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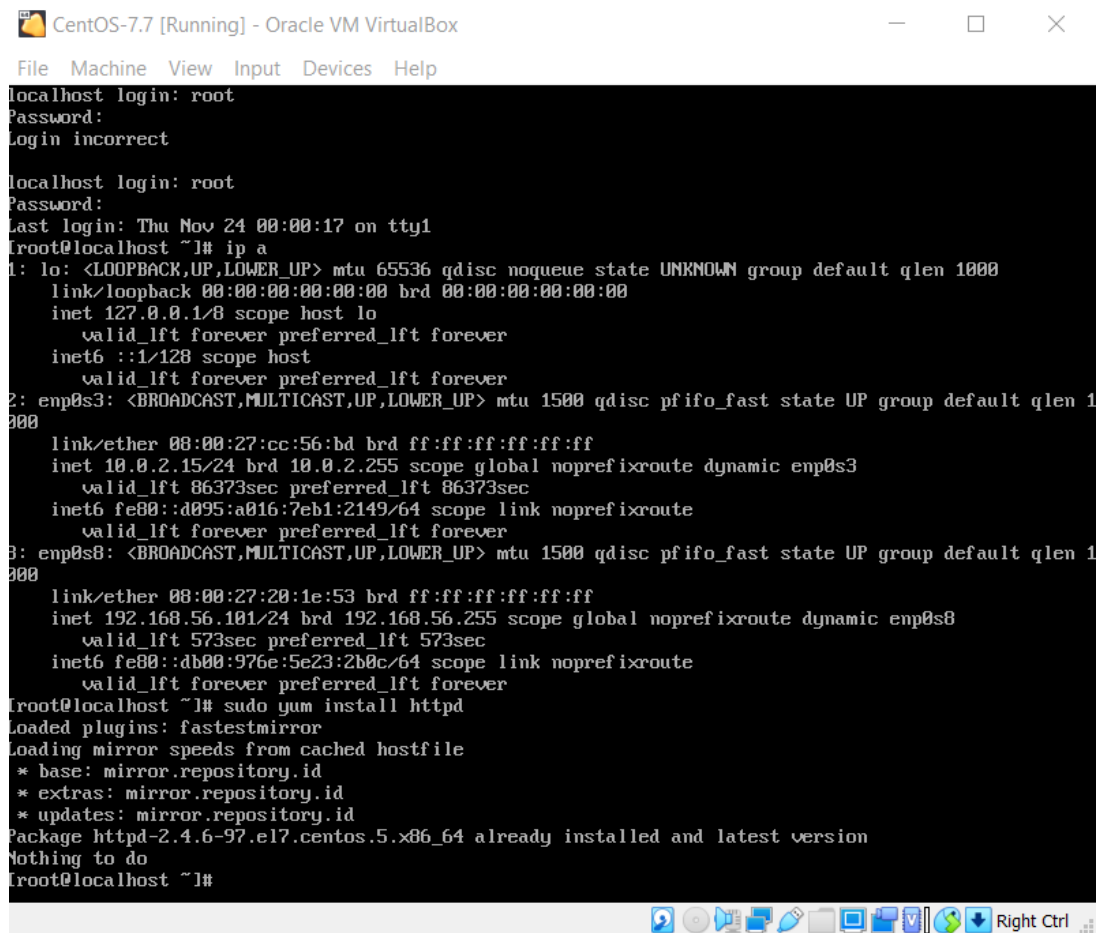
Kelas : 3SI2

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Praktikum 11 Install Linux, Apache, MySQL, PHP (LAMP) stack On CentOS 7

