UBUNTU 18.04.3 INSTALLATION GUIDE	TB000109	REV. A

Purpose:

This installation guide goes through the steps to integrate Ubuntu onto an Elo computer. It contains the instructions to install, set-up, and test Ubuntu for a faultless compatibility with Elo computers.

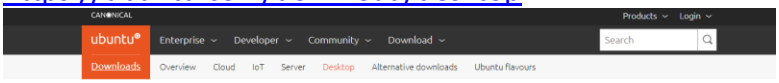
Note:

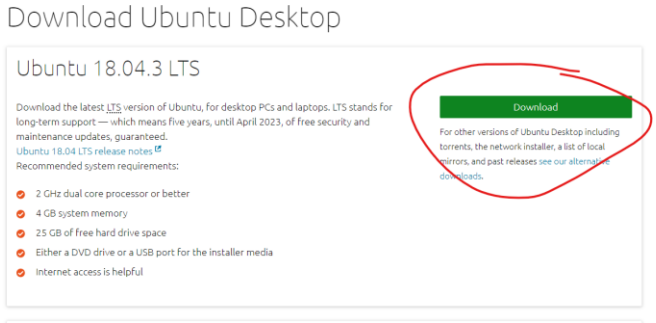
*Elo strongly recommends using this or a later version of Ubuntu to ensure full hardware support. *
For all terminal sudo commands in Terminal, the computer will ask for your password, enter your password in order to process the command
For all terminal commands, be aware of the spacing or the lack thereof in-between words and be aware of using the correct capitalization
The appendix sections are for testing purposes only

Table of Contents

Downloads Required (download files below before starting the next step):

- Ubuntu iso:
  - To download Ubuntu, go to ubuntu's website and download the latest LTS Desktop Version (This instruction is written using 18.04.3): https://ubuntu.com/download/desktop





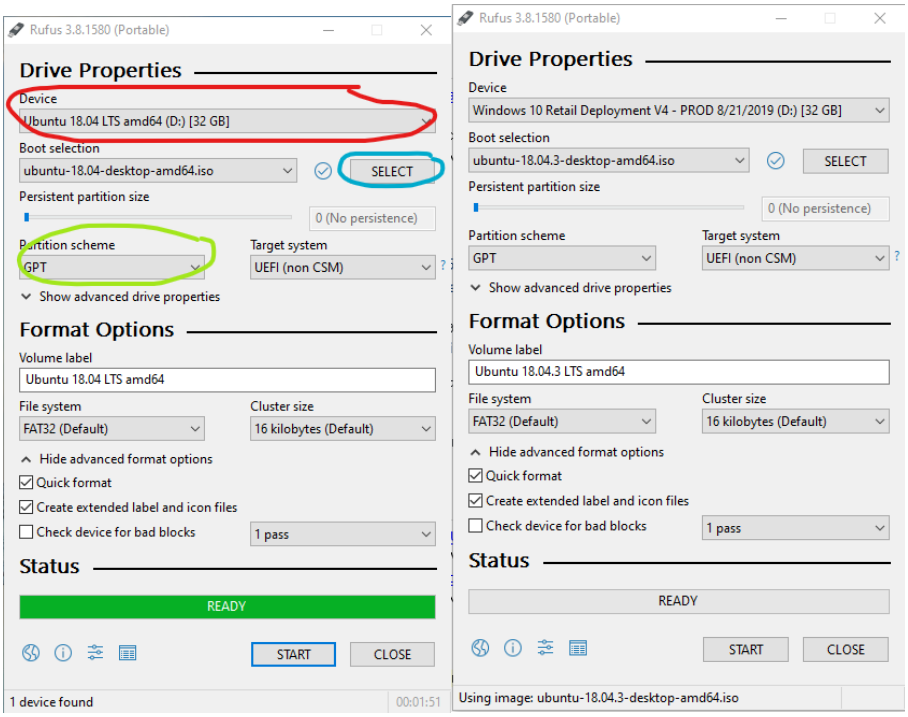
- Rufus:
  - Rufus is the tool we will be using to format and create our Ubuntu bootable USB drive.
  - To download, go to Rufus' website: https://rufus.ie/ .Scroll down and download the latest version.

