

# 2016



## Controlling Raspberry Pi GPIO through Local Server using PHP



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## Introduction:

Raspberry Pi is a credit card sized computer that plugs into a computer monitor or TV, and uses standard keyboard and mouse. It's capable of doing everything you'd expect a desktop computer to do, from browsing the internet and playing high-definition video, to making spreadsheets, word-processing, and playing games. Here we are going to control 230V home appliances using relays.

## Hardware Requirements:

1. [Raspberry Pi board.](#)
2. [Tenet GPIO board.](#)
3. Hookup wires.

## What is IoT(Internet of Things):

It is a very simple concept where devices in our home or wherever they are, have the capability to communicate with each other via the internet. A lot of technologies are being developed around this concept such as independent light-weight IoT networks, protocols for passing data, etc. Raspberry Pi is a best development board to do IoT Projects.

## Procedure:

### Step 1:

Update and upgrade your OS to latest one by giving the below command in the terminal window.

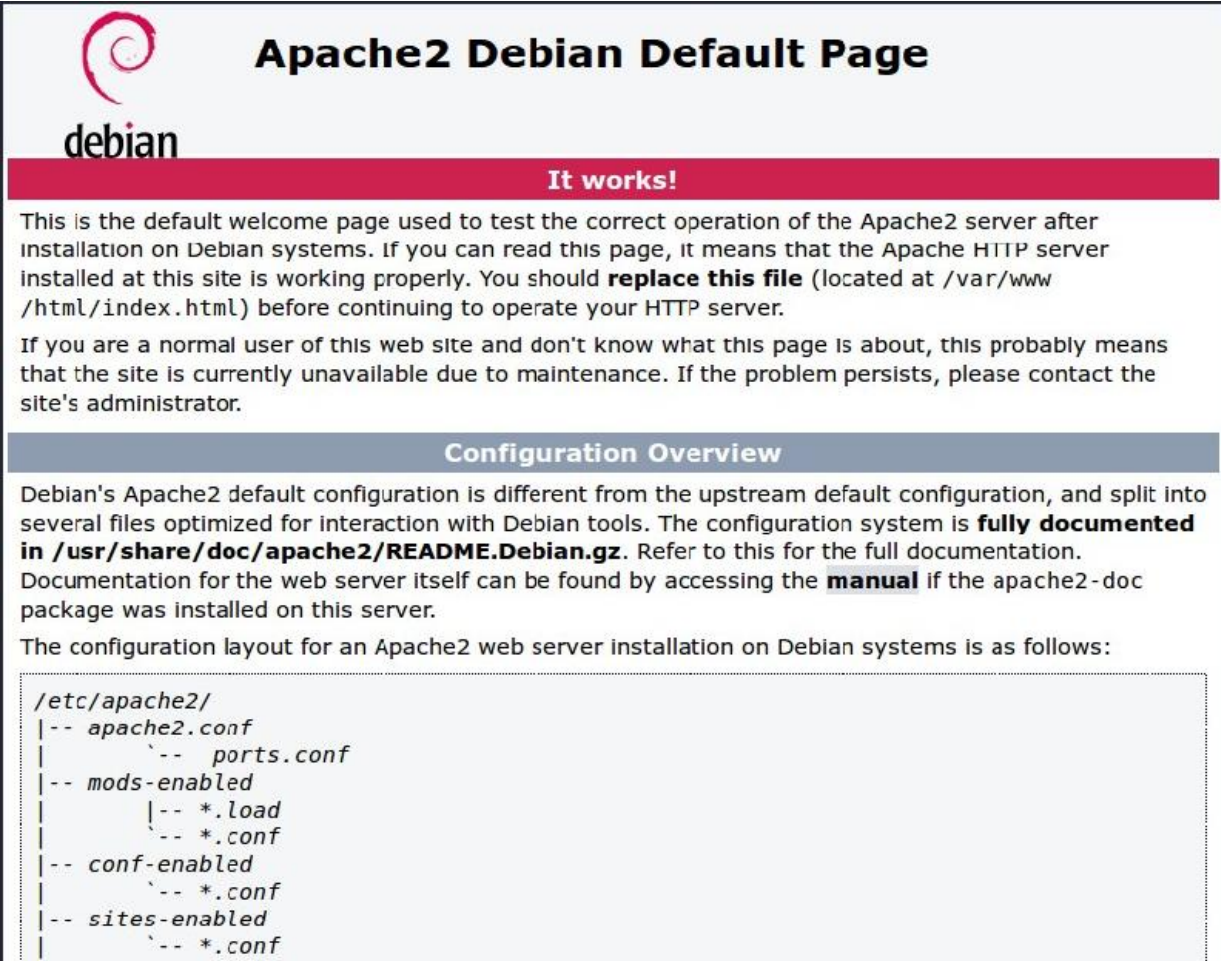
```
Sudo apt-get update  
Sudo apt-get upgrade
```

### Step 2:

Install apache which is the webserver that responds to http request.

```
Sudo apt-get install apache2 apache2-utils
```

To check whether the apache server installed or not, type the RPI ip address in the web browser. If the server is installed properly you can able to see the below page in the browser.