1. Installing the Apache Web Server

- Install httpd Apache Package



```
CentOS-7.7 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
localhost login: root
Password:
Login incorrect

localhost login: root
Password:
Last login: Thu Nov 24 00:00:17 on tty1
[root@localhost ~]# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
    inet 127.0.0.1/8 scope host lo
        valid_lft forever preferred_lft forever
    inet6 ::1/128 scope host
        valid_lft forever preferred_lft forever
2: enp0s3: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:cc:56:bd brd ff:ff:ff:ff:ff:ff
    inet 10.0.2.15/24 brd 10.0.2.255 scope global noprefixroute dynamic enp0s3
        valid_lft 86373sec preferred_lft 86373sec
    inet6 fe80::d095:a016:7eb1:2149/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
3: enp0s8: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 08:00:27:20:1e:53 brd ff:ff:ff:ff:ff:ff
    inet 192.168.56.101/24 brd 192.168.56.255 scope global noprefixroute dynamic enp0s8
        valid_lft 573sec preferred_lft 573sec
    inet6 fe80::db00:976e:5e23:2b0c/64 scope link noprefixroute
        valid_lft forever preferred_lft forever
[root@localhost ~]# sudo yum install httpd
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.repository.id
 * extras: mirror.repository.id
 * updates: mirror.repository.id
Package httpd-2.4.6-97.el7.centos.5.x86_64 already installed and latest version
Nothing to do
[root@localhost ~]#
```

- Start httpd

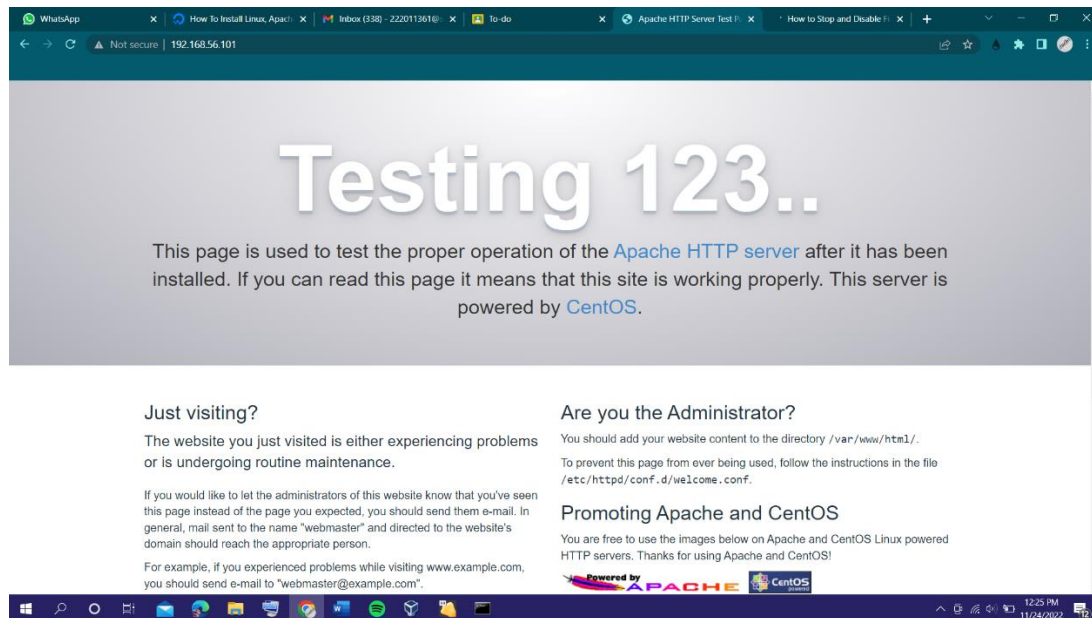


```
[root@localhost ~]# sudo systemctl start httpd
[root@localhost ~]#
```

- Mematikan Firewall

```
[root@localhost ~]# sudo systemctl stop firewalld
[root@localhost ~]# _
```

- Default CentOS 7 landing page



- Enable Apache to start in boot

```
[root@localhost ~]# sudo systemctl enable httpd.service
Created symlink from /etc/systemd/system/multi-user.target.wants/httpd.service to /usr/lib/systemd/s
ystem/httpd.service.
[root@localhost ~]# _
```