- Serial port, Cashdrawer and Printer Drivers:
  - To download the driver packages, go to Elo's website:

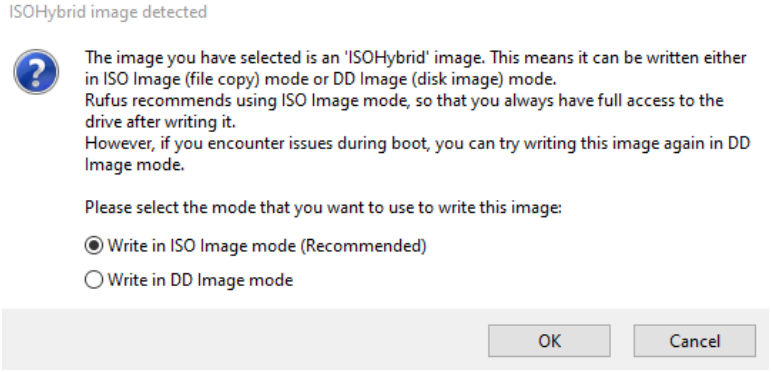
Installing Ubuntu onto the Elo computer:

* Warning: to create an installation USB drive, we will need to wipe out an USB drive. When choosing the disk to write to, make sure that you are choosing the correct disk, and that there are no files you want to preserve on the drive. *

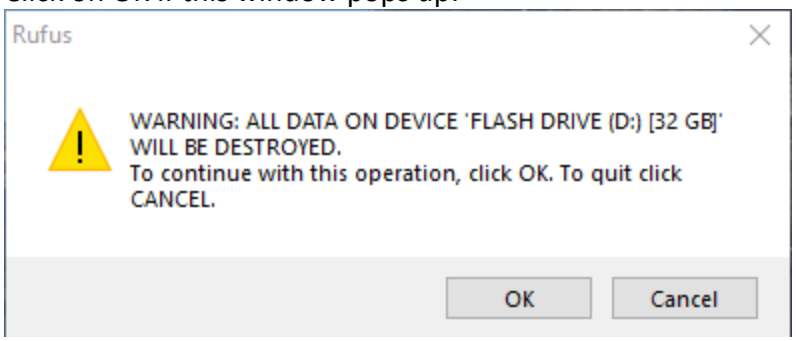
1. Create an Ubuntu bootable flash-drive using Rufus.
   - Launch Rufus and plug in an USB thumb drive.
   - In Rufus, select your thumb drive under device (circled in red). Then, click on the "SELECT" button (circled in blue) and select the Ubuntu iso file you have just downloaded.
   - Make sure that you choose GPT under Partition scheme (circled in green).
   - The end settings should look like the photo below.



   - Click on start.
   - Choose "Write in ISO Image mode" if this window pops up.



- Click on OK if this window pops up.

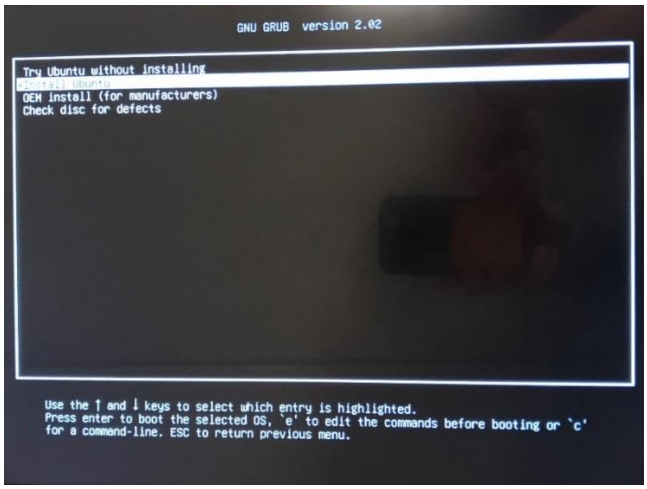


- Wait for Rufus to finish formatting the flash-drive and an Ubuntu bootable flash-drive is created!

