



INSTALASI WORDPRESS DENGAN MENGHUBUNGKAN WEB SERVER DAN DATABASE SERVER

4332101006
NISRINA AMELIA PUTRI

RKS 3A REG PAGI

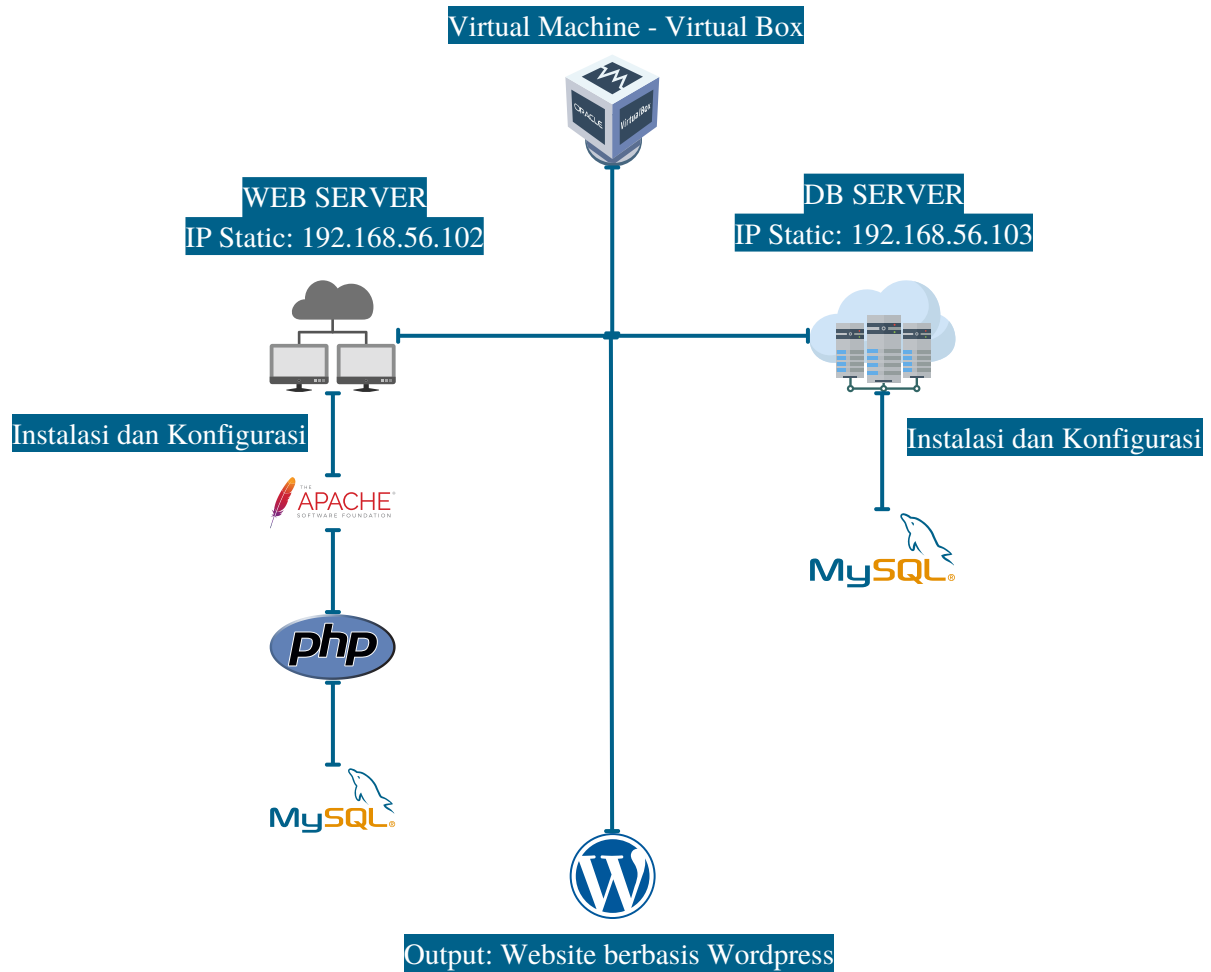


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DASAR TEORI

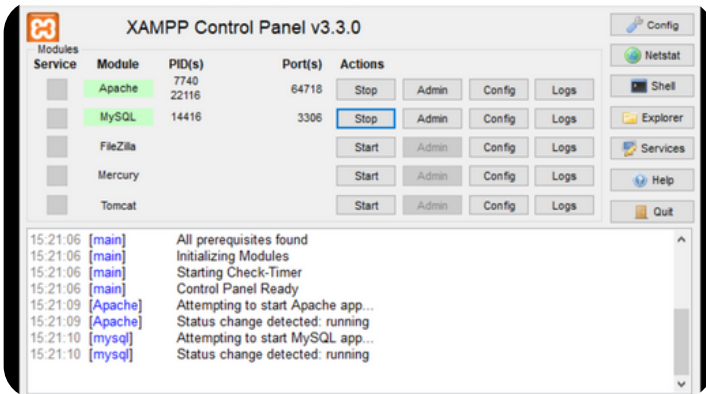
Untuk membuat web server dengan database yang berbeda tempat, memerlukan beberapa instalasi khusus yang diperlukan guna membuat website. Berikut topologi yang menunjukkan langkah untuk membangun sebuah web server dan database server dengan wordpress.



MEMBUAT WEBSITE WORDPRESS DENGAN DATABASENYA (MYSQL)

Untuk membuat website wordpress dinamis tanpa menghubungkan dengan server ubuntu, memerlukan sebuah software bernama XAMPP.

XAMPP digunakan untuk menyediakan PHP environment, web server dan MySQL server. Dapat di Download pada: <https://www.apachefriends.org/download.html> . Pilih versi XAMPP dengan awalan 8.x saat proses download. Lakukan instalasi hingga selesai.