2. Installing MySQL (MariaDB)

- Install MariaDB

```
CentOS-7.7 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

--> Running transaction check
--> Package perl-IO-Compress.noarch 0:2.061-2.el7 will be installed
--> Processing Dependency: perl(Compress::Raw::Zlib) >= 2.061 for package: perl-IO-Compress-2.061-2.el7.noarch
--> Processing Dependency: perl(Compress::Raw::Bzip2) >= 2.061 for package: perl-IO-Compress-2.061-2.el7.noarch
--> Package perl-Net-Daemon.noarch 0:0.48-5.el7 will be installed
--> Running transaction check
--> Package perl-Compress-Raw-Bzip2.x86_64 0:2.061-3.el7 will be installed
--> Package perl-Compress-Raw-Zlib.x86_64 1:2.061-4.el7 will be installed
--> Finished Dependency Resolution

Dependencies Resolved

=====
Package                                Arch              Version            Repository          Size
=====
Installing:
mariadb-server                        x86_64            1:5.5.68-1.el7     base                11 M
Installing for dependencies:
mariadb                              x86_64            1:5.5.68-1.el7     base                8.8 M
perl-Compress-Raw-Bzip2               x86_64            2.061-3.el7        base                32 k
perl-Compress-Raw-Zlib               x86_64            1:2.061-4.el7        base                57 k
perl-DBD-MySQL                       x86_64            4.023-6.el7        base               140 k
perl-DBI                             x86_64            1.627-4.el7        base               802 k
perl-Data-Dumper                     x86_64            2.145-3.el7        base                47 k
perl-IO-Compress                     noarch            2.061-2.el7        base               260 k
perl-Net-Daemon                     noarch            0.48-5.el7         base                51 k
perl-PIRPC                           noarch            0.2020-14.el7      base                36 k
=====

Transaction Summary
=====
Install 1 Package (+9 Dependent packages)

Total download size: 21 M
Installed size: 110 M
Is this ok [y/d/N]: _
```

- Start MariaDB

```
Complete!
root@localhost ~]# sudo systemctl start mariadb
root@localhost ~]# _
```

