Electronics lab 1 notes

for future logins: username=pi, password=raspberry

Go home, set up raspberry pi (plug in hdmi before power)

- Raspbian
- Go to finish
- Once desktop is up, open LX terminal (don't use your mouse!)
- In lx terminal type in ssh student@science.simulator@uoit.ca
    - Get the @ using (shift+")
        - We cant type @ because the rbp is made in Britain
    - Password 123456
- Create a file called rico.humza (contents are 123456) and s-copy it to the remote desktop in the library
    - 'exit' the simulator
    - How to create a file
        - Use an editor
            - Nano
                - Type into it
                - Cntrl-x
                    - Yes
                    - Name the file and save it
                        - DON'T PUT SPACES IN FILE NAMES.
        - Double check its there using the 'ls' command
        - Want to see whats in the file
            - Look inside. How?
                - Command 'more' followed by the name of the file

    - Eg. more rico.humza

- Copy the file to another file
    - ‘cp’ filename to new file name
    - E.g. cp rico.humza rico.humza2
- Delete the old file:
    - ‘rm’ name of file
    - E.g. rm rico.humza
- Make a director
    - mkdir donkey
- move file to donkey director
    - mv rico.humza2 donkey
- change directory
    - cd donkey
- see if its in there by using ls

- move the file we have here to another computer!
- Use the s copy command to move it to science simulator (held in library)
    - scp rico.humza2 student@simulator.science.uoit.ca:
    - enter password (123456)
    - if done correctly you should see it transfer over.
- Now it’s on the other machine
- Without closing old terminal window, open up a new one.
- Here
    - Ssh into the other machine (as we did earlier)
    - Confirm that the file is there using ls

- When you use the ssh command you can log into remote computers.

Next

- Click on previous terminal window
- Now download file ‘e2’ to your own local machine (go backwards)
- To pull a file
    - scp student@simulator.science.uoit.ca:e2 . (need a period after e2 which signifies the current directory and a double period is the directory above me; need a space between the period and the end of the file name
    - Check if you downloaded it using the ‘ls’ command
- Look inside the file using the ‘more command’

Now

- Go back to home directory
    - **c**d.. (takes you one directory up) **or just ‘cd’ to go back to your home directory**
- Now move over an entire directory
- Rename the directory to ‘indigo’
    - mv donkey indigo
- move the directory over
    - scp -r indigo student@simulator.science.uoit.ca:
- ssh into the other machine and confirm that the directory is there.
- Go back into local machine and create a new file
    - Call it rico.humza.txt using nano
- Once you’ve created the new file
    - Move the new file on the local machine to
    - scp rico.humza.txt student@simulator.science.uoit.ca:blue/
        - No space b/w the colon and the b

- We'll use these techniques to back up our files from class

-Go to gui go to the 'start' menu

-Accessories

-File manager

We can see the files/directories that we were creating

python

- Open editor of your choice (nano) and write some python that says 'hello world'
    - Print 'Hello World' (use single quotations)
    - Save the file as hello.py
        - Learn python
            - Codeacademy.com, go through the first couple of exercises
            - In for loops and print statements etc.
- Now we want to run the file
    - Two ways
        - Easy way
            - Tell computer to run python from hello.py
        - Better way to do it
            - Add extra info to top of file which tells comp that its to be run in python
            - #!/usr/bin/env python
            - once you save your file, run the command
                - chmod u+x hello.py
                - this will make it executable

- run it by ./hello.py
    - Easy way:
        - Python file name
        - E.g. python hello.py
- No go back and edit the file again edit the file to do a for loop from one to 10
    - E.g. for i in range(10):

        (4 spaces) Print i

- In python spaces matter (everything that is indented 4 spaces) will be looped
- Check if it worked by python hello.py
- Now, let's say we want to save it to a file
- How?
    - Right now we're printing to a screen
    - We can redirect output into a file
        - Python hello.py > file.dat
- Now let's write a program that has two nested for loops. Count from 0 to 10 on outside loop and 0 to 30 on the inside loop. Write that to a file.

We want a while loop

- That does the same thing as above

```
for i in range(2):
     for i in range(3):
          print i, j
f=0
while f<3;
     g=0
     while g<4:
          print f,g
          f+=1
          g+=1
```

How to download software

- apt-cache search gnuplot-x11

(sudo=super do, you have the power to do dangerous commands; gives you admin rights)

- sudo apt-get install gnuplot-x11
- Didn't work because we haven't updated software lists on our machine
- How?
    - sudo apt-get update (updates our software lists!)
        - Works on all debian (e.g. Ubuntu) systems. Fedora uses a different way of installing software
        - If you google online make sure to look for apt-get instead of yum because yum is for fedora
- After doing this we can try again to install gnuplot-x11
- Run by just typing in 'gnuplot'
- plot sin(x)

Make new file that squares the second column

```
f=1
while f<10:
   g=f*f
   print f,g
   f+=1
```

Then print it and get the output into a file called square.dat

python square.py > square.dat

Then open gnuplot

plot 'square.dat

plot 'square.dat',x**2

Email the .dat file to yourself.