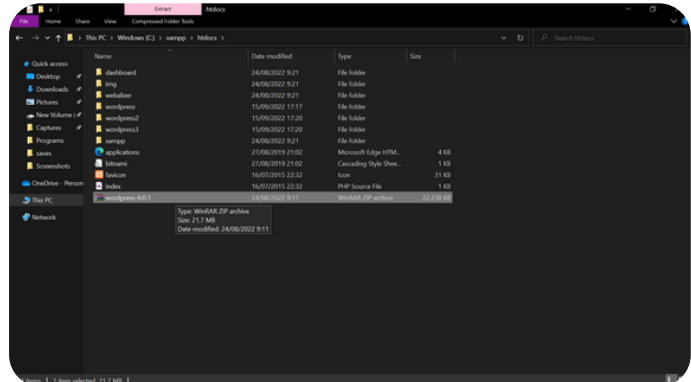


Setiap memulai proses pengembangan web, pastikan aplikasi XAMPP telah dijalankan pada bagian:

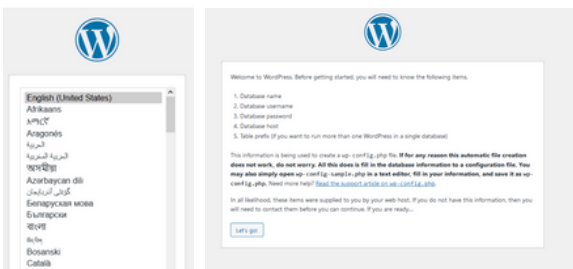
- **Apache** (Aplikasi web server gratis dan open source untuk menciptakan halaman website) dan
- **MySQL Server** (Befungsi untuk mengelola dan membuat sistem database yang terstruktur)

WordPress installation

- Download file wordpress pada: <https://wordpress.org/download/>
- Setelah download selesai, copy file yang telah didownload ke folder **htdocs** lalu extract file. Hasil ekstrak akan menampilkan satu folder baru dengan nama **wordpress**



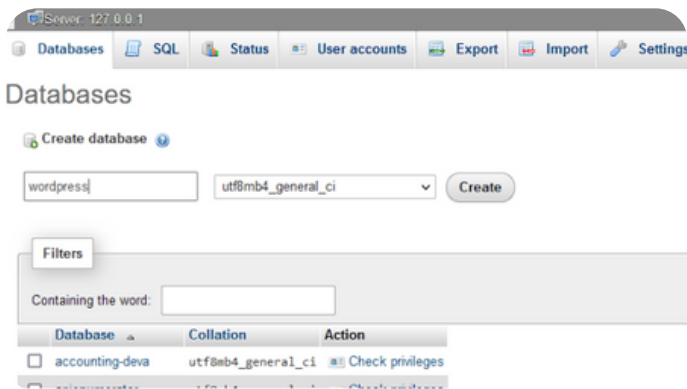
Secara default, htdocs berada di `C:\xampp\htdocs`. **Htdocs** merupakan nama sebuah folder bagian dari XAMPP yang berfungsi untuk menyimpan berbagai file dan dokumen yang akan ditampilkan di website. Kapasitas penyimpanan dalam Htdocs bergantung pada storage harddisk komputer.