- Enable MariaDB to start on boot

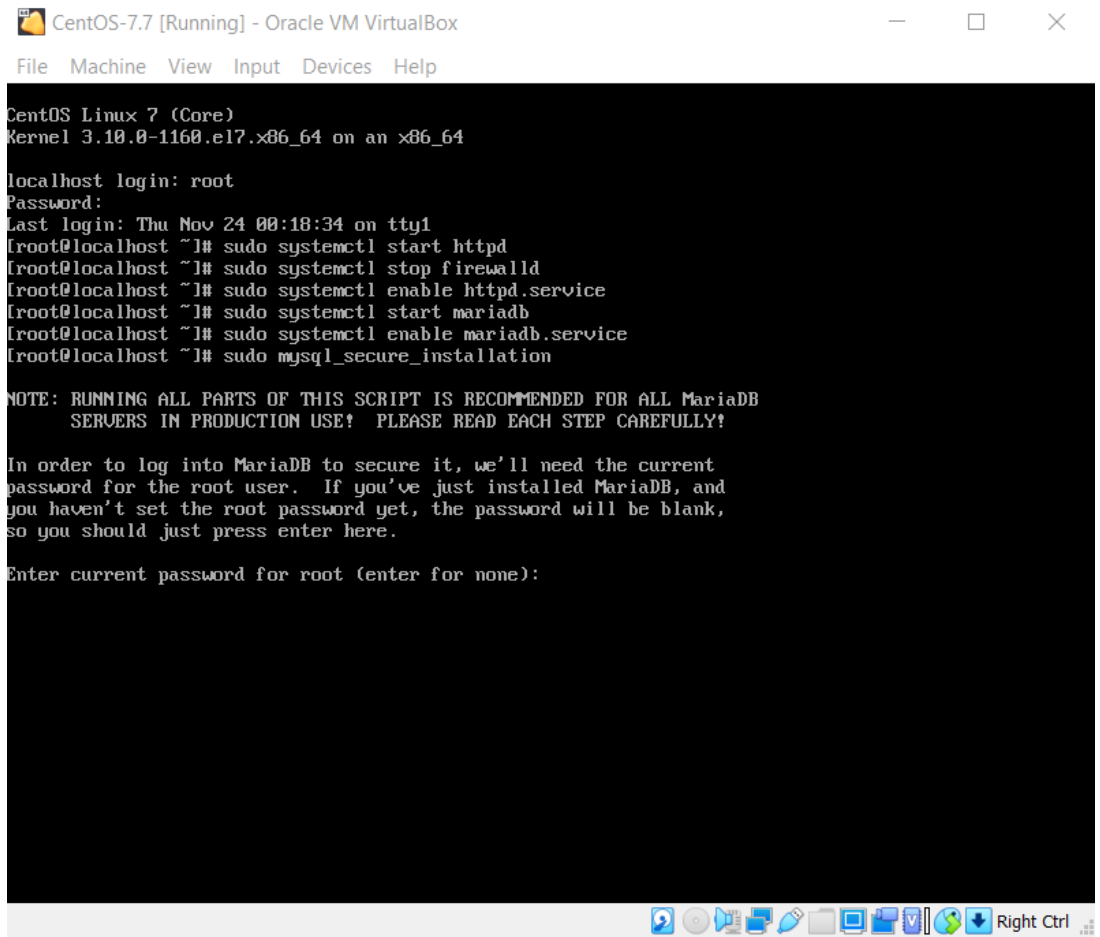
```
CentOS-7.7 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
Installing : perl-Data-Dumper-2.145-3.el7.x86_64 1/10
Installing : 1:perl-Compress-Raw-Zlib-2.061-4.el7.x86_64 2/10
Installing : 1:mariadb-5.5.68-1.el7.x86_64 3/10
Installing : perl-Net-Daemon-0.48-5.el7.noarch 4/10
Installing : perl-Compress-Raw-Bzip2-2.061-3.el7.x86_64 5/10
Installing : perl-IO-Compress-2.061-2.el7.noarch 6/10
Installing : perl-PIRPC-0.2020-14.el7.noarch 7/10
Installing : perl-DBI-1.627-4.el7.x86_64 8/10
Installing : perl-DBD-MySQL-4.023-6.el7.x86_64 9/10
Installing : 1:mariadb-server-5.5.68-1.el7.x86_64 10/10
Verifying : perl-Compress-Raw-Bzip2-2.061-3.el7.x86_64 1/10
Verifying : perl-Net-Daemon-0.48-5.el7.noarch 2/10
Verifying : perl-Data-Dumper-2.145-3.el7.x86_64 3/10
Verifying : 1:mariadb-server-5.5.68-1.el7.x86_64 4/10
Verifying : perl-DBD-MySQL-4.023-6.el7.x86_64 5/10
Verifying : 1:mariadb-5.5.68-1.el7.x86_64 6/10
Verifying : 1:perl-Compress-Raw-Zlib-2.061-4.el7.x86_64 7/10
Verifying : perl-DBI-1.627-4.el7.x86_64 8/10
Verifying : perl-IO-Compress-2.061-2.el7.noarch 9/10
Verifying : perl-PIRPC-0.2020-14.el7.noarch 10/10

Installed:
  mariadb-server.x86_64 1:5.5.68-1.el7

Dependency Installed:
  mariadb.x86_64 1:5.5.68-1.el7          perl-Compress-Raw-Bzip2.x86_64 0:2.061-3.el7
  perl-Compress-Raw-Zlib.x86_64 1:2.061-4.el7  perl-DBD-MySQL.x86_64 0:4.023-6.el7
  perl-DBI.x86_64 0:1.627-4.el7          perl-Data-Dumper.x86_64 0:2.145-3.el7
  perl-IO-Compress.noarch 0:2.061-2.el7    perl-Net-Daemon.noarch 0:0.48-5.el7
  perl-PIRPC.noarch 0:0.2020-14.el7

Complete!
[root@localhost ~]# sudo systemctl start mariadb
[root@localhost ~]# sudo systemctl enable mariadb.service
Created symlink from /etc/systemd/system/multi-user.target.wants/mariadb.service to /usr/lib/systemd/system/mariadb.service.
[root@localhost ~]# _
```

