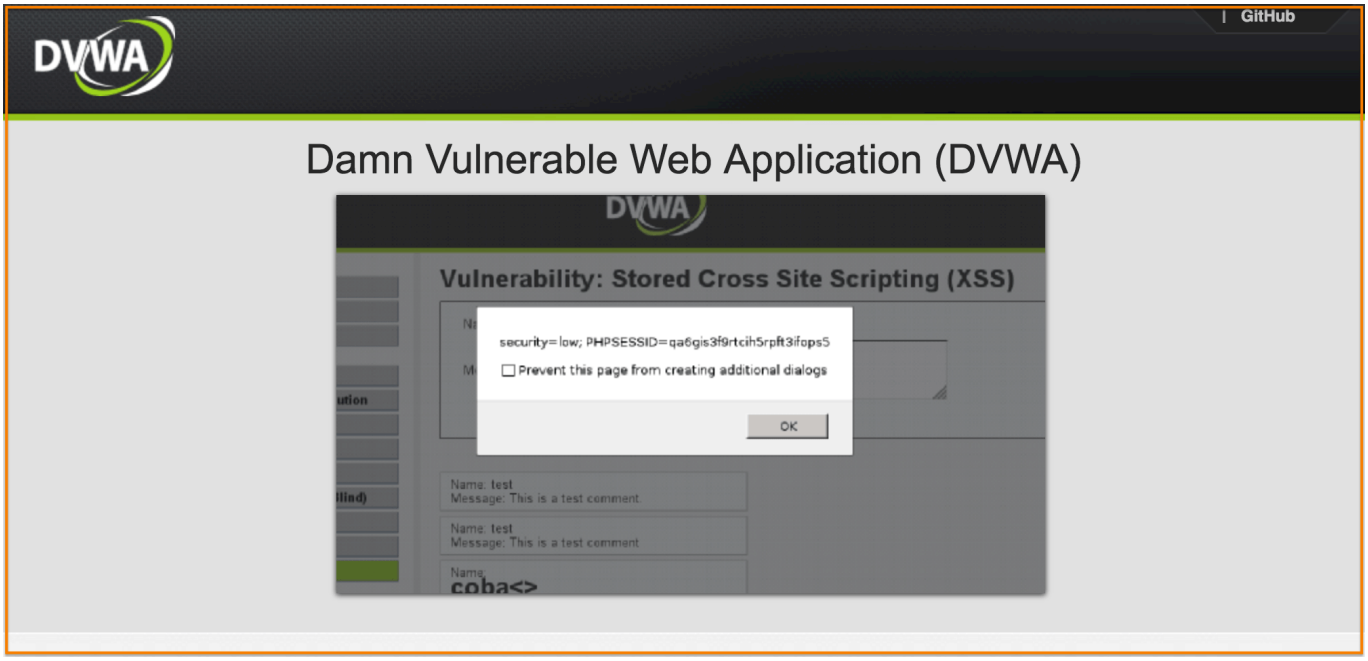
Create Your First Ethical Hacking Environment with DVWA

In this tutorial, I'll demonstrate you to setup Damn Vulnerable Web Application (DVWA) along with Apache, MySQL, PHP on localhost. It's always been a concern for newbies that where they should practice and explore the vulnerabilities.

If you are one of those guys, DVWA would be for you to figure it out yourself. I will help you create a hacking environment into your Linux distro to practice and test your skills.

And, if you are new to Web Security and want to get ahead in the field of CyberSecurity. I'd suggest that you read 'How to Become a Web Security Researcher', you'll richly benefit from the tips and resources provided.



Attacks Covered in DVWA

Brute Force

Command Execution

CSRF

File Inclusion

SQL Injection

SQL Injection (Blind)

Shell Uploading

XSS (Reflected)

XSS (Stored)

Prerequisites:

Virtual Machine: VirtualBox

Linux Distro: Kali Linux, Parrot Security OS *or* elementaryOS (or any other Linux Distribution)

I prefer using elementaryOS which is Lightweight Linux based distribution, but you can follow the same instructions for Kali Linux which is aimed at advanced Penetration Testing and Security Auditing.

Remember, we need to use a virtual machine and not a connected server because DVWA is really vulnerable and should only be installed on your virtual machine with NAT.

