

## ECE430.

### Lab 0-1.

Laura and Joseph.

```
Last login: Mon Jun 27 14:58:22 on ttys000
[lauradoug@n3-52-122 ~ % cd ~/.ssh
[lauradoug@n3-52-122 ~ % ssh -Xi id_rsa iild27@dwslgrid.ece.drexel.edu
The authenticity of host 'dwslgrid.ece.drexel.edu (129.25.219.201)' can't be established.
ED25519 key fingerprint is SHA256:Hgv1DA8BosPr7ZNGJ9JIEqfz+6YAsSgqFq717Vo018.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'dwslgrid.ece.drexel.edu' (ED25519) to the list of known hosts.
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.4.0-117-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Mon Jun 27 15:45:33 EDT 2022

System load:      2.76           IPv4 address for br1: 192.168.16.1
Usage of /:       19.7% of 439.11GB IPv4 address for eno2: 10.248.103.181
Memory usage:     92%           IPv4 address for ens3f0: 129.25.219.201
Swap usage:       72%           IPv4 address for lxdbr0: 10.100.100.1
Processes:        1757          IPv4 address for lxdbr1: 10.100.101.1
Users logged in:  25

 * Super-optimized for small spaces - read how we shrank the memory
   footprint of MicroK8s to make it the smallest full K8s around.

https://ubuntu.com/blog/microk8s-memory-optimisation

10 updates can be applied immediately.
To see these additional updates run: apt list --upgradable

*** System restart required ***

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

/usr/bin/xauth: file /home/iild27/.Xauthority does not exist
iild27@dwslgrid:~$
```

