Apache Web Server on a Raspberry Pi

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Week 7, Internet of Things

1 Aims

- Understand what a web server
- Understand their pivotal role in making the internet accessible to users
- Understand how web servers work
- Build your own web server with Apache (more information on that below)!

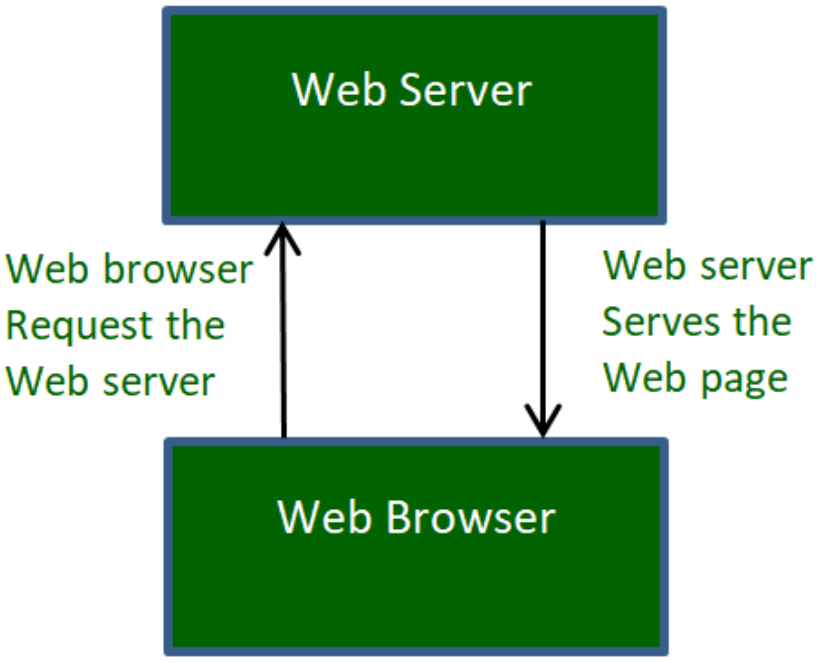
2 Introduction

Today, you're going to be learning how to set up a web server on a Raspberry Pi! But, what exactly are web servers? Before we jump in to setting up your Raspberry Pi, let's dive into what a web server is and how they operate!

3 What is a web server?

Web servers are just computers that deliver web pages!

Every Web server has an IP address and possibly a domain name. For example, if you enter the URL http://www.unimelb.edu.au/index.html in your browser, this sends a request to the Web server whose domain name is unimelb.edu.au. The server then fetches the page named index.html and sends it to your browser!



Any computer can be turned into a Web server by installing server software and connecting the machine to the Internet. There are many Web server software applications, including public domain software and commercial packages.

4 What is Apache?

To turn your Raspberry Pi into a web server, today we will be using Apache. Apache is a popular web server application you can install to serve web pages.

Developed by the Apache Software Foundation, it's an open-source server which serves almost 37 percent of the top million websites, and 43 percent of all websites! It's a HTTP server, which means that it can send HTML files via a communication protocol between computers called HTTP.

5 How are we going to build it?

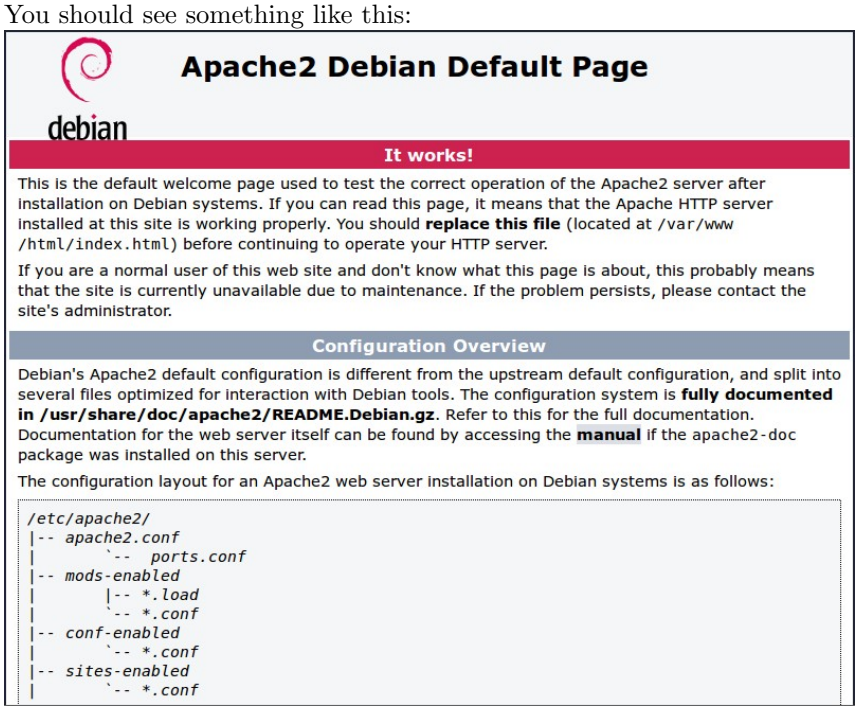
Now that you know a bit about how web servers work, let's set up one on your Raspberry Pi.

5.1 Install Apache

- First, update your available packages by typing the following command into your Terminal: `sudo apt-get update`
- And now you can install the `apache2` package with this: `sudo apt-get install apache2 -y`

5.2 Testing your web server

- In order to allow you to test your set up, Apache creates a test HTML file in the web folder. You can view this page by going to `http://localhost/` on your Raspberry Pi, or browse to Pi's IP Address on a different computer `http://192.168.1.10`. (You can find the Pi's IP address with the command `hostname -I`
- You should see something like this:



- If you got the above page, congratulations! You made it work!

5.3 Changing the default page

- A web page isn't anything fancy, it's just a a HTML file on your server. It's located at `/var/www/html/index.html`
- Go to this location with the command `cd /var/www/html` on your terminal.

- Then look display what's inside with the command `ls -al`
- You should see something like this

```
total 12
drwxr-xr-x 2 root root 4096 Jan 8 01:29 .
drwxr-xr-x 12 root root 4096 Jan 8 01:28 ..
-rw-r--r-- 1 root root 177 Jan 8 01:29 index.html
```

- This is just saying there's one file in `/var/www/html/` called `index.html` that is owned by `root`. If you want to edit the file, you have to edit the ownership of this file by changing it to the default Pi user with `sudo chown pi: index.html`.
- Refresh your web browser and you'll see the web page change!

5.4 What you can take from here

And that's how you set up a web server on your Raspberry Pi! It's a really simple process and one you can use to further progress other projects.

You can do things like host your own personal websites, make a media streaming server, make a game server, make a print server, and so much more!