Lakukan instalasi dengan mengakses wordpress melalui browser. Pada browser, masukkan URL berikut: <http://localhost/wordpress>

Lakukan set-up:

- Pada halaman utama instalasi pemilihan bahasa, lalu klik Continue
- Pada tahap informasi pembuatan file wp-config, klik Continue



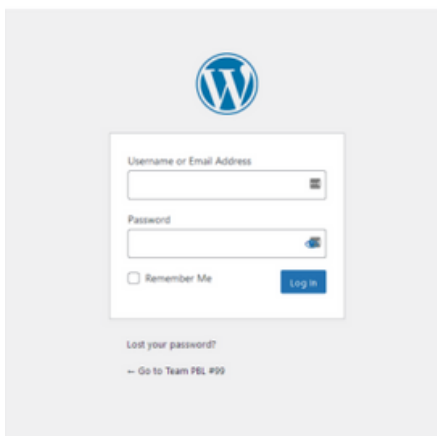
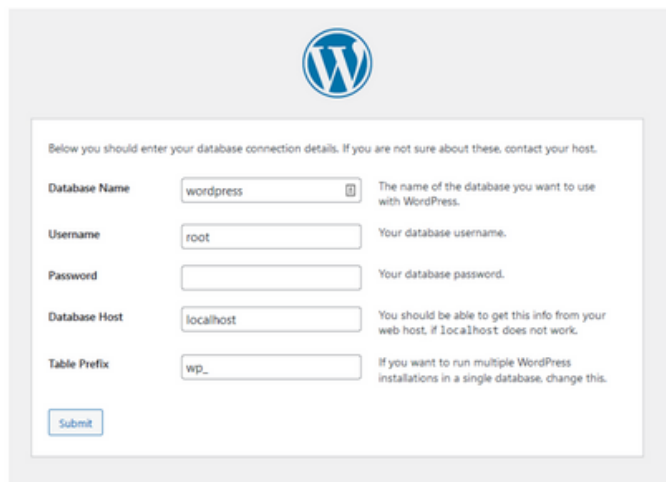
Buat database wordpress dengan bantuan fitur bawaan XAMPP yaitu **PHPMysqladmin**. Untuk mengakses fitur ini, buka tab baru (jangan tutup tab instalasi), lalu ketikkan: <http://localhost/phpmyadmin>

Create sebuah database baru dengan nama wordpress. Lalu kembali ke tab instalasi wordpress.

Pada tahap pengisian konfigurasi database, isikan dengan data berikut:

Jika konfigurasi tidak ada masalah, klik **Run Installation**. Lengkapi form informasi yang dibutuhkan lalu klik **Install Wordpress**.

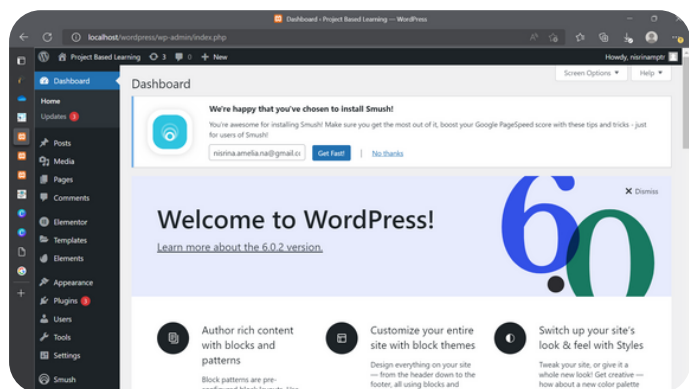
NOTE: Pastikan untuk mengingat username dan password yang dipilih karena digunakan untuk login wordpress.



Login ke dalam sistem dengan menggunakan username dan password yang sudah diisi pada tahap sebelumnya. Jika akun benar, maka akan muncul halaman dashboard utama wordpress.

Begini tampilan dashbord wordpress yang telah di install.