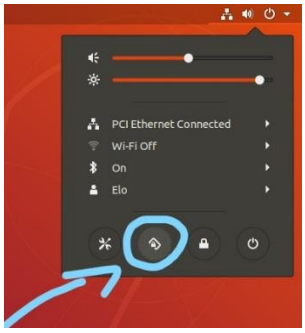
2. Install Ubuntu onto the Elo computer.
   - Plug the Ubuntu bootable flash-drive into the Elo computer.
   - Turn on or restart the computer. Go to the BBS Menu. This can be done by clicking on the BBS button on the top right corner during computer start-up.

- Now, select your thumb drive.

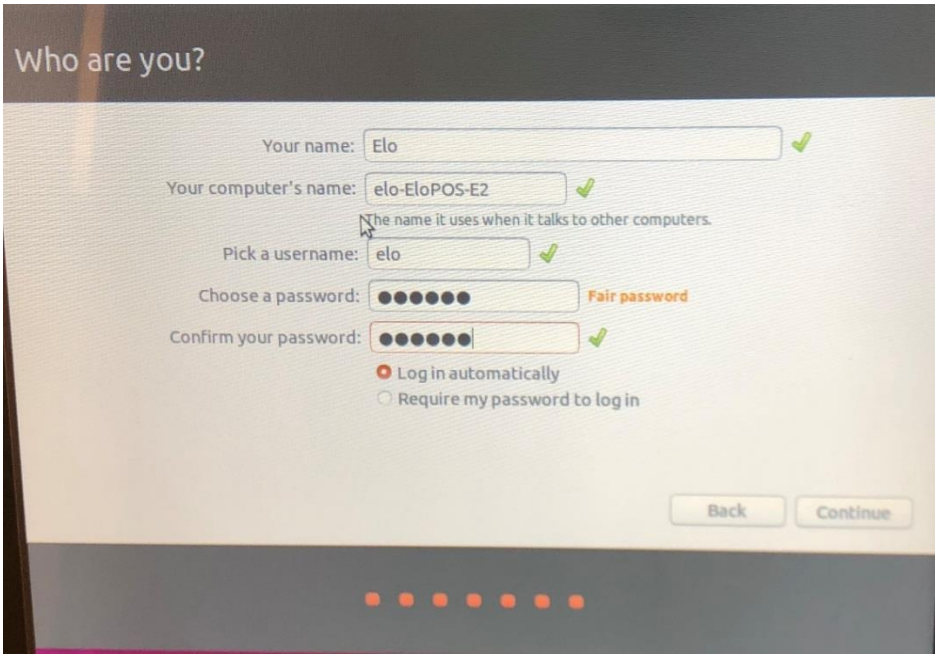
- This should bring up a menu. Select “Install Ubuntu.



- Ubuntu installation manager would launch. The screen may rotate sideways. This is normal, we will fix it by modifying the 60-sensor.hwdb file later. For now, use a keyboard and mouse for later steps. Alternatively, turn the Elo computer sideways so Ubuntu would be in landscape mode, bring down the slider menu on the top right corner, and turn off Auto-Rotate. Ubuntu should be showing in the correct direction now.



- Choose your language, keyboard layout, and internet connection.
- On the “Updates and other software” page, select “Normal installation” and enable **“Install third-party software for graphics and Wi-Fi hardware and additional media formats”**.
- On the installation type page, select “erase disk and install Ubuntu” if you do not want the original OS.
- Select your location and fill out your user credentials.

