2016

TENET TECHNETRONICS

Controlling Raspberry Pi GPIO through Local Server using PHP

Author: Palani K

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

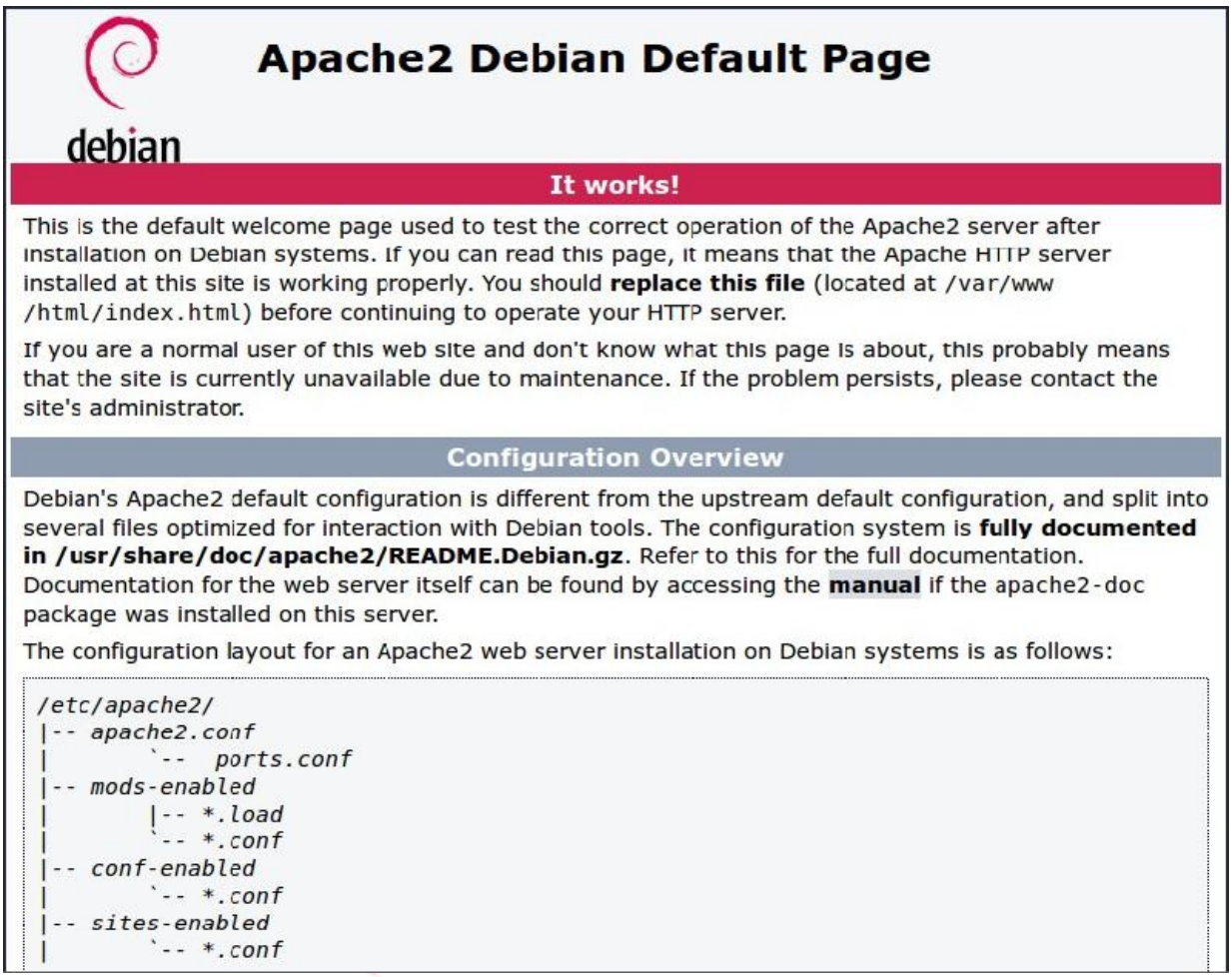
Sudo apt-get upgrade

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.