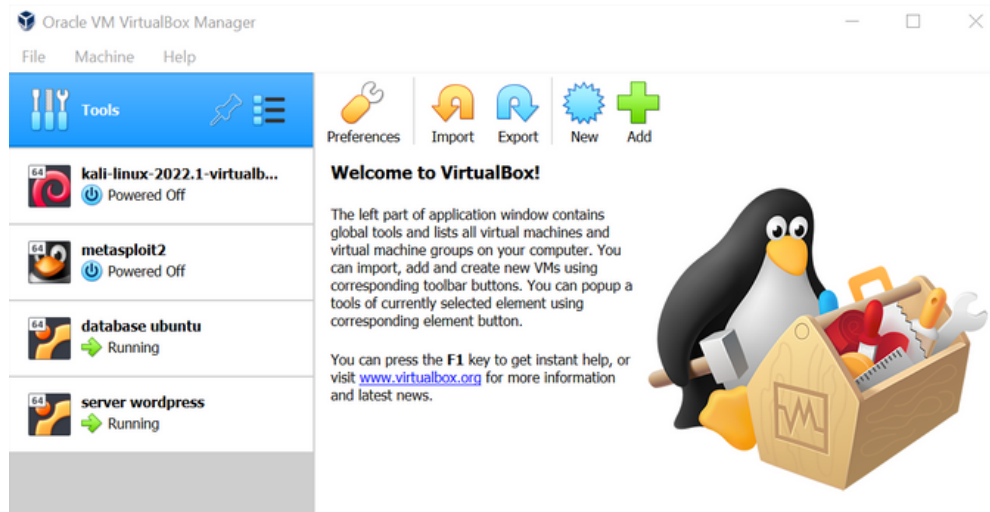
Untuk melihat hasil web setelah instalasi, ketikkan kembali URL berikut: <http://localhost/wordpress>



MEMBUAT WEBSITE WORDPRESS DENGAN DATABASE TERPISAH

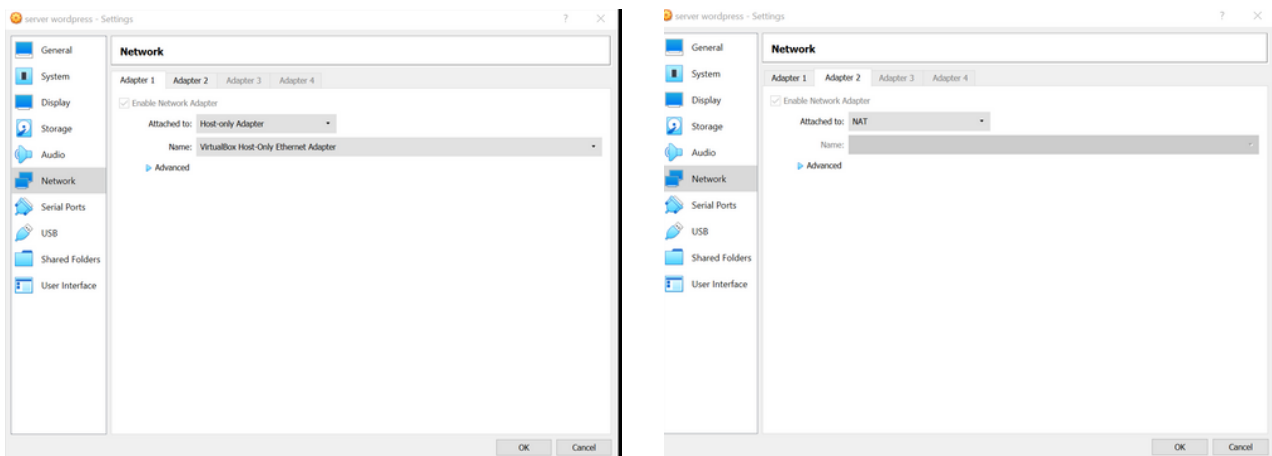
Untuk menghubungkan wordpress dengan web server dan database terpisah, dapat menggunakan 2 mesin virtual. Untuk memudahkan identifikasi server berbeda, diberi nama database ubuntu sebagai database server dan server wordpress sebagai web server.

NOTE: Untuk panduan cara menginstall mesin virtual baru dapat diakses pada <https://adinusa.id/content/post/blogs/panduan-install-ubuntu-server-di-virtualbox/>



Atur kedua mesin virtual menjadi jenis network berikut:

- **Host-only adapter**, digunakan agar ip tidak terus berubah.
- **NAT**, digunakan agar server dapat terhubung ke internet.



Start kedua mesin virtual kemudian lakukan update dan upgrade dengan command:

`$ sudo apt update && sudo apt upgrade`

```
nisrina@nisrinadb:~$ sudo apt update && sudo apt upgrade
[sudo] password for nisrina:
```