**Figure 1:** showing that I have logged into the system, using my unique ssh key, and I have connected to dwslgrid, under my Drexel username 'iild27'

```
iild27@dwslgrid:~$ ssh -Xi ~/.ssh/id_rsa iild27@grid12
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-39-lowlatency x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Mon Jun 27 20:24:15 UTC 2022

System load: 0.32           Processes: 41
Usage of /: 15.9% of 228.23GB Users logged in: 0
Memory usage: 0%           IPv4 address for eth0: 192.168.18.3
Swap usage: 0%             IPv4 address for usrp: 192.168.10.1
Temperature: 50.0 C

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https://ubuntu.com/blog/microk8s-memory-optimisation

0 updates can be applied immediately.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

Last login: Mon Jun 27 20:13:21 2022 from 192.168.16.1
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

iild27@grid12:~$ uhd_find_devices
linux; GNU C++ version 9.4.0; Boost_107100; UHD_003.009.005-3-g61e5dfd1

--- UHD Device 0
Device Address:
  type: usrp2
  addr: 192.168.10.2
  name:
  serial: 30F8179

iild27@grid12:~$

iild27@dwslgrid:~$ ssh -Xi ~/.ssh/id_rsa iild27@grid33
Welcome to Ubuntu 20.04.4 LTS (GNU/Linux 5.13.0-51-lowlatency x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Mon Jun 27 20:25:09 UTC 2022

System load: 0.29           Processes: 41
Usage of /: 6.0% of 915.89GB Users logged in: 0
Memory usage: 0%           IPv4 address for eth0: 192.168.18.0
Swap usage: 0%             IPv4 address for usrp: 192.168.40.1
Temperature: 39.0 C

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https://ubuntu.com/blog/microk8s-memory-optimisation

0 updates can be applied immediately.

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

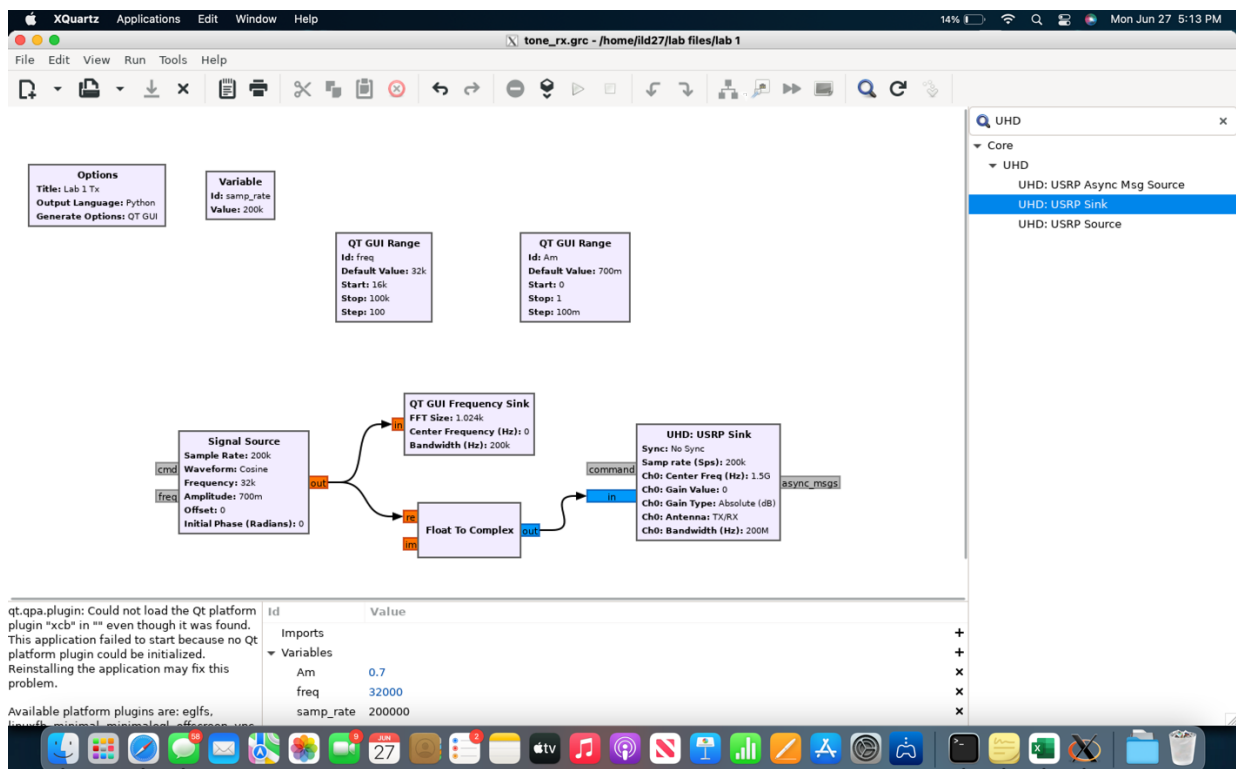
Last login: Mon Jun 27 20:18:03 2022 from 192.168.16.1
To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

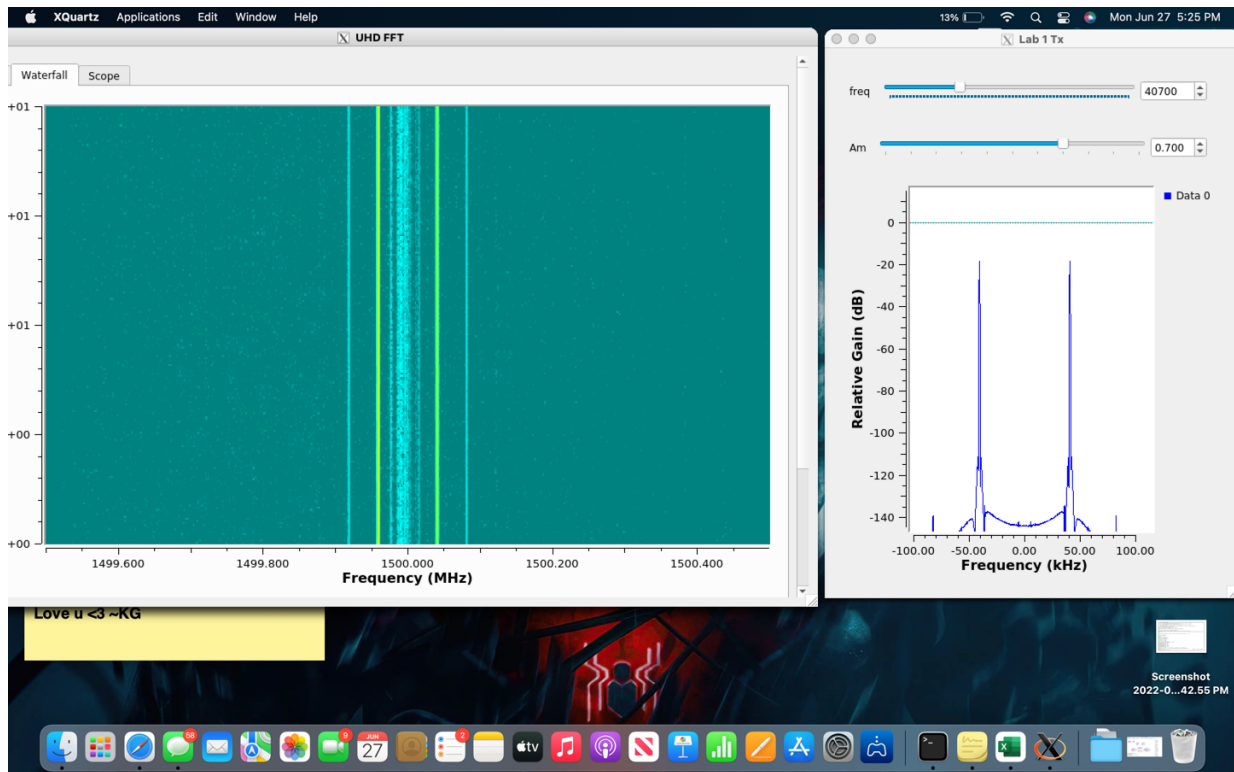
iild27@grid33:~$ uhd_find_devices
linux; GNU C++ version 9.4.0; Boost_107100; UHD_003.009.005-3-g61e5dfd1

--- UHD Device 0
Device Address:
  type: x300
  addr: 192.168.40.2
  fpga: HUS
  name:
  serial: 3180CE22
  product: X310

iild27@grid33:~$
```

