

Lab 1

Published

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Introduction to COSC130 Lab

[Step 1: Using the Hydra Machine]

1. Log into the Hydra machine using your NetID and Password
2. This will check to see if your netid and password work.
3. **IF NOT:** Please see EECS IT at Min Kao Suite 423
4. Open the Terminal
5. Type **gedit .zsh.path** (if that doesn't work, try **gedit .zsh_files/.zsh.path**)
6. Add a line that reads **export PATH="\$PATH:/opt/eecs/aarch64/bin"**
7. Save the file and exit the Terminal (this is necessary to reset your path).

[Step 2: Downloading Tools]

1. To use your laptop or personal device while not at the Hydra lab, you will need three tools:
2. Download Logisim: [logisim-generic-2.7.1.jar](#)
3. Download MobaXterm (free version) for Windows: <http://mobaxterm.mobatek.net/>
(<http://mobaxterm.mobatek.net/>)
4. If you have a MAC, download XQuartz <https://www.xquartz.org/> (<https://www.xquartz.org/>). You can access a "shell" by going under Applications > Utilities > XQuartz. When it opens, click on the menu "Applications" > "Xterm" and then type in **ssh -X hydra3.eecs.utk.edu**. It will ask for your username (netid) and password (netid password). There are 31 hydra machines, so you can type hydra0.eecs.utk.edu all the way to hydra30.eecs.utk.edu. Pick one that works for you!