Setup & Install DVWA Into Your Linux Distribution

DVWA is made with PHP and MySQL for security professionals or aspiring security professionals to discover as many issues as possible and exploit some of the most commons vulnerabilities of web platforms like SQL injection, Cross Site Scripting

(*XSS*), Cross Site Request Forgery (*CSRF*), and more.

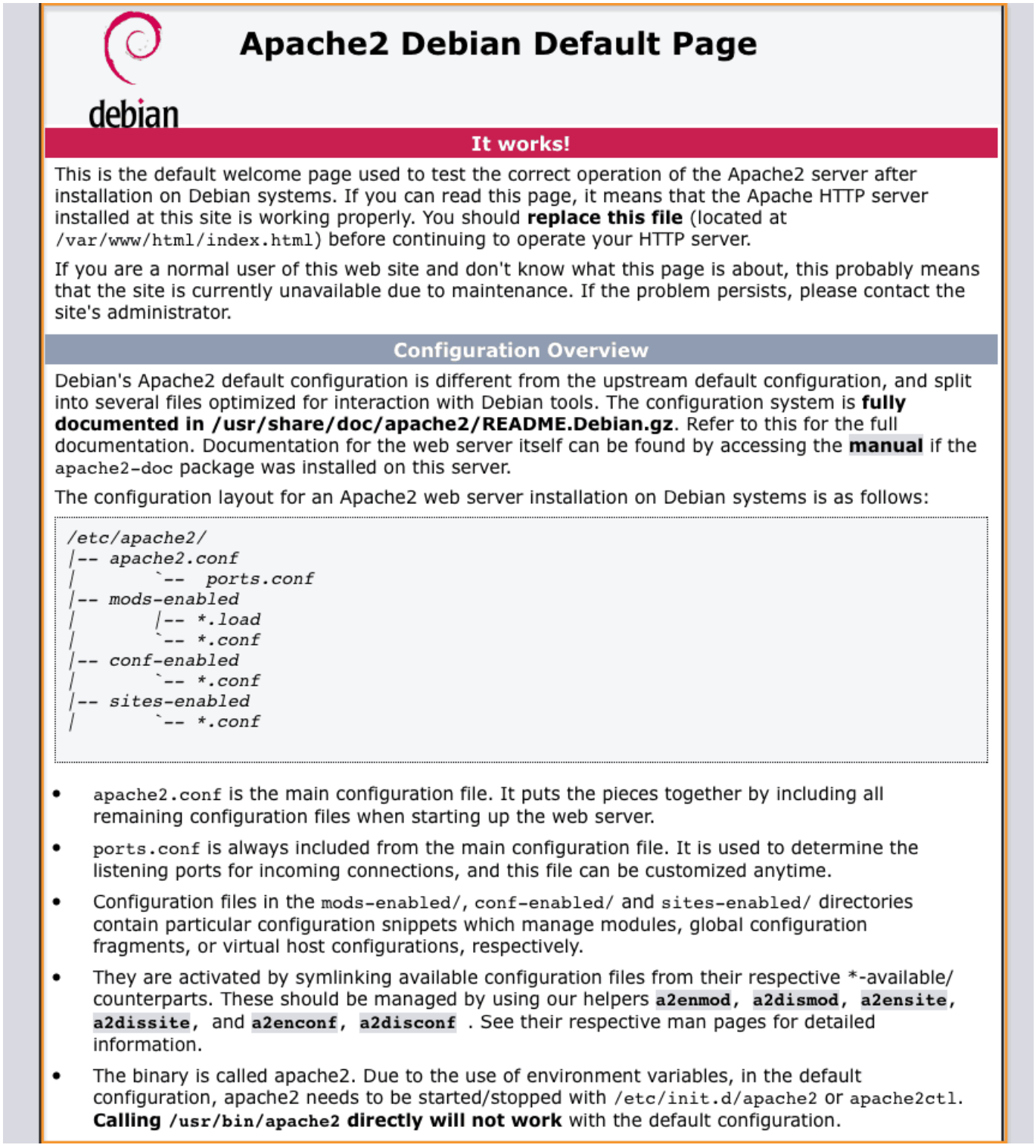
Note: This guide is for beginners. If you're unable to complete any of the steps or encounter any error message during the installation. I encourage you to use StackOverflow for an answer or leave a comment below.