- Improve the security of database server



```
CentOS-7.7 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help

CentOS Linux 7 (Core)
Kernel 3.10.0-1160.el7.x86_64 on an x86_64

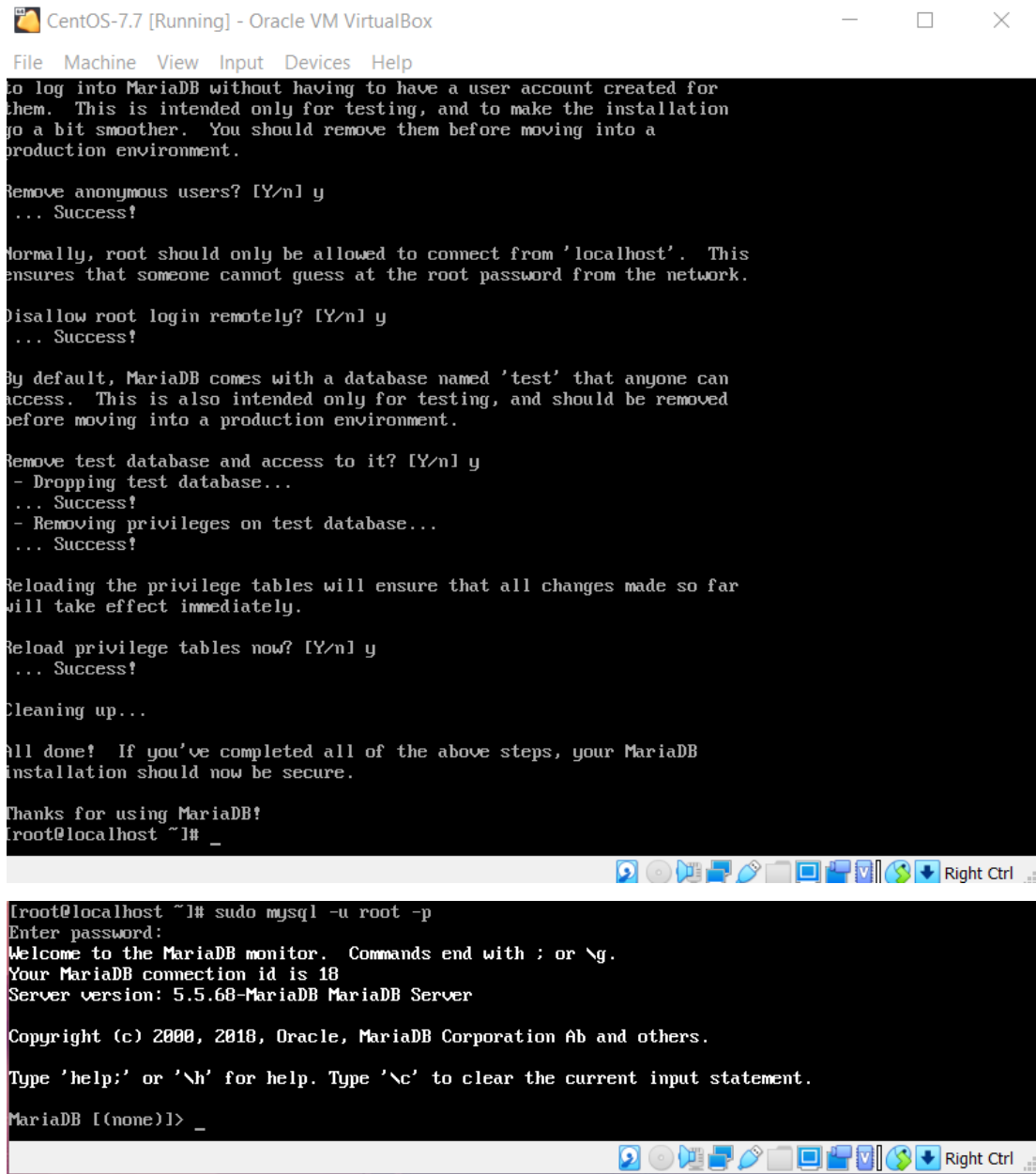
localhost login: root
Password:
Last login: Thu Nov 24 00:18:34 on tty1
[root@localhost ~]# sudo systemctl start httpd
[root@localhost ~]# sudo systemctl stop firewalld
[root@localhost ~]# sudo systemctl enable httpd.service
[root@localhost ~]# sudo systemctl start mariadb
[root@localhost ~]# sudo systemctl enable mariadb.service
[root@localhost ~]# sudo mysql_secure_installation

NOTE: RUNNING ALL PARTS OF THIS SCRIPT IS RECOMMENDED FOR ALL MariaDB
SERVERS IN PRODUCTION USE! PLEASE READ EACH STEP CAREFULLY!

In order to log into MariaDB to secure it, we'll need the current
password for the root user. If you've just installed MariaDB, and
you haven't set the root password yet, the password will be blank,
so you should just press enter here.

Enter current password for root (enter for none):
```