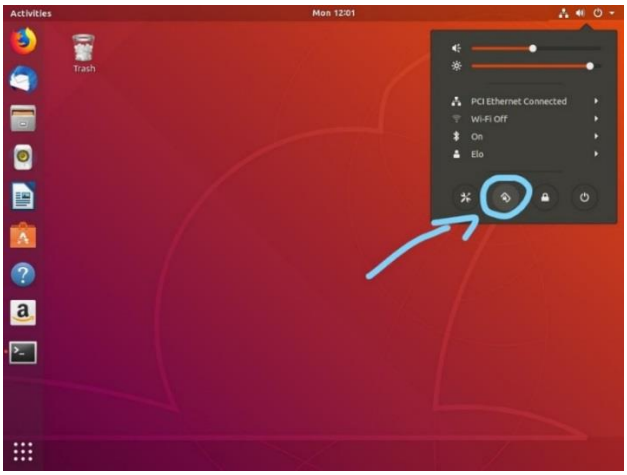


- The Ubuntu installation should be complete! Restart the computer and log in.

Updating the Linux Kernel

*This step is only required for users with a lower version of Ubuntu that does not work with Elo's auto rotation sensor. You can check this by sliding down the drop-down menu from the top right corner of your screen and checking if there is an auto-rotation icon as shown below. If your drop-down menu has this icon and can auto-rotate, please skip to section "Correcting Auto-Rotation Behavior" at the end of this guide"

1. Check that your Ubuntu's drop-down menu does not have an auto rotation icon. If your computer has the icon shown below, please skip this section



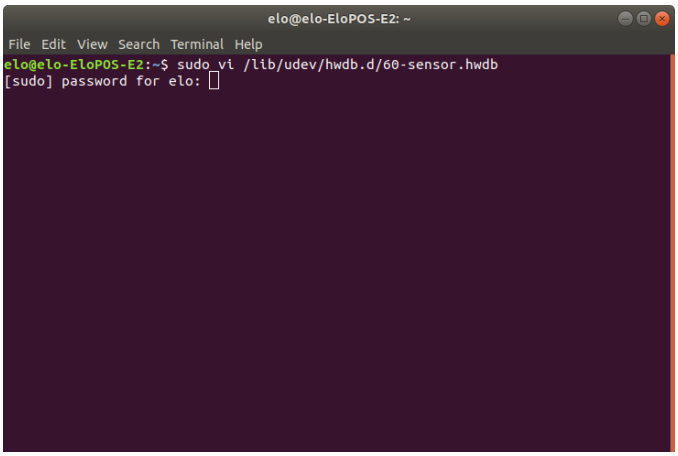
2. Back up important files in an external storage unit.

3. Perform an Ubuntu software update or an independent kernel upgrade. It is recommended that users install a newer version of Ubuntu such as Ubuntu 18.04.3(following section "**Installing Ubuntu onto the Elo computer")** because it comes prepackaged with drivers that support Elo computers. If that cannot be done, please proceed to updating your kernel independently.

Correcting Auto-Rotation Behavior when the Display is not Calibrated in the Right Orientation

1. To correct the rotation behavior of the computer, we will change the direction matrix of the sensor reading. We will do so by modifying the 60-sensor.hwdb file.

2. Launch Terminal and run command `sudo vi /lib/udev/hwdb.d/60-sensor.hwdb`.



3. You will now be in the vim editor. Make all lines of code irrelevant by typing in command `:%s!^!#!`. This will add a "#" in the beginning of every line.

4. Now, move to the bottom of the file and type "i" to enter interactive mode. Type in the two lines of code matching your computer model. Make sure to leave a space in the beginning of the second line.