Step 1. Setup Web server (Install Apache)

To install Apache, Open your Terminal and type the following:

```
sudo apt install apache2
```

Once done, type 127.0.0.1 in the browser and you will see the default Apache 2 web page, similar to this:



If you see this page, then congratulations — you have successfully installed Apache.

When you are done looking at this test page, you can remove it by typing the following command:

```
sudo rm /var/www/html/info.html
```

Step 2. Download DVWA

We need to download the archive of DVWA from Github.

To install Git, type following command:

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

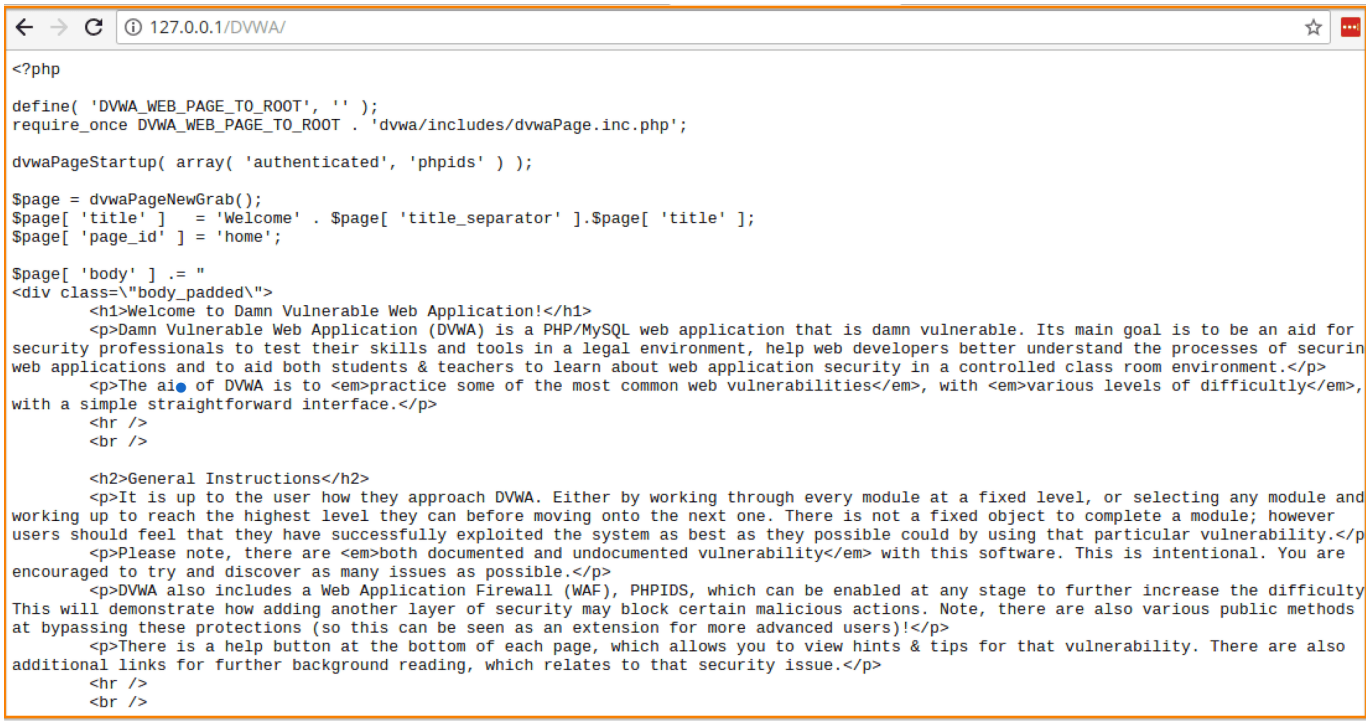
Go to the apache2 folder.

```
cd /var/www/html/
```

Clone DVWA from Github, type the following command:

```
sudo git clone https://github.com/ethicalhack3r/DVWA.git
```

Once done, type 127.0.0.1/DVWA/ in the browser and you will see the DVWA page, similar to this:



Change permissions for DVWA

```
sudo chmod -R 777 /var/www/html/DVWA/
```

Step 3. Install MySQL

The next component for Setting up DVWA is Installing MySQL.