The screenshot shows the Apache2 Debian Default Page. At the top left is the Debian logo. The title is "Apache2 Debian Default Page". Below the title is a red banner that says "It works!". The main text explains that this is the default welcome page used to test the correct operation of the Apache2 server after installation on Debian systems. It states that if you can read this page, it means that the Apache HTTP server installed at this site is working properly. It advises to replace this file (located at /var/www/html/index.html) before continuing to operate your HTTP server. It also mentions that if you are a normal user and don't know what this page is about, it probably means the site is currently unavailable due to maintenance. Below this is a section titled "Configuration Overview" which explains that Debian's Apache2 default configuration is different from the upstream default configuration and is split into several files optimized for interaction with Debian tools. It states that the configuration system is fully documented in /usr/share/doc/apache2/README.Debian.gz. It also mentions that documentation for the web server itself can be found by accessing the manual if the apache2-doc package was installed on this server. Finally, it states that the configuration layout for an Apache2 web server installation on Debian systems is as follows:

```
/etc/apache2/
|-- apache2.conf
|   |-- ports.conf
|-- mods-enabled
|   |-- *.load
|   |-- *.conf
|-- conf-enabled
|   |-- *.conf
|-- sites-enabled
|   |-- *.conf
```

### Step 3:

Now install PHP on Raspberry pi by giving the below command in the terminal window.

**sudo apt-get install libapache2-mod-php5 php5 php-pear php5-xcache php5-mysql php5-curl php5-gd**

Create a simple index.php file in **/var/www/html** folder

```
<?php phpinfo(); ?>
```

Visit index.php in your web browser, you will see PHP Info. You should see the following:

## PHP Version 5.2.6-3ubuntu4



System	Linux TonidoPlug 2.6.31 #2 PREEMPT Wed Sep 16 00:55:42 MDT 2009 armv5tel
Build Date	Mar 31 2009 11:08:11
Server API	CGI/FastCGI
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/cgi
Loaded Configuration File	/root/app/tonido/php/php.ini
Scan this dir for additional .ini files	/etc/php5/cgi/conf.d
PHP API	20041225
PHP Extension	20060613
Zend Extension	220060519
Debug Build	no
Thread Safety	disabled
Zend Memory Manager	enabled
IPv6 Support	enabled
Registered PHP Streams	zip, php, file, data, http, ftp, compress.bzip2, compress.zlib, https, ftps
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, sslv3, sslv2, tls
Registered Stream Filters	string.rot13, string.toupper, string.tolower, string.strip_tags, convert.*, consumed, convert.iconv.*, bzip2.*, zlib.*

### Step 4:

To deploy the Wiring Pi library [1] for working with GPIO pins and then use the library with PHP via the shell\_exec() function. For this solution to work, you need to install Wiring Pi on Raspberry Pi first.

```
sudo apt-get install git-core
```

```
git clone git://git.drogon.net/wiringPi
```

Change the directory to the resulting wiringPi directory and use the ./build command to compile and install Wiring Pi:

```
cd wiringPi
```

```
./build
```

To make sure Wiring Pi is installed and works properly, run the gpio -v command; it should return the current version of Wiring Pi along with the basic Raspberry Pi info.

# 9/3, 2nd floor, SreeLakshmi Complex, opp, to Vivekananda Park, Girinagar, Bangalore - 560085,

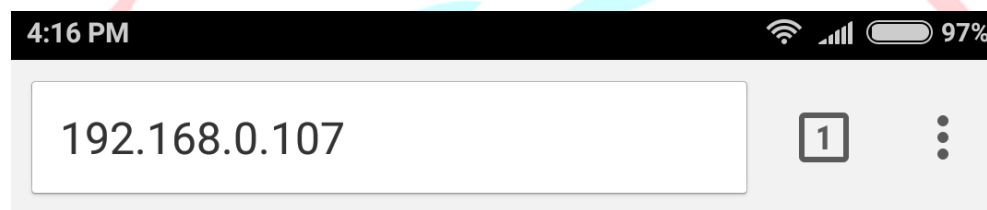
Email: [info@tenettech.com](mailto:info@tenettech.com), Phone: 080 - 26722726

If the buttons don't work, most likely the web server doesn't have appropriate rights to execute shell commands. To fix this, run the **sudo visudo** command and add the following line to the **sudoers** file:

**www-data ALL=NOPASSWD: ALL**

**Step 5:** Download the code from <https://github.com/TenetVarsity/GPIO-control> , save it /var/www/html.

**Step 6:** Now type the Raspberry Pi IP address in your phone and enter .You will get the page like below.



## Index of /

<a href="#">Name</a>	<a href="#">Last modified</a>	<a href="#">Size</a>	<a href="#">Description</a>
----------------------	-------------------------------	----------------------	-----------------------------