- Login ke MariaDB



CentOS-7.7 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

to log into MariaDB without having to have a user account created for them. This is intended only for testing, and to make the installation go a bit smoother. You should remove them before moving into a production environment.

Remove anonymous users? [Y/n] y
... Success!

Normally, root should only be allowed to connect from 'localhost'. This ensures that someone cannot guess at the root password from the network.

Disallow root login remotely? [Y/n] y
... Success!

By default, MariaDB comes with a database named 'test' that anyone can access. This is also intended only for testing, and should be removed before moving into a production environment.

Remove test database and access to it? [Y/n] y
- Dropping test database...
... Success!
- Removing privileges on test database...
... Success!

Reloading the privilege tables will ensure that all changes made so far will take effect immediately.

Reload privilege tables now? [Y/n] y
... Success!

Cleaning up...

All done! If you've completed all of the above steps, your MariaDB installation should now be secure.

Thanks for using MariaDB!
root@localhost ~]# _

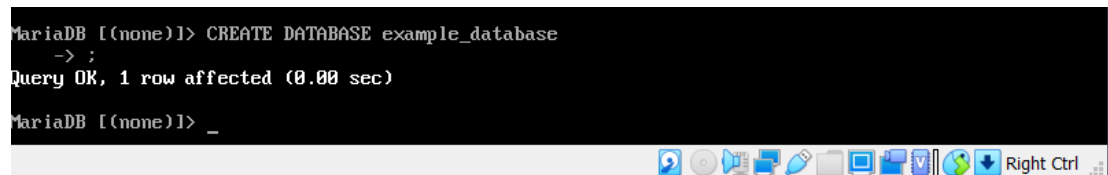
[root@localhost ~]# sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 18
Server version: 5.5.68-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> _

- Create database



MariaDB [(none)]> CREATE DATABASE example_database
-> ;
Query OK, 1 row affected (0.00 sec)

MariaDB [(none)]> _

- Membuat grant ke sebuah user

```
MariaDB [(none)]> GRANT ALL ON example_database.* TO 'example_user'@'localhost' IDENTIFIED BY 'password' WITH GRANT OPTION
-> ;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> _
```

- Reload and save privileges

```
MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> _
```

- Show database

```
[root@localhost ~]# mysql -u taufiq -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 24
Server version: 5.5.68-MariaDB MariaDB Server

Copyright (c) 2000, 2018, Oracle, MariaDB Corporation Ab and others.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW DATABASE
-> ;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your
MariaDB server version for the right syntax to use near 'DATABASE' at line 1
MariaDB [(none)]> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| example_database |
+-----+
2 rows in set (0.00 sec)

MariaDB [(none)]>
```

3. Installing PHP

- Install PHP

```
[root@localhost ~]# sudo yum install php php-mysql
Loaded plugins: fastestmirror
Loading mirror speeds from cached hostfile
 * base: mirror.repository.id
 * extras: mirror.repository.id
 * updates: mirror.repository.id

_
```

- Restart the Apache web server to enable the PHP module

```
[root@localhost ~]# sudo systemctl restart httpd.service
[root@localhost ~]# _
```

4. Testing PHP on your Apache Web Server

- Change the ownership of the default Apache document root

```
[root@localhost ~]# sudo chown -R taufiq.taufiq /var/www/html/
[root@localhost ~]# _
```