Step 3:

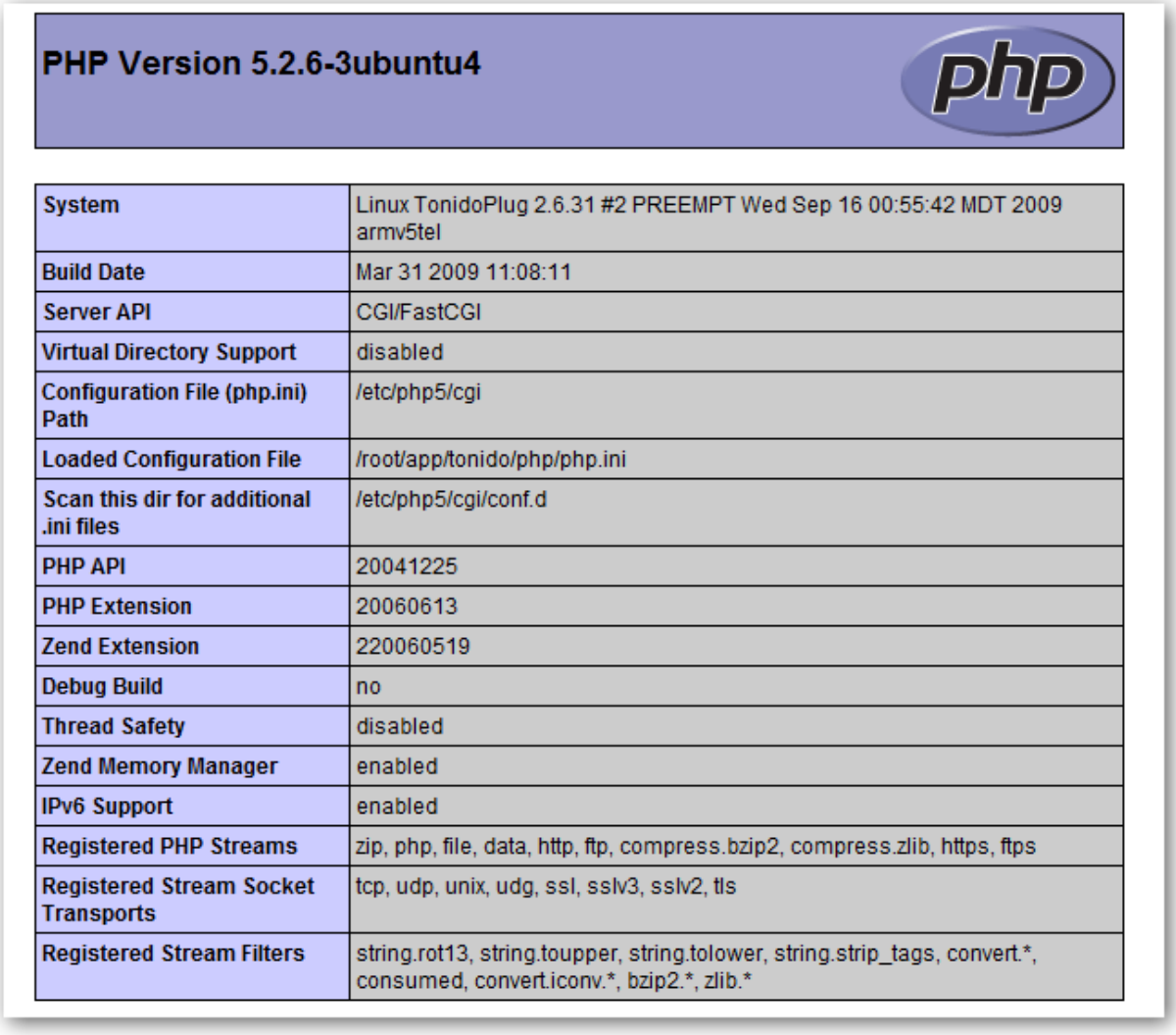
Now install PHP on Raspberry pi by giving the below command in the terminal window.