To install MySQL, type the following:

```
sudo apt install mysql-server
```

Note that the installation routine may ask you to create a new password for the root MySQL user. Once you have completed all of the required steps, your MySQL installation should be completed. Let’s double-check that our new MySQL server is

running. Type this command:

```
mysql -u root -p
```

Enter the root password you created for MySQL when you installed the software package. Once in, the following to get the server status, version information and more:

```
status
```

This is a good way to ensure that you've installed MySQL and are ready for further configuration.

Restart Apache Server

```
sudo service apache2 restart
```

Create Database and User

To create a MySQL database and user, follow these steps:

At the command line, type the following:

```
mysql -u root -p
```

Type the MySQL root password, and then press Enter.

To create a database, type the following command:

```
CREATE DATABASE dvwadb;
```

To create a database user, type the following command. Replace *dvwausr* with the user you want to create, and replace dvwa@123 with the

user’s password:

```
CREATE USER 'dvwausr'@'127.0.0.1' IDENTIFIED BY 'dvwar@123';
```

Grant permission, type the following command:

Once done, exit the application by typing either of the following commands:

```
\q
(or)
exit
```

Step 4. Install PHP5

For our last component in DVWA Installation, we will setup and install PHP. Installing this on your VM is quite easy.

To install PHP, simply type the following command:

```
sudo apt install php5
```

or

```
sudo apt install php5.6
```

Agree to the installation and PHP 5 will be installed on your Server.

Restart Apache Server

```
sudo service apache2 restart
```

Now, let’s take a moment to test the PHP software that you just installed. Move into your public web directory:

```
cd /var/www/html
```

Once there, use the text editor to create a file named info.php by typing the following command:

```
sudo vim info.php
```

This command will use the command line editor vim to open a new blank file with this name. Inside this file, type the following:

Inside this file, copy paste the following:

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

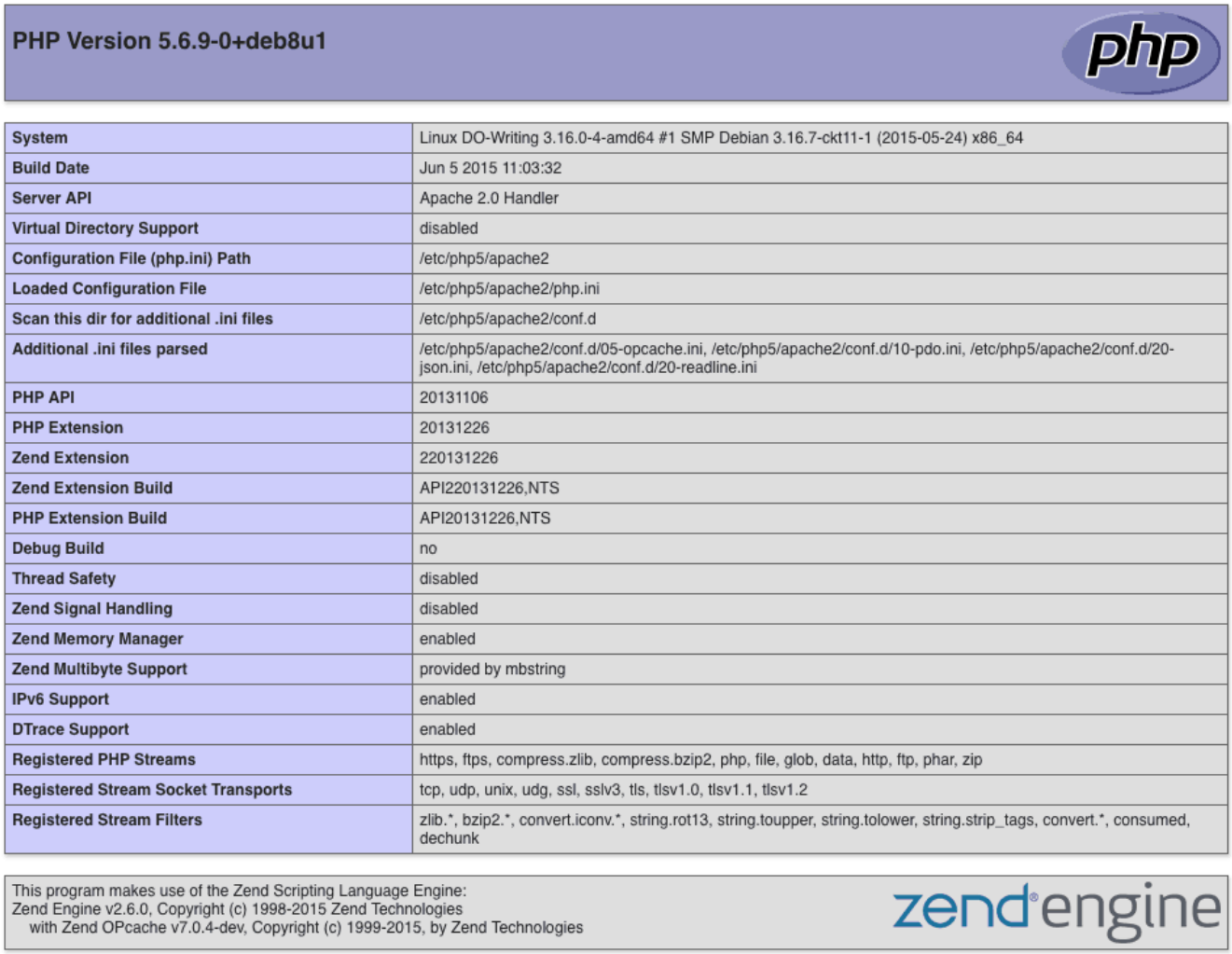
Save your changes by entering:

```
:wq!
```