- Create a PHP file called info.php at the var/www/html directory

CentOS-7.7 [Running] - Oracle VM VirtualBox

File Machine View Input Devices Help

```

'/var/www/html/info.php' [New] 2L, 21C written
root@localhost ~]# rm /var/www/html/info.php
rm: remove regular file '/var/www/html/info.php'?
root@localhost ~]#
```

- Melakukan test info.php

PHP Version 5.4.16

System	Linux localhost.localdomain 3.10.0-1160.el7.x86_64 #1 SMP Mon Oct 19 16:18:59 UTC 2020 x86_64
Build Date	Apr 1 2020 04:08:16
Server API	Apache 2.0 Handler
Virtual Directory Support	disabled
Configuration File (php.ini) Path	/etc
Loaded Configuration File	/etc/php.ini
Scan this dir for additional .ini files	/etc/php.d
Additional .ini files parsed	/etc/php.d/curl.ini, /etc/php.d/fileinfo.ini, /etc/php.d/json.ini, /etc/php.d/mysql.ini, /etc/php.d/mysqli.ini, /etc/php.d/pdo.ini, /etc/php.d/pdo_mysql.ini, /etc/php.d/pdo_sqlite.ini, /etc/php.d/phar.ini, /etc/php.d/sqlite3.ini, /etc/php.d/zip.ini
PHP API	20100412
PHP Extension	20100525
Zend Extension	220100525
Zend Extension Build	API220100525,NTS
PHP Extension Build	API20100525,NTS
Debug Build	no
Thread Safety	disabled
Zend Signal Handling	disabled
Zend Memory Manager	enabled
Zend Multibyte Support	disabled
IPv6 Support	enabled
DTrace Support	disabled
Registered PHP Streams	https, ftps, compress.zlib, compress.bzip2, php, file, glob, data, http, ftp, phar, zip

5. Testing Database Connection eith PHP (Optional)

- Create tabel todo_list

```
MariaDB [(none)]> CREATE TABLE example_database.todo_list(
  -> item_id INT AUTO_INCREMENT,
  -> content VARCHAR(255),
  -> PRIMARY KEY(item_id)
  -> );
Query OK, 0 rows affected (0.00 sec)

MariaDB [(none)]> _
```

- Melakukan insert data ke tabel todo_list

```
MariaDB [(none)]> INSERT INTO example_database.todo_list (content) VALUES ("My first item");
Query OK, 1 row affected (0.00 sec)

MariaDB [(none)]>
```

- Menampilkan tabel todo_list

```
MariaDB [(none)]> SELECT * FROM example_database.todo_list;
+-----+-----+
| item_id | content |
+-----+-----+
|      1 | My first item |
+-----+-----+
1 row in set (0.00 sec)

MariaDB [(none)]> _
```

- Membuat file todo_list.php dan mengisi file todo_list.php

CentOS-7.7 [Running] - Oracle VM VirtualBox

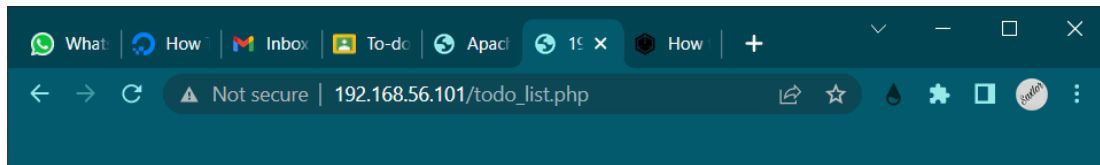
File Machine View Input Devices Help

```
<?php
$user = "taufiq";
$password = "123456";
$database = "example_database";
$table = "todo_list";

try {
    $db = PDO("mysql:host=localhost;dbname=$database", $user, $password);
    echo "<h2>TODO</h2><ol>";
    foreach($db->query("SELECT content FROM $table") as $row){
        echo "<li>" . $row['content'] . "</li>";
    }
    echo "</ol>";
} catch (PDOException $e) {
    print "Error!: " . $e->getMessage() . "<br>";
    die();
}

-- INSERT --
```

- Melakukan test_info.php



TODO

1. My first item
2. My second important item
3. My third important item
4. and this one more thing