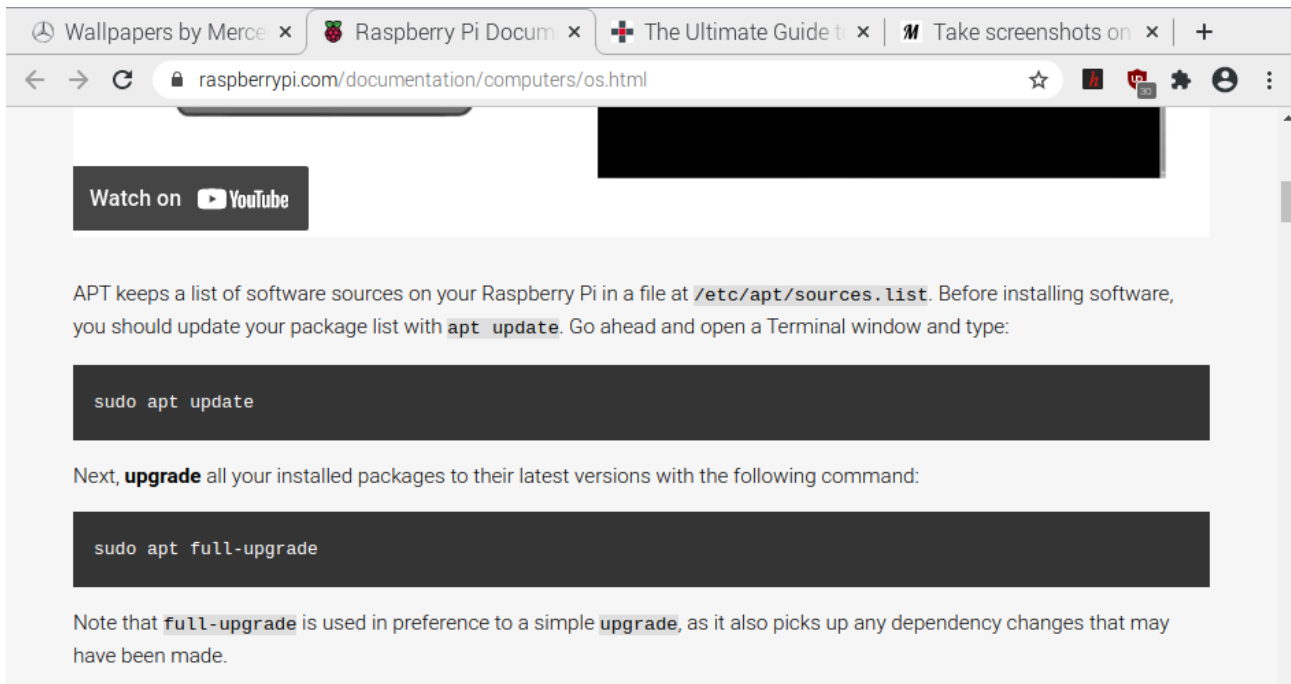


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## Lab 1

In this lab we set up and brought are pi to current software version and installed software to run in future labs, this is WiringPI, openPLC Editor and Runtime.

Below is the Raspberry website with the commands to bring the OS to the current version.



This will install the updates on to the pi

```
pi@raspberrypi:~ $ sudo apt update
```

This will apply the updates

```
pi@raspberrypi:~ $ sudo apt upgrade -y
```

After Running both commands and downloading gnome-screenshot the version was not updated, to fix this you must reboot the pi.

```
pi@raspberrypi:~ $ uname -r
5.4.79-v7l+
```

```
pi@raspberrypi:~ $ uname -r
5.10.103-v7l+
pi@raspberrypi:~ $
```