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

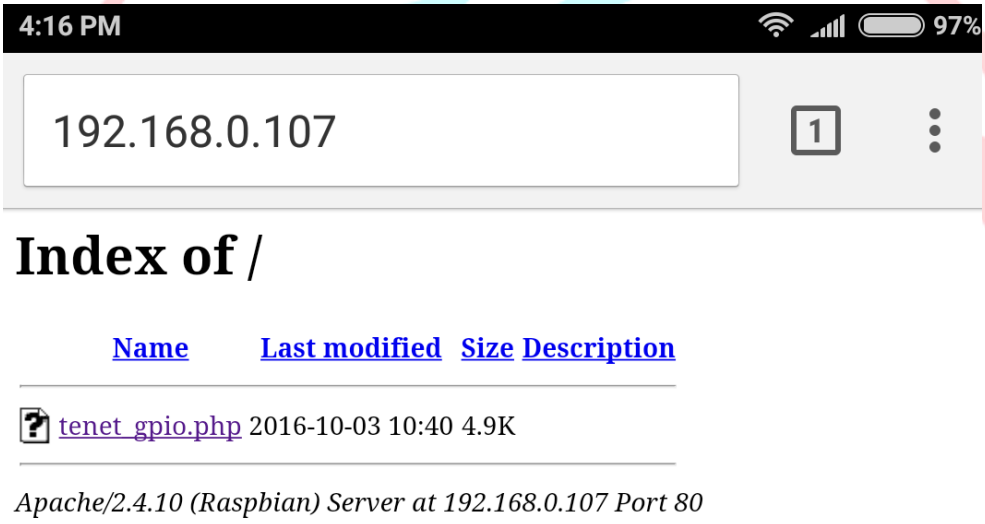
To make sure Wiring Pi is installed and works properly, run the gpio -v command; it should return the current version of Wiring Pi along with the basic Raspberry Pi info.

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.

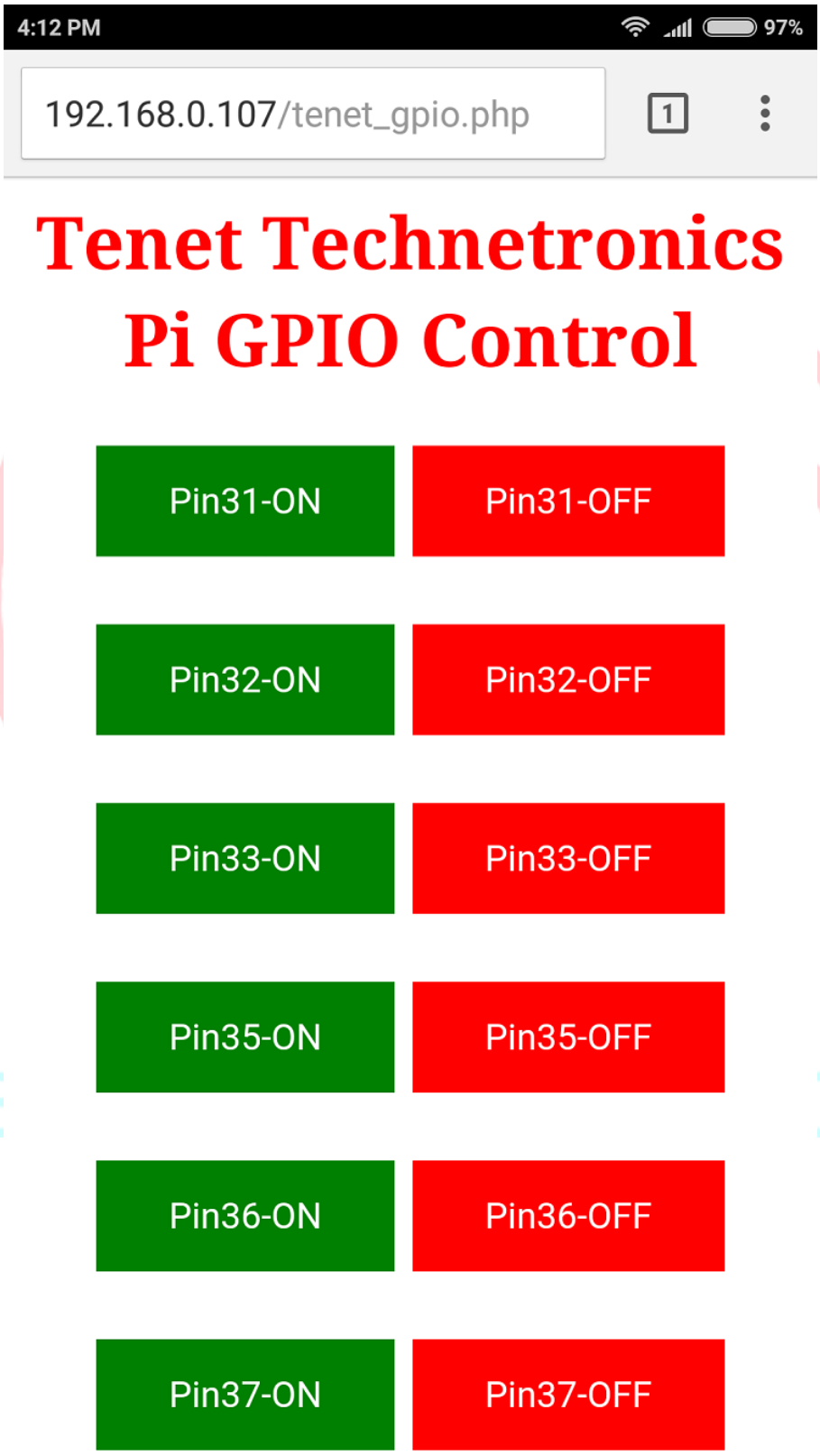
Step 6: Now type the Raspberry Pi IP address in your phone and enter .You will get the page like below.