Once done, open your web browser and type your localhost IP address in the browser.

```
(Example IP Address)
http://127.0.0.1/info.php
```

You will see the default PHP information page, similar to this:



PHP Version 5.6.9-0+deb8u1

System	Linux DO-Writing 3.16.0-4-amd64 #1 SMP Debian 3.16.7-ckt11-1 (2015-05-24) x86_64
Build Date	Jun 5 2015 11:03:32
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc/php5/apache2
Loaded Configuration File	/etc/php5/apache2/php.ini
Scan this dir for additional .ini files	/etc/php5/apache2/conf.d
Additional .ini files parsed	/etc/php5/apache2/conf.d/05-opcache.ini, /etc/php5/apache2/conf.d/10-pdo.ini, /etc/php5/apache2/conf.d/20-json.ini, /etc/php5/apache2/conf.d/20-readline.ini
PHP API	20131106
PHP Extension	20131226
Zend Extension	220131226
Zend Extension Build	API220131226,NTS
PHP Extension Build	API20131226,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	disabled
Zend Memory Manager	enabled
Zend Multibyte Support	provided by mbstring
IPv6 Support	enabled
DTrace Support	enabled
Registered PHP Streams	https, ftps, compress.zlib, compress.bzip2, php, file, glob, data, http, ftp, phar, zip
Registered Stream Socket Transports	tcp, udp, unix, udg, ssl, sslv3, tls, tlsv1.0, tlsv1.1, tlsv1.2
Registered Stream Filters	zlib.*, bzip2.*, convert.iconv.*, string.rot13, string.toupper, string.tolower, string.strip_tags, convert.*, consumed, dechunk

This program makes use of the Zend Scripting Language Engine:
Zend Engine v2.6.0, Copyright (c) 1998-2015 Zend Technologies
with Zend OPcache v7.0.4-dev, Copyright (c) 1999-2015, by Zend Technologies

When you are done looking at this test PHP page, you can remove this file if you want by typing the following command:

```
sudo rm /var/www/html/info.php
```

Install MySQL Extension for PHP.

To Install MySQL Extension for PHP Support, type the following:

```
sudo apt install php5-mysql
```

Once done, you have completed the PHP installation required for DVWA.

Install PHP-GD

DVWA requires a module for PHP which is not installed into Kali Linux or elementaryOS. So we need to add a Debian source for APT.

Once done, you have completed the PHP installation for DVWA.