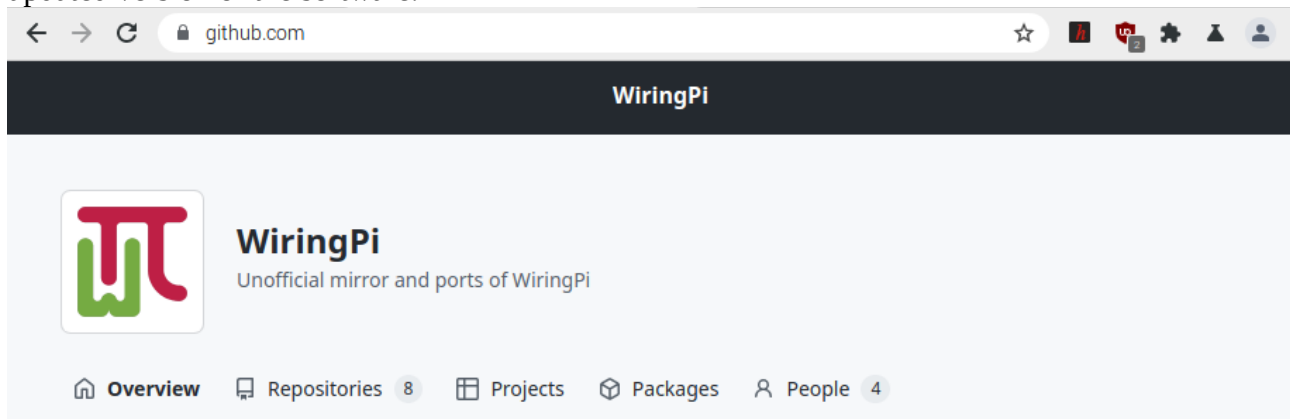
After rebooting the version is now running the current version of Pi OS. We will install the third-party software to use this pi as if it was a PLC. The git command can be used to receive files from a server, here we can see that git is already installed on the pi.

```
pi@raspberrypi:~ $ git
usage: git [--version] [--help] [-C <path>] [-c <name>=<value>]
      [--exec-path[=<path>]] [--html-path] [--man-path] [--info-path]
      [-p | --paginate | -P | --no-pager] [--no-replace-objects] [--bare]
      [--git-dir=<path>] [--work-tree=<path>] [--namespace=<name>]
      <command> [<args>]
```

The version of the software we will use later in the semester is currently out of date and will not work with the pi 400

```
pi@raspberrypi:~ $ gpio -v
gpio version: 2.50
Copyright (c) 2012-2018 Gordon Henderson
This is free software with ABSOLUTELY NO WARRANTY.
For details type: gpio -warranty
```

To solve this problem, we will download the unofficial update to allow the Pi to connect with bread boards with WiringPi on GitHub, we download it using the command 'git clone URL' to receive this updated version of the software.



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```
pi@raspberrypi:~ $ git clone https://www.github.com/WiringPi/WiringPi.git
Cloning into 'WiringPi'...
warning: redirecting to https://github.com/WiringPi/WiringPi.git/
remote: Enumerating objects: 1730, done.
remote: Counting objects: 100% (613/613), done.
remote: Compressing objects: 100% (112/112), done.
```

After receiving the repository from git hub we run its build script to install the new version of the software.

```
pi@raspberrypi:~/WiringPi $ ./build
wiringPi Build script
=====

WiringPi Library
[UnInstall]
[Compile] wiringPi.c
```

This is the result, the updated gpio version, now 2.7.