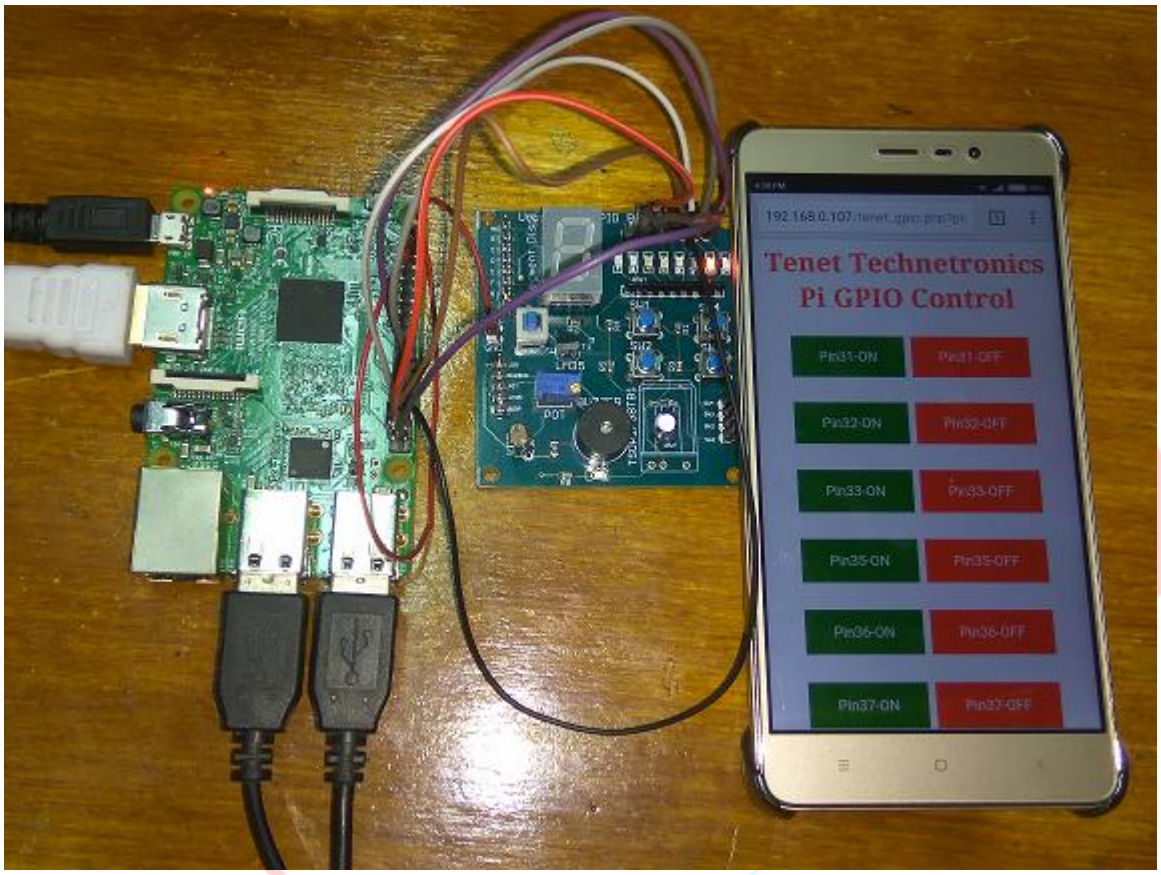
Note: Your Raspberry Pi and Mobile should be connected in same network.

Step 6:

Select the **tenet_gpio.php** file, you will get image like below.



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

For technical query please send an e-mail: info@tenettech.com