   For Elo computers running on an intel Celeron CPU (product model number ending with i2):

   ```
   sensor:modalias:acpi:*:dmi:*:*
    ACCEL_MOUNT_MATRIX=0, 1, 0; 1, 0, 0; 0, 0, -1
   ```

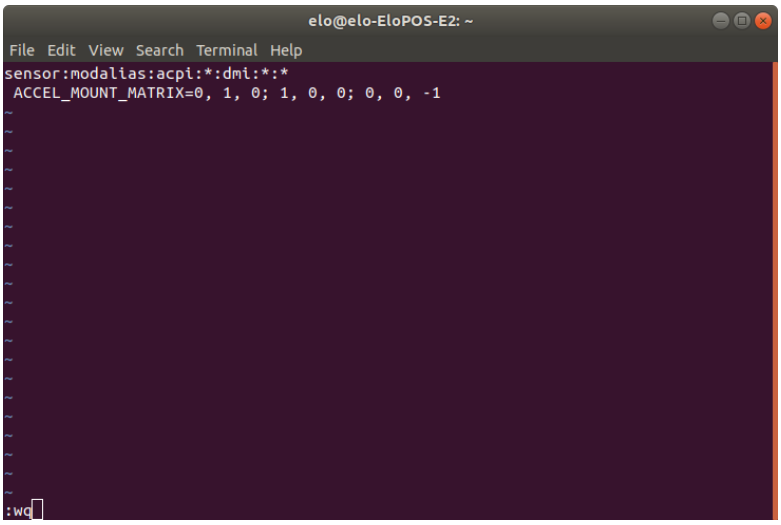
   For Elo computers running on an intel i3 CPU (product model number ending with i3):

   ```
   sensor:modalias:acpi:*:dmi:*:*
    ACCEL_MOUNT_MATRIX=-1, 0, 0; 0, 1, 0; 0, 0, 1
   ```

   For Elo computers running on an intel i5 CPU (product model number ending with i5):

   ```
   sensor:modalias:acpi:*:dmi:*:*
    ACCEL_MOUNT_MATRIX=-1, 0, 0; 0, 1, 0; 0, 0, 1
   ```

5. Save and leave vim editor by pressing the “Esc” key to exit the interactive mode then typing in :wq.



6. You should be back in the Terminal. Now run commands:
   sudo systemd-hwdb update
   sudo udevadm trigger -v -p DEVNAME=/dev/iio:device*
   reboot

7. Your Elo computer’s auto-rotation mechanism should now work flawlessly.

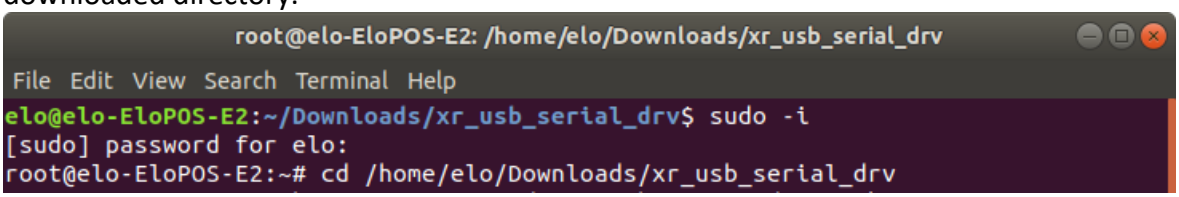
Appendix A: Testing Serial Port Functionality

In this section, we will test the functionality of the serial ports.

1. Check if your Ubuntu version have Exar’s USB serial driver installed. Perform this check by running command:
   $ ls /dev/ttyXRUSB*. If you see the serial ports listed in a format like the one shown below, skip to step 6.

```
root@elo-EloPOS-E2:~# ls /dev/ttyXRUSB*
/dev/ttyXRUSB0  /dev/ttyXRUSB1
```

2. Download Exar’s USB serial driver at Elo’s website. Once the download is complete, launch terminal, go into sudo mode by running command $ sudo -i and go to the downloaded directory.



3. Extract the files and run commands:

```
$ tar zxvf xr_usb_serial_drv.tar.gz
$ cd /xr_usb_serial_drv/
$ chmod 777 build.sh
$ ./build.sh
```

4. Check that USB UART is detected by the system by using the command: $ lsmod, and check device nodes by using the command: $ ls /dev/ttyXRUSB*. You should see the serial ports listed in a format like the one shown below.

```
root@elo-EloPOS-E2:~# ls /dev/ttyXRUSB*
/dev/ttyXRUSB0  /dev/ttyXRUSB1
```

5. Seeing the port names printed means that the Elo computer registers the serial ports. Now, to test the functionality of the serial ports, we will check the output and input function of the ports by using the cat and echo commands.