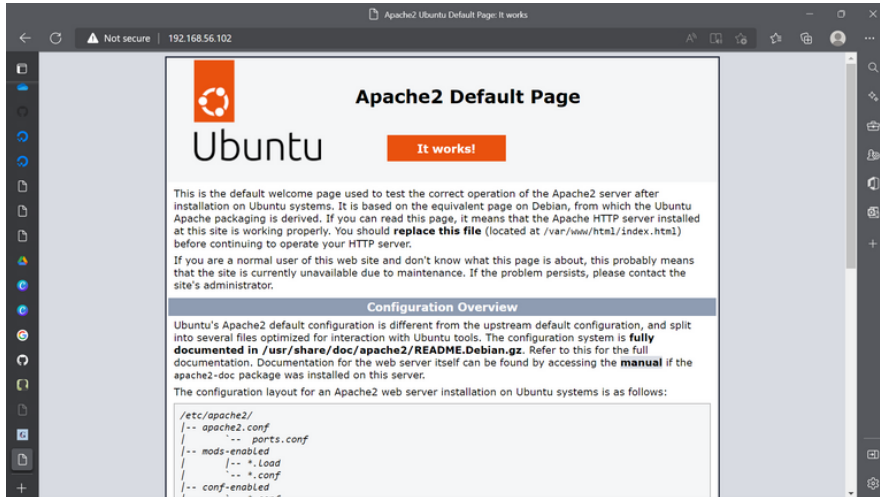
A. Konfigurasi Web Server

Instalasi Apache dengan menggunakan command `$ sudo apt install apache2`

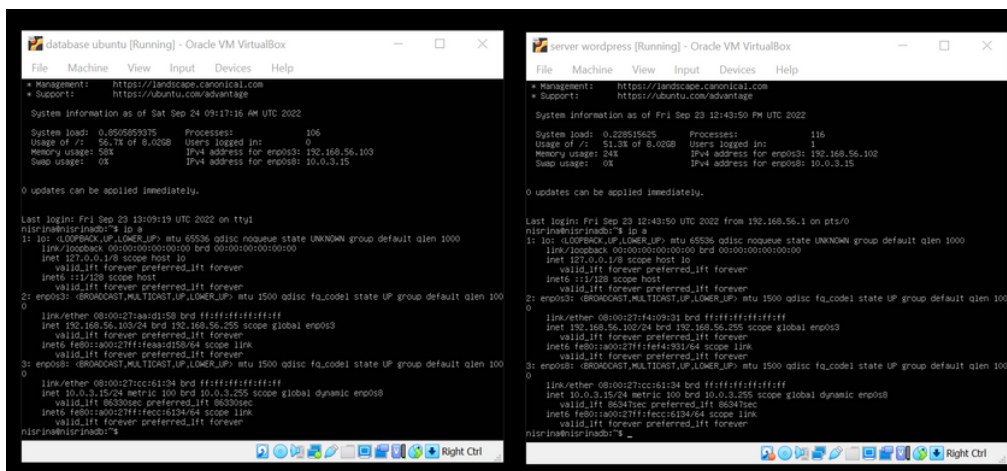
Apache perlu diinstal sebagai layanan yang dapat menyajikan web yang akan dibuat pada server.

```
nisrina@nisrinadb:~$ sudo apt install apache2
```

Untuk memverifikasi apakah server sudah berjalan semestinya, dapat mengetik ip server pada web browser `192.168.56.102`



Untuk mengetahui ip, dapat mengetik command `$ip a`



Install paket PHP dengan command `$sudo apt install php libapache2-mod-php php-mysql`

Instalasi PHP diperlukan untuk membuat website menjadi dinamis dan sebagai penghubung dengan database server.

```
nisrina@nisrinadb:~$ sudo apt install php libapache2-mod-php php-mysql
[sudo] password for nisrina:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
php is already the newest version (2:8.1+92ubuntu1).
php-mysql is already the newest version (2:8.1+92ubuntu1).
The following NEW packages will be installed:
 libapache2-mod-php
0 upgraded, 1 newly installed, 0 to remove and 1 not upgraded.
Need to get 2,898 B of archives.
After this operation, 18.4 kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

Untuk mengetahui versi dari php yang berhasil di install dapat mengetik command `$ php -v`

```
nisrina@nisrinadb:~$ php -v
PHP 8.1.2 (cli) (built: Aug  8 2022 07:28:23) (NTS)
Copyright (c) The PHP Group
Zend Engine v4.1.2, Copyright (c) Zend Technologies
with Zend OPcache v8.1.2, Copyright (c), by Zend Technologies
```

Instalasi mysql-client `$ sudo apt install mysql-client`

Dilakukan agar web server dapat mengelola database dengan baik.

```
nisrina@nisrinadb:~$ sudo apt install mysql-client
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

B. Konfigurasi Database Server

Instalasi mysql-server dengan menggunakan command `$ sudo apt install mysql-server`

Dilakukan agar database server dapat mengelola database dengan baik dan dapat terhubung ke web server yang telah dikonfigurasi tadi.

```
nisrina@nisrinadb:~$ sudo apt install mysql-server
[sudo] password for nisrina