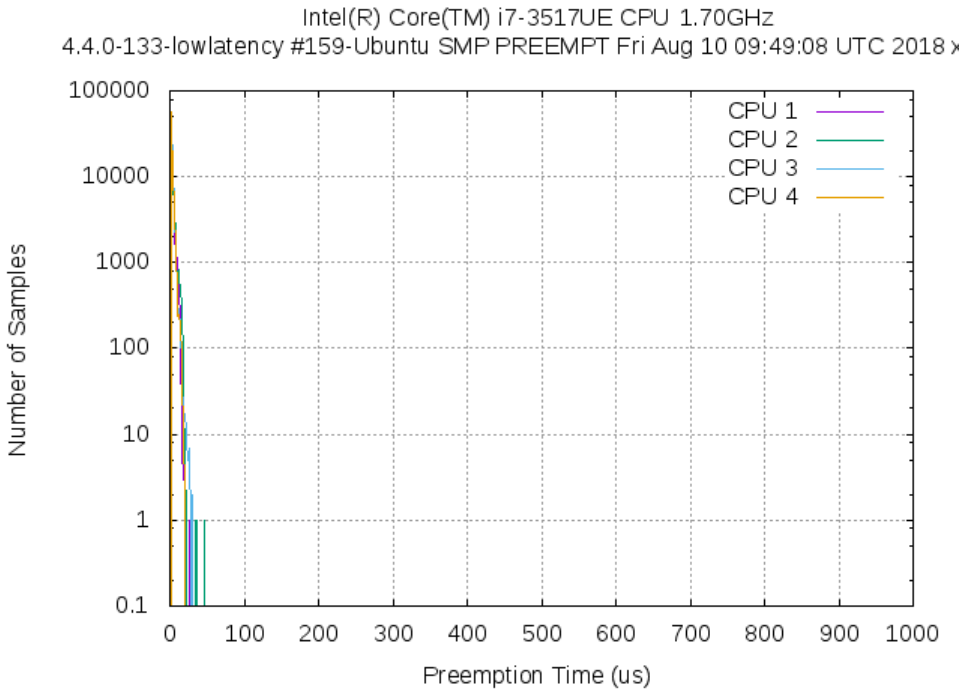
Wait for a few minutes. This command creates a file named "result" containing the testing result. Then,

```
./cyclictest_plot.sh result
```

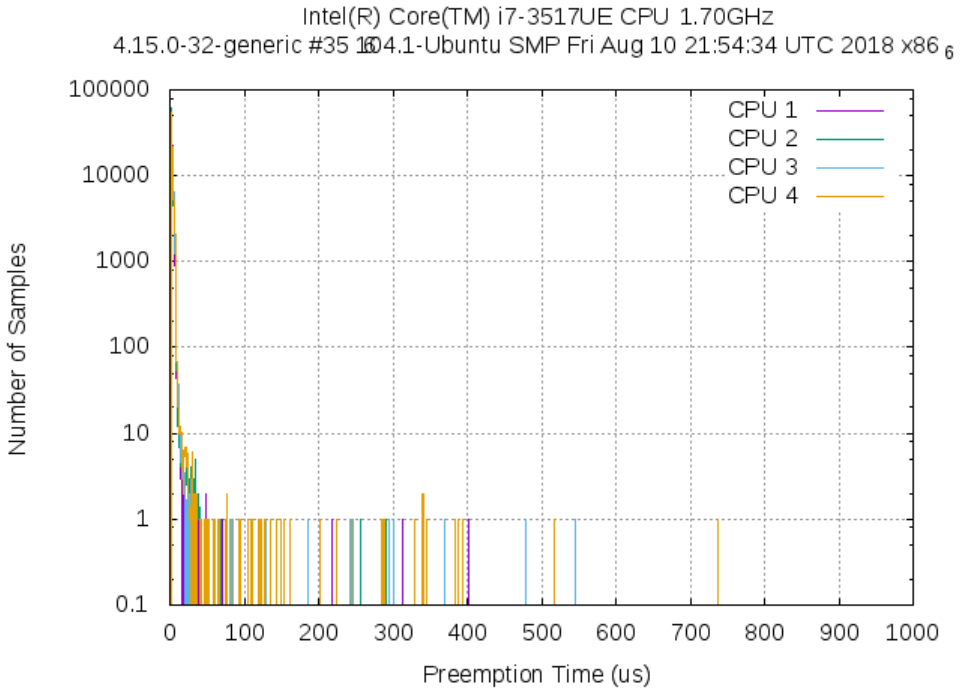
This command visualizes your data and put it in result.png in your current directory.



The following picture shows the latency test result for –lowlatency kernel.



And you can compare it to latency result for –generic kernel



The preemption time here actually stands for latency. As you can see, the latency dropped dramatically!