Step5. Configure DVWA

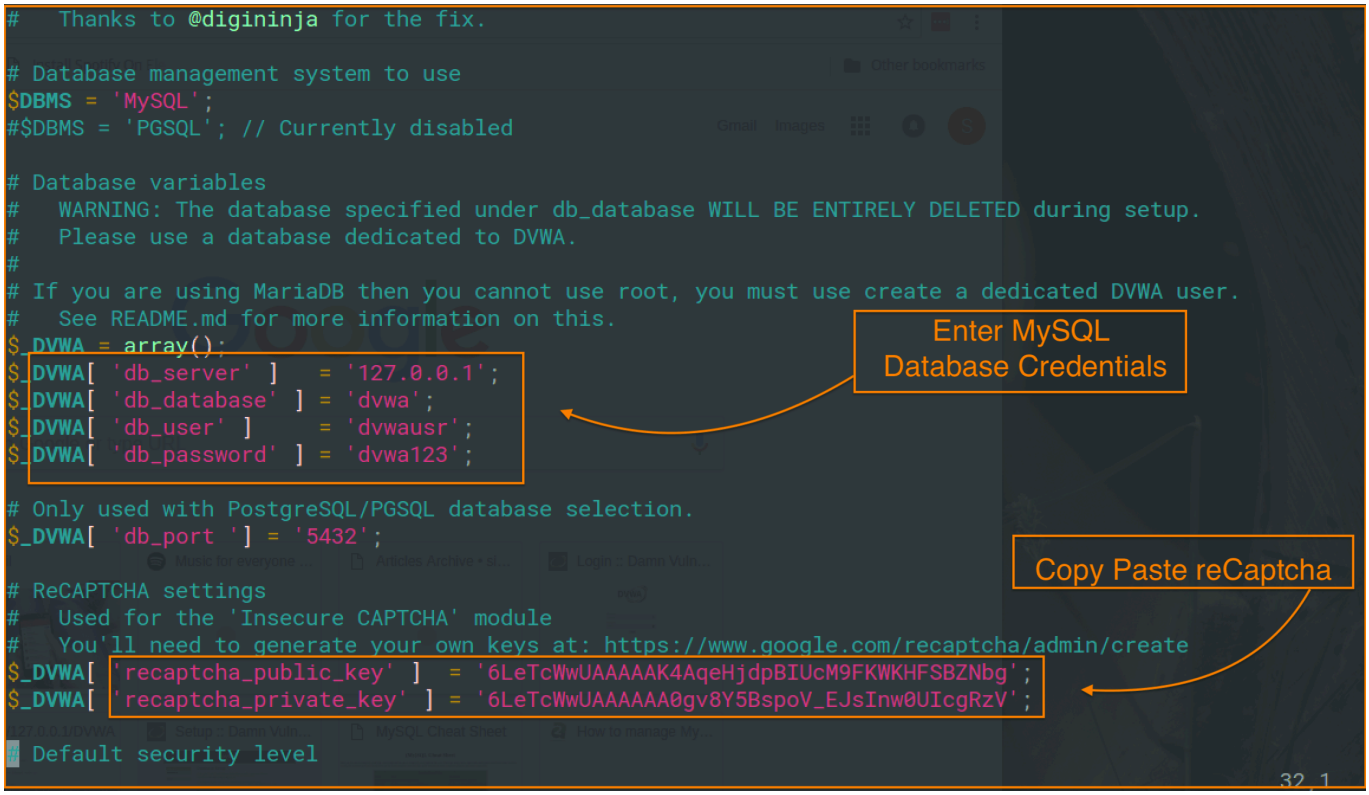
Now we are ready to edit the source of PHP config files to make sure your web application connects to the database and has got a working captcha. You can obtain reCaptcha keys from your Google Account by clicking here.

We will use the text editor to edit the configuration typing the following command:

```
sudo vim  /var/www/html/dvwa/config/config.inc.php.dist
```

Add the database name, user, and password of the MySQL database.
Enter reCaptcha keys.

Here’s a screenshot on how your file needs to be after editing.