```
pi@raspberrypi:~/WiringPi $ gpio -v
gpio: Symbol 'piModelNames' has different
gpio version: 2.70
```

The next step in our lab is to install open plc runtime and editor.

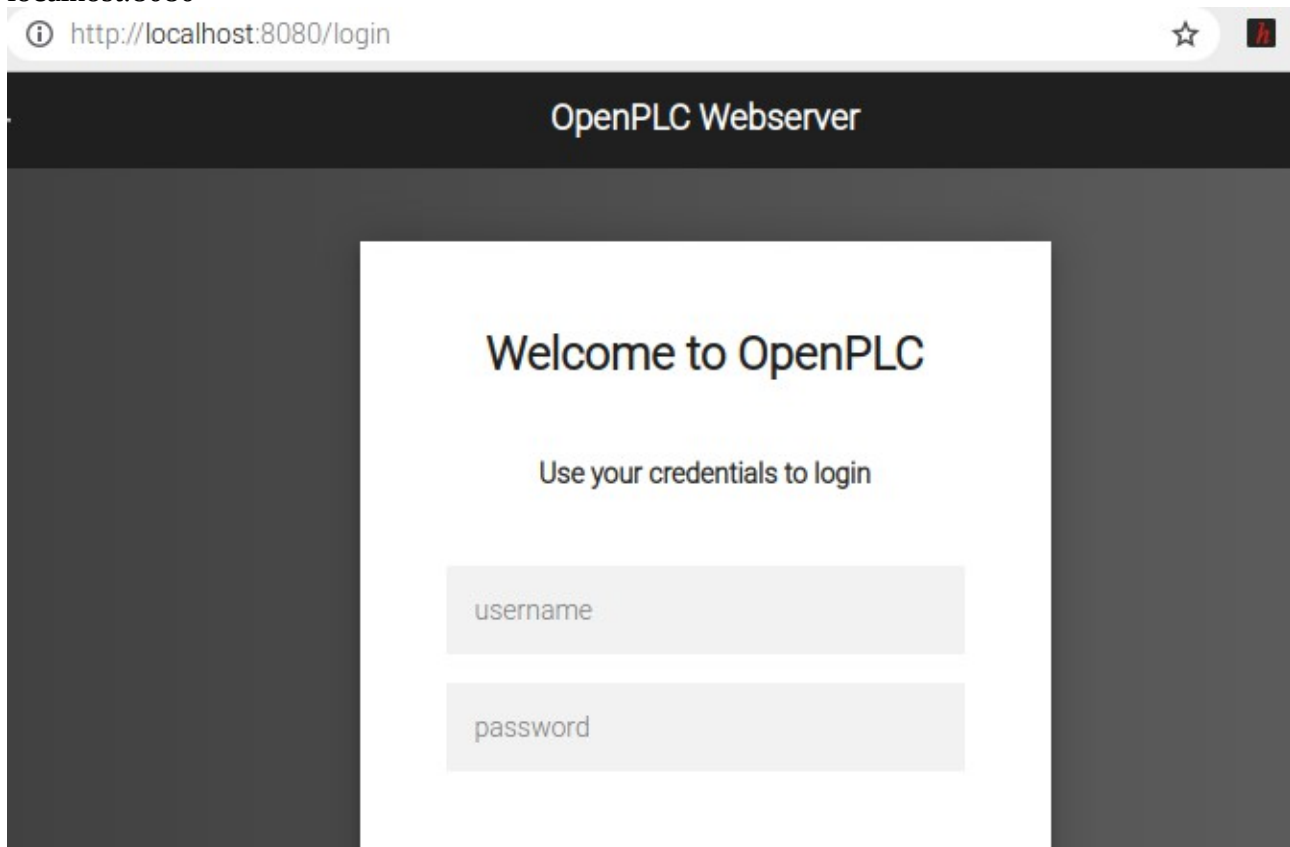
He we are installing the runtime for plc editor which will act as a plc for our future lab projects

```
pi@raspberrypi:~ $ git clone https://github.com/thiagorvalves/OpenPLC_v3.git
Cloning into 'OpenPLC_v3'...
remote: Enumerating objects: 5660, done.
```

After installing the repository we must then run the installation script

```
pi@raspberrypi:~/OpenPLC_v3 $ sudo ./install.sh rpi
Installing OpenPLC on Raspberry Pi
Get:1 http://raspbian.raspberrypi.org/raspbian buster InRelease [15.0 kB]
Get:2 http://archive.raspberrypi.org/debian buster InRelease [32.6 kB]
```

The script will install the actual application of the runtime. This can be checked by going to localhost:8080



This is the login screen for it.

Next, we will need the editor to run programs on the runtime

```
pi@raspberrypi:~ $ git clone https://github.com/thiagoralves/OpenPLC_Editor
Cloning into 'OpenPLC_Editor'...
remote: Enumerating objects: 4243, done.
```

We once again install the editor repository through git clone after this we run the installation script in it.

```
pi@raspberrypi:~/OpenPLC_Editor $ sudo ./install.sh
Installing OpenPLC Editor
Please be patient. This may take a couple minutes...
```

This once again installs the application and dependencies.

After a successful install the application will look like this, the editor.