5. If you have Linux, you should know how to enter a terminal based on your distribution. You'll use the same command as if you had a MAC (without XQuartz, though).
6. Download the Arduino IDE from <https://www.arduino.cc/en/Main/Software>
(<https://www.arduino.cc/en/Main/Software>)

[Step 3: Testing]

1. Open a new Terminal window

2. Create a new file called lab1.c (type in a terminal: **gedit lab1.c**). You may use a console editor, such as nano or vi as well.
3. This file is in C, but it is close enough to C++ for you to understand
4. Type the following code into test.c using your favorite editor

```
#include <stdio.h>

int main()
{
    printf("Hello World\n");
    return 0;
}
```

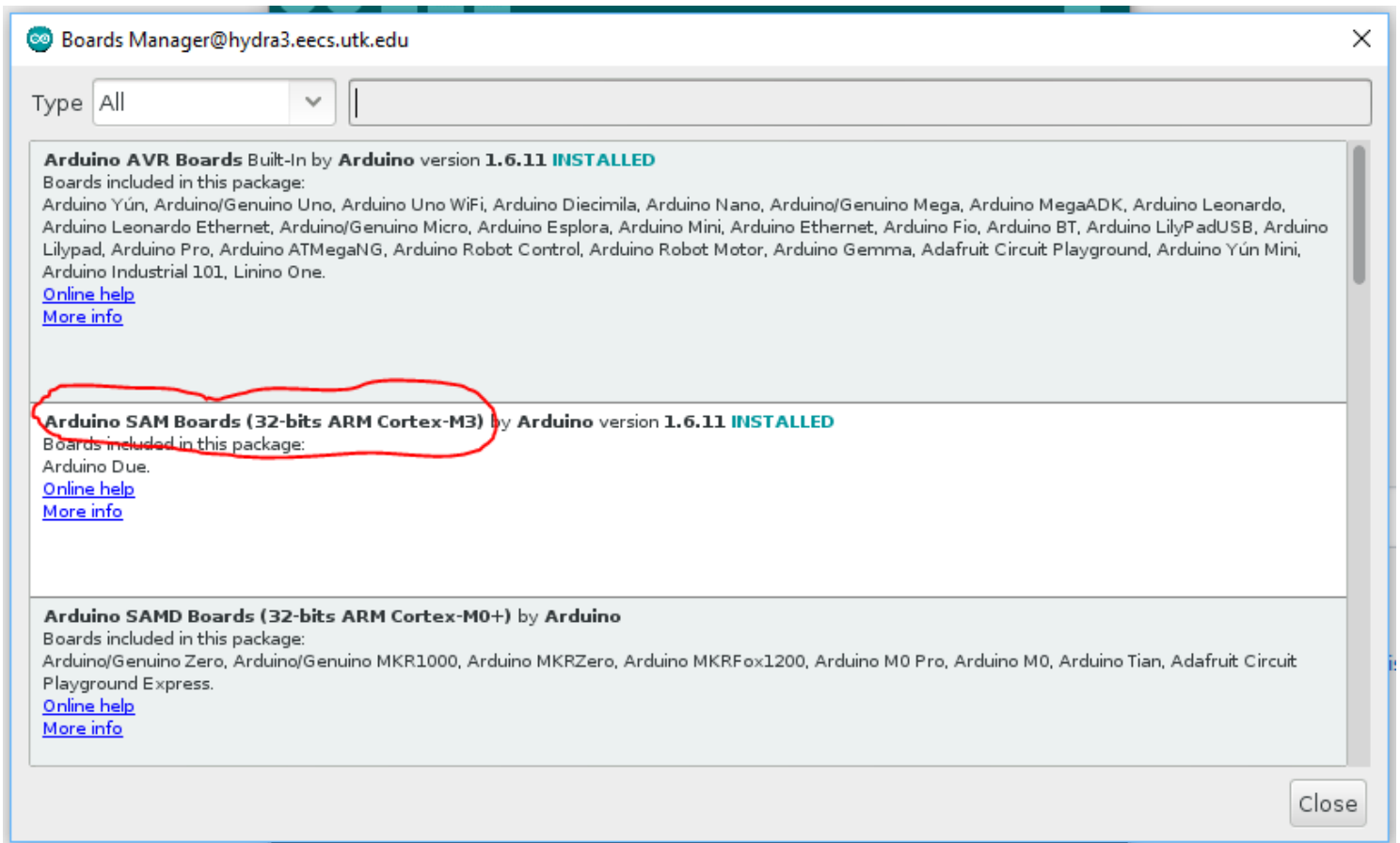
5. Save the file and close your editor.
6. Compile the file in the terminal by typing **aarch64-linux-gnu-gcc -o lab1 lab1.c**
7. Execute the file by typing **./lab1**
8. You should see "Hello World"
9. If you see **aarch64-linux-gnu-gcc: command not found**, this means that your path didn't get set from Step 1. First, try logging out, and then logging back in, then repeat 5 and 6. If it still doesn't work, please see your TA.