6. Connect a cable to a serial port on the Elo Computer and a serial loopback connector to the other end of the cable.

7. Launch two terminal windows and enter sudo mode for both by using the command $ sudo -i in both terminal windows.

8. In one of the windows, we will run echo commands and in the other window we will test cat commands. We will call these two windows “cat terminal window” and “echo

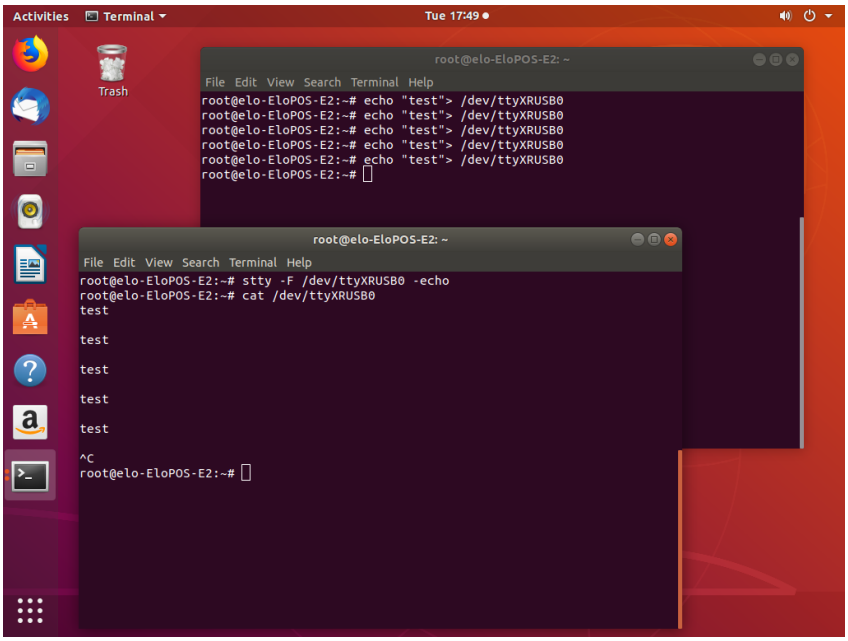
terminal window" for easy identification. The messages we output from the echo terminal window should show up in the cat terminal window. This will test the output and input functionality of the serial port.

9. To prevent infinite loops of the echo message, in the cat terminal window, run command $ stty -F /dev/ttyXRUSB0 -echo

10. In the cat terminal window, run command $ cat /dev/ttyXRUSB0. This terminal will now print out all the input messages that the serial port receives.

11. In the echo terminal window, run command $ echo "insert_your_test_message"> /dev/ttyXRUSB0.

12. You should see the message printed out in the cat terminal window. If you don't see the message, try plugging in your serial cable along with the loopback connector into another serial port and repeat step 11.



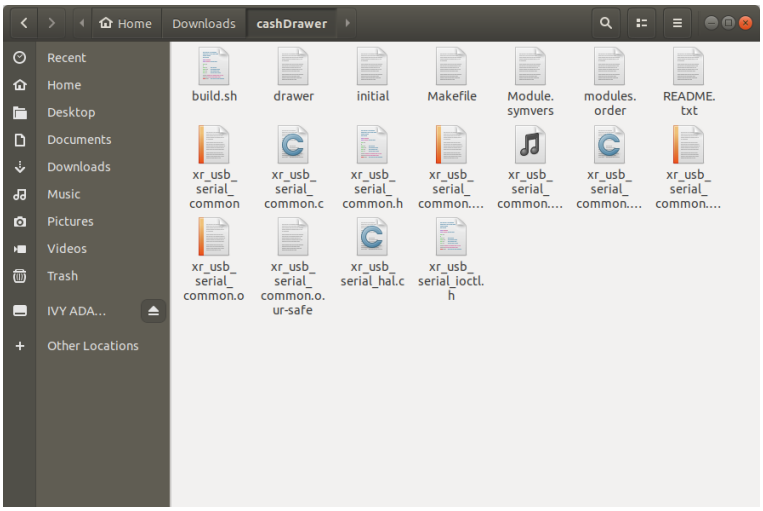
13. Once you've successfully tested the serial port, revert the echo setting by typing in the command:

    $ stty -F /dev/ttyXRUSB0 echo

14. Repeat steps 6-13 on all serial ports.

Appendix B: Testing Cashdrawer Functionality

1. To test the cashdrawer functionality, first download the cashdrawer file from the Elo website onto the Elo computer. Once all files are downloaded, copy all serial port driver files from the last step into the cashdrawer folder.



2. Launch terminal and change to root user by running the command $ sudo -i. Go to the downloaded cashdrawer directory using the cd command. For our computer, the command is $ cd /home/elo/Downloads/cashDrawer.

```
root@elo-EloPOS-E2:/# cd /home/elo/Downloads/cashDrawer
```

3. Change the permissions of the drawer script by running the commands:
   $ chmod 777./drawer

4. Run command:
   $ ./drawer init

5. Now you should be able to open the drawer(s) using the commands $ ./drawer cda and $ ./drawer cdb (to open cash drawer a and b).

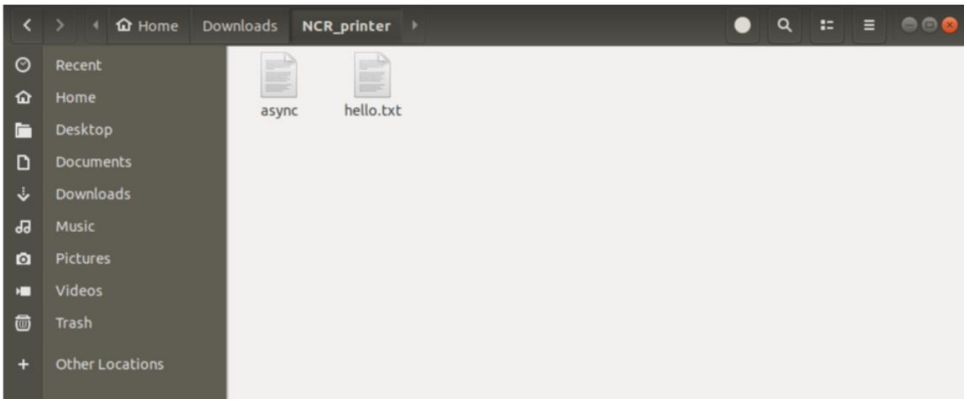
6. You should also be able to read drawer status by running the command $ ./drawer state.

```
root@elo-EloPOS-E2:/home/elo/Downloads/cashDrawer# ./drawer state
Channel control mode.
Cash drawer is close.
reg value:0x1f1, state:0x0
root@elo-EloPOS-E2:/home/elo/Downloads/cashDrawer# ./drawer state
Channel control mode.
Cash drawer is open.
reg value:0x3f1, state:0x1
```

Appendix C: Testing NCR and Epson Printer Functionality

For NCR Printer:

1. To test the NCR Printer functionality, first download the NCR_Printer file from the Elo website onto the Elo computer and make sure extract it in Linux system.