 <a href="#">tenet_gpio.php</a>	2016-10-03 10:40	4.9K	
--	------------------	------	--

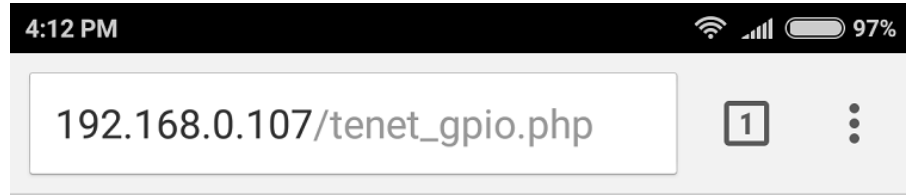
Apache/2.4.10 (Raspbian) Server at 192.168.0.107 Port 80

TE...S

**Note:** Your Raspberry Pi and Mobile should be connected in same network.

## Step 6:

Select the **tenet\_gpio.php** file, you will get image like below.



# Tenet Technetronics Pi GPIO Control

Pin31-ON

Pin31-OFF

Pin32-ON

Pin32-OFF

Pin33-ON

Pin33-OFF

Pin35-ON

Pin35-OFF

Pin36-ON

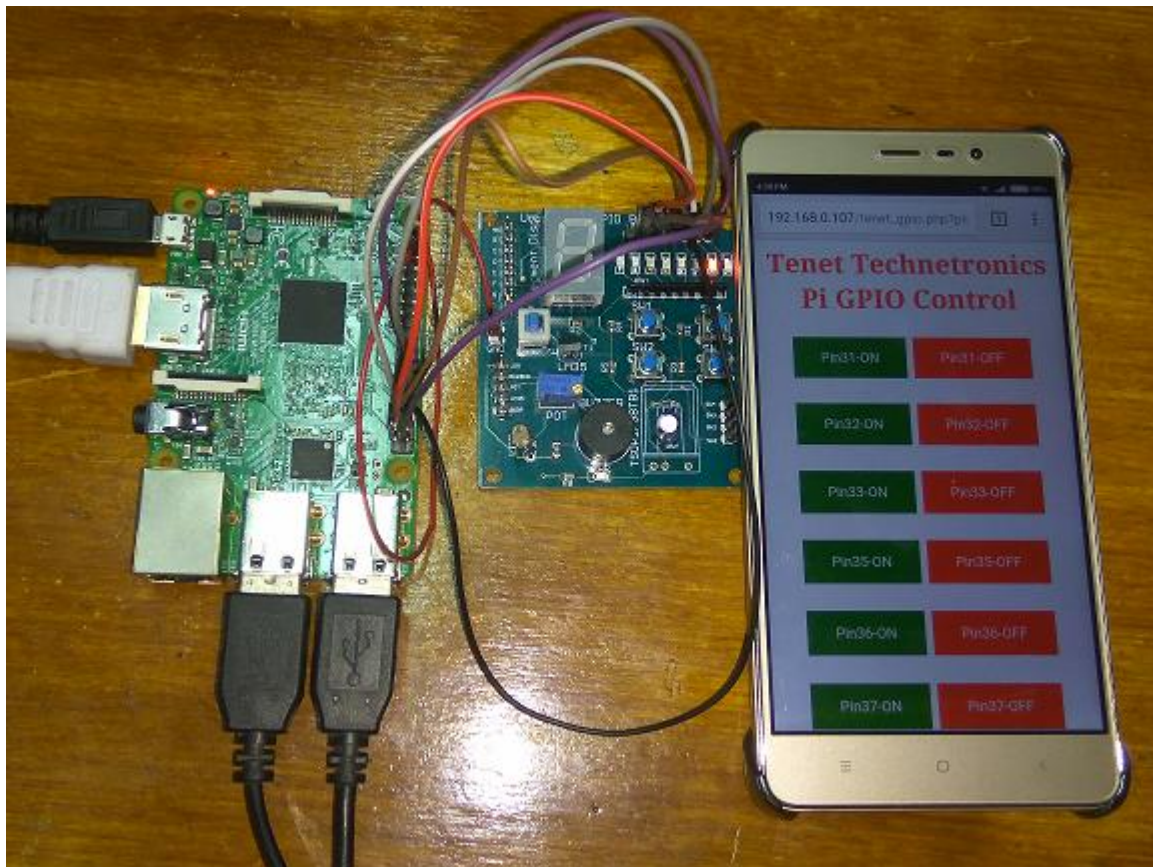
Pin36-OFF

Pin37-ON

Pin37-OFF



## Output:



### For product link:

1. <http://tenettech.com/product/7990/raspberry-pi-3>
2. <http://www.tenettech.com/product/6655/universal-gpio-board>

For more information please visit: [www.tenettech.com](http://www.tenettech.com)

For technical query please send an e-mail: [info@tenettech.com](mailto:info@tenettech.com)