[Step 4: Logisim]

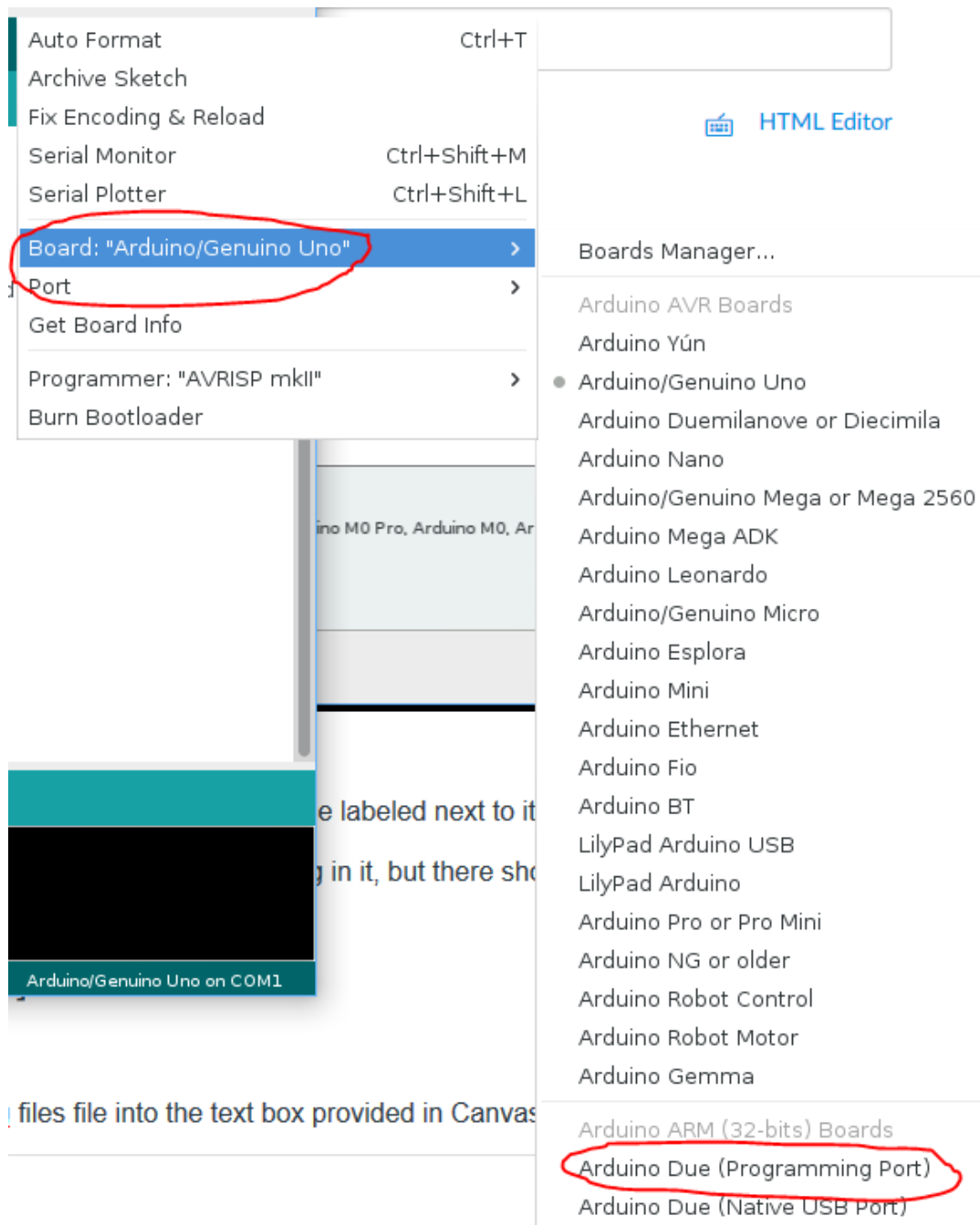
1. Open Logisim
2. Click on any input or output pin [electrical socket] and click on the white area with little black dots (the canvas) to the right.
3. This will drop the pin. You will be using this later. However, this will allow you to export this as a picture...which is how you'll be submitting Logisim assignments.
4. Click "File" -> "Export Image"
5. Make sure that the circuit to be exported is "main", that the Image Format is PNG, that the scale factor is 100%, and that the printer view is checked. Save it as lab1.png for your submission below.

[Step 5: Arduino IDE]

1. You will need to open the Arduino IDE on both the Hydra machine and your personal laptop.
2. Install "SAM Boards" under "Boards Manager"



3. Set the device to "Arduino Due (Programming Port)"



4. Select the proper communication device under "Port" (it should have Arduino Due labeled next to it)
5. Create a new .ino file called lab1.ino, and type in the following code:

```
File Edit Sketch Tools Help
sketch_aug13a

int pin = 0;

void setup() {
  // put your setup code here, to run once:
  pinMode(10, OUTPUT);
  pinMode(11, OUTPUT);
  pinMode(12, OUTPUT);
  pinMode(13, OUTPUT);
}

void loop() {
  // put your main code here, to run repeatedly:
  digitalWrite(10, HIGH);
  digitalWrite(11, HIGH);
  digitalWrite(12, HIGH);
  digitalWrite(13, HIGH);
  digitalWrite(10 + pin, LOW);
  delay(500);
  if (pin >= 3)
    pin = 0;
  else
    pin = pin + 1;
}
```

Done Saving.

6. Compile your code, and then upload it:



7. (If you do not have an Arduino Due, yet, skip this step). If all succeeded, you should see the LEDs on your Due flash one by one. If not, call your TA.

[You are finished with this lab!]

Submission:

1. Attach your lab1.c, lab1.ino, and lab1.png files file into the text box provided in Canvas.

Points 3

Submitting a file upload

File Types png, c, and ino

Due	For	Available from	Until
Aug 29, 2017	Everyone	Aug 25, 2017 at 7:58am	Aug 29, 2017 at 11:59pm

Lab 1			
Criteria	Ratings		Pts
lab1.c submission	1.0 pts Full Marks	0.0 pts No Marks	1.0 pts
Logisim exported image	1.0 pts Full Marks	0.0 pts No Marks	1.0 pts
lab1.ino submission	1.0 pts Full Marks	0.0 pts No Marks	1.0 pts
			Total Points: 3.0