2. Launch terminal and change to root user by running the command $ sudo -i. Go to the downloaded NCR_Printer directory using the cd command. For our computer, the command is $ cd /home/elo/Downloads/NCR_Printer.

```
root@elo-EloPOS-E2:/home/elo/Downloads/NCR_printer#
```

3. Unplug and plugin printer cable.
   Check device node by running the command $ ls /dev/ttyUSB*

```
root@elo-EloPOS-E2:/home/elo/Downloads/NCR_printer# ls /dev/ttyUSB*
/dev/ttyUSB0
```

   Check USB device by running the command $ lsusb

```
root@elo-EloPOS-E2:/home/elo/Downloads/NCR_printer# lsusb
Bus 002 Device 003: ID 0424:5807 Standard Microsystems Corp.
Bus 002 Device 004: ID 0bda:0411 Realtek Semiconductor Corp.
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 007: ID 8087:0025 Intel Corp.
Bus 001 Device 009: ID 04e2:1422 Exar Corp.
Bus 001 Device 016: ID 0404:0311 NCR Corp. 7167 Printer, Receipt/Slip
```

4. Install some packages by running the commands.
   $ apt-get install libboost-dev
   $ apt-get install libboost-all-dev
   $ apt-get install libqrencode3

5. Print by running the command
   $ ./async 0 hello.txt true 5 false

```
root@elo-EloPOS-E2:/home/elo/Downloads/NCR_printer# ./async 0 hello.txt true 5 false
```

Command format: $ ./async [port] [message_path] [cut] [lines] [beep]
[port]: device node, get from #ls /dev/ttyUSB*
[message_path]: print content file
[cut]: true or false, true: cut paper after print, false: not cut
[lines]: int, blank lines
[beep]: true or false, true: beep after print

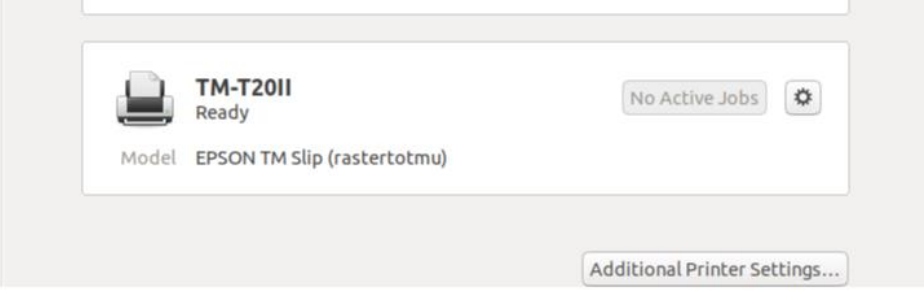
For Epson - TM20II Printer:

1. Driver download : https://download.epson-biz.com/modules/pos/index.php?page=single_soft&cid=5012&scat=32&pcat=52 and make sure extract it in Linux system.

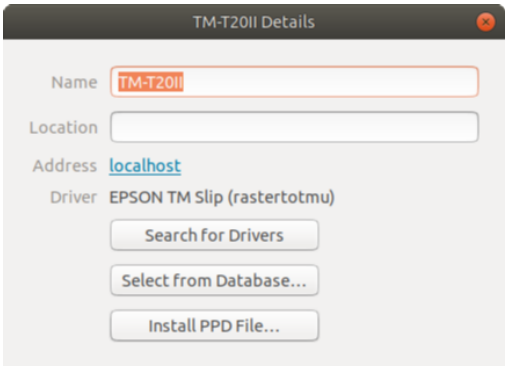
2. Launch terminal and change to root user by running the command $ sudo -i. Go to the downloaded tmx-cups directory using the cd command. For our computer, the command is $ cd /home/elo/Downloads/tmx-cups.
```
root@elo-EloPOS-E2:~# cd /home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups/
```

3. Install by running the command $./install.sh and $./install-sc.sh
```
root@elo-EloPOS-E2:/home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups# ./install.sh
root@elo-EloPOS-E2:/home/elo/Downloads/tmx-cups-2.0.3.0/tmx-cups# ./install.sh
```

4. Go to Setting => Device => Printer => TM-T20II => setting icon => Printer Details => Unlock.



5. Go to Setting => Device => Printer => TM-T20II => setting icon => Printer Details => Install PPD File => select PPD file (tm-slip-rastertotmu.ppd.gz)



6. Go to Activities => LibreOffice Write and type any wording for testing. Then select the printer TM-T20II and print it out as below:

=>  =>