**Figure 2:** showing that I have been able to set up tmux, enabling me to split my screen so I can simultaneously see me inputs for the transmitter and receiver.





**Figure 5:** output from flow graph, with a beam appearing at the specified frequency from Fig. 4 (1.5GHz). To check that this was indeed out transmission, we stopped transmitting and watched the beam disappear.

```

from .param import Param
File "/usr/lib/python3/dist-packages/gnuradio/grc/gui/canvas/param.py", line 23, in <module>
  from .. import ParamWidgets, Utils, Constants, Actions
File "/usr/lib/python3/dist-packages/gnuradio/grc/gui/ParamWidgets.py", line 69, in <module>
  add_style_provider()
File "/usr/lib/python3/dist-packages/gnuradio/grc/gui/ParamWidgets.py", line 64, in add_style_provider
  Gtk.StyleContext.add_provider_for_screen(
TypeError: Argument 0 does not allow None as a value
ild27@grid12:~$ uhd_fft -f 1.3812e9
linux; GNU C++ version 9.4.0; Boost_107100; UHD_003.009.005-3-g61e5dfd1

qt.qpa.xcb: could not connect to display localhost:11.0
qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
This application failed to start because no Qt platform plugin could be initialized. Reinstalling the application may fix this problem.

Available platform plugins are: eglfs, linuxfb, minimal, minimalegl, offscreen, vnc, xcb.

Aborted (core dumped)
ild27@grid12:~$ exit
logout
Connection to grid12 closed.
ild27@grid12:~$ logout
Connection to grid12 closed.
ild27@dswlgrid:~/.ssh$
ild27@dswlgrid:~/.ssh$
ild27@dswlgrid:~/.ssh$
ild27@dswlgrid:~/.ssh$
ild27@dswlgrid:~/.ssh$ logout
Connection to dswlgrid.ece.drexel.edu closed.
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh %
lauradouglass@n3-52-122 .ssh % ls
config      id_rsa      id_rsa.pub  known_hosts known_hosts.old
lauradouglass@n3-52-122 .ssh % scp id_rsa ild27@dswlgrid.ece.drexel.edu:/home/ild27/.ssh
id_rsa
lauradouglass@n3-52-122 .ssh %
100% 3381 420.7KB/s 00:00

```

**Figure 6:** showing that I have been able to logout completely, freeing up space on the grid for others to use.

The received signal spectrum appears different when using uhd\_siggen as a transmitter in Section 2.0 as opposed to tone modulation gnu radio companion (GRC) flowgraph in Section 3.0 because the GRC allows for real-time amplitude and frequency modulation signal transmission and reception