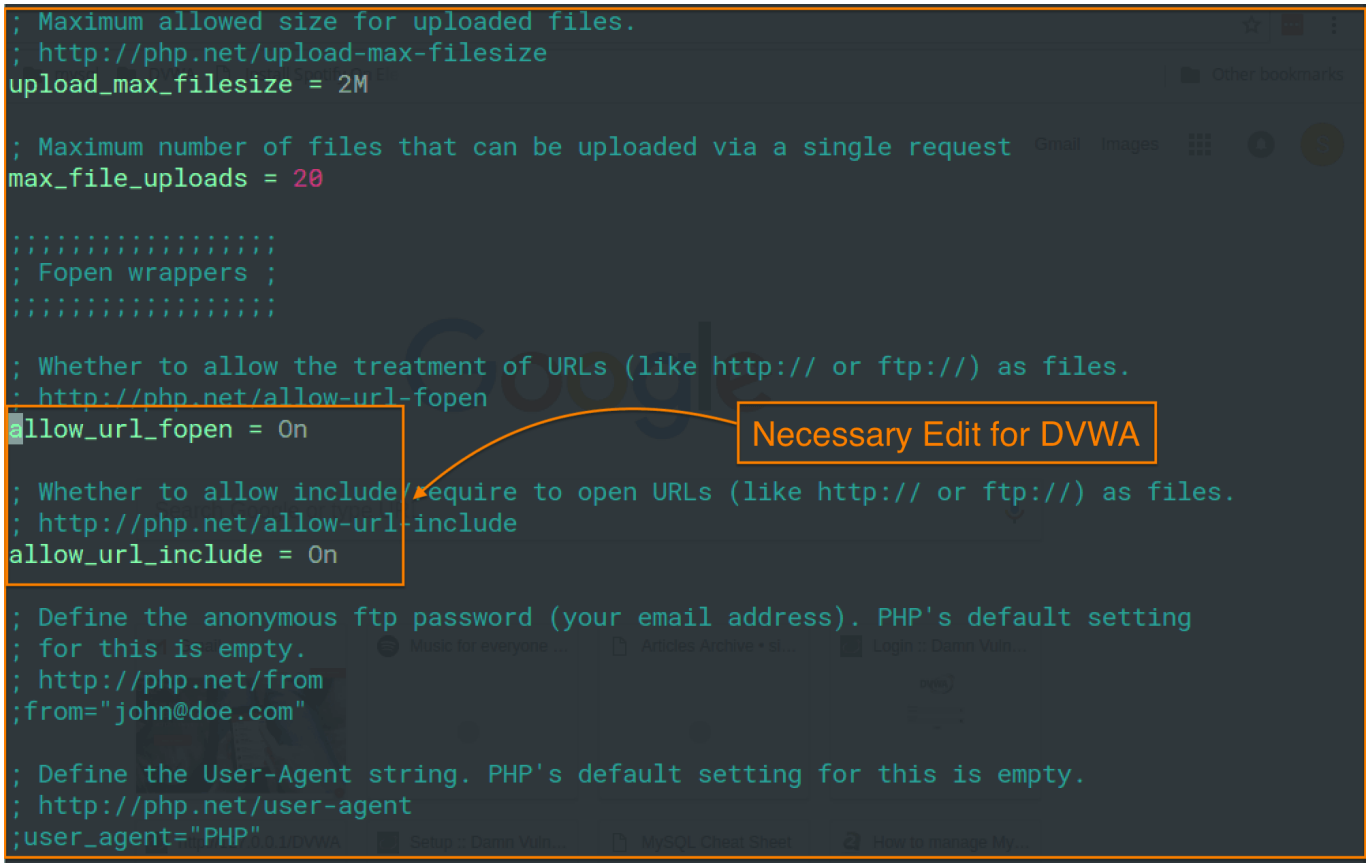
Once done, we need to edit the main config (*php.ini*) file for apache2, which is not correctly overridden for DVWA by default.

```
sudo vim /etc/php5/apache2/php.ini
```

Enable Allow_url_fopen

Enable Allow_url_include

This is necessary to exploit the file upload vulnerability. Here's a screenshot for *php.ini* after making changes.



After saving changes for *php.ini*, we need to follow few more steps.

Install Iceweasel

```
sudo apt install iceweasel
```

Restart Apache

```
sudo /etc/init.d/apache2 restart
```

Restart MySQL Service

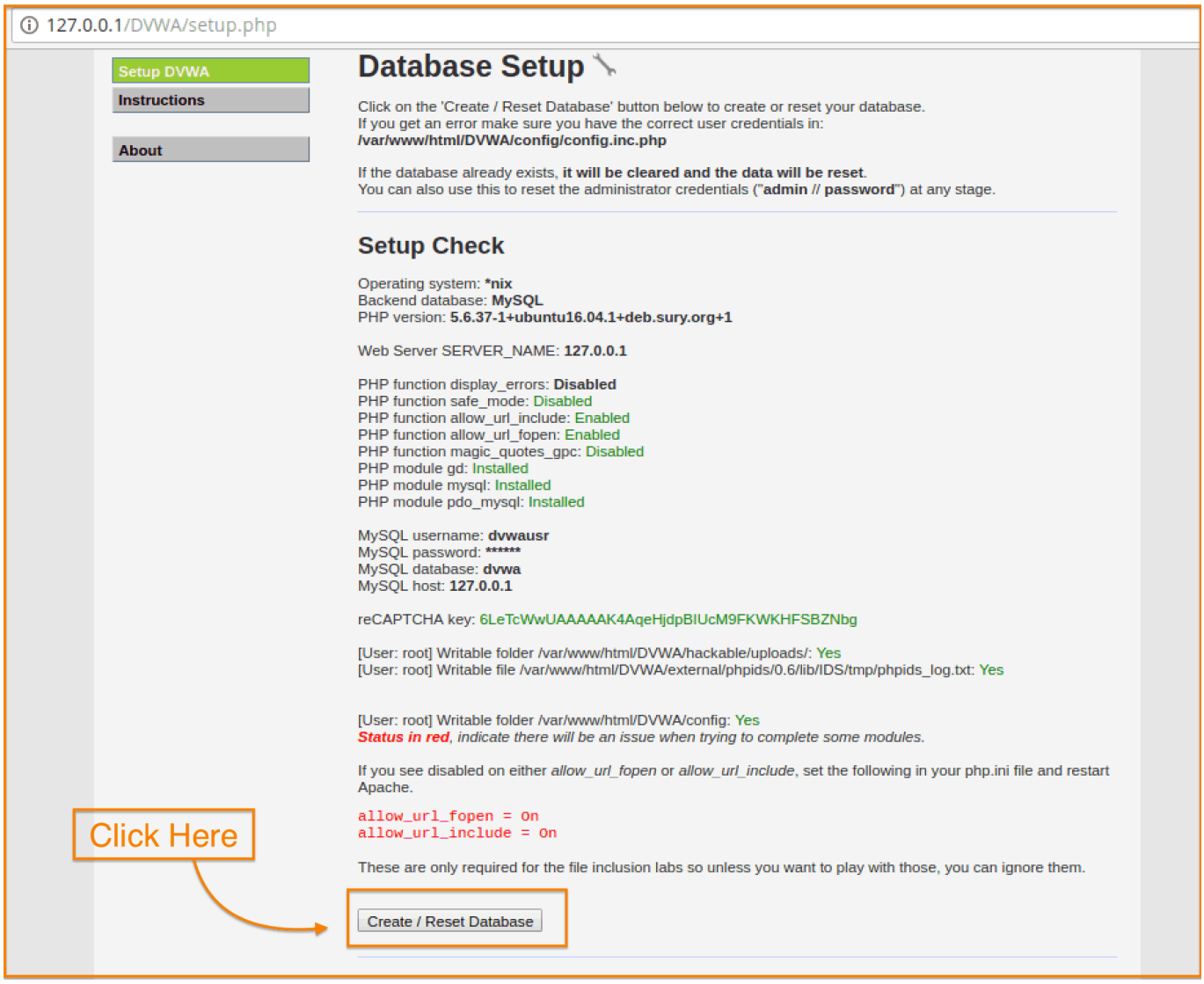
```
sudo /etc/init.d/mysql restart
```

Once done, you have completed the required configuration for DVWA.

Test DVWA Installation

```
iceweasel http://127.0.0.1/DVWA/setup.php
```

You will be redirected to the web browser and the page similar to this will be in front of you.



When you are done looking at this DVWA Setup page, you can click on Create / Reset Database button. You will be redirected to the login page.

Use MySQL User and Password to Login

Now, login to change the strength of vulnerabilities by clicking on “DVWA Security”.

DVWA Security Options for Attacks: Start with Low level.

Low Level: Low-Level Security gives you the freedom to exploit all known vulnerabilities means there will be no security in a given framework and hence you can try all attacks if you are using it first Time.

Medium Level: Medium security will have all entry-level validations and filtration which can stop any script kiddie to get the benefit of available vulnerabilities.

High Level: High Level is kind of Zero Day environment and if you can breach it then that means you are on the right track to becoming a VAPT Expert.

You’re done.

So, we have setup a simple vulnerable web application on localhost. You can now *Explore DVWA interface.*

If you encounter any errors during the installation or have questions, Let us know in the comments below!

You may also be interested in reading How to become a Web Security Researcher or learn Why questioning is Pivotal to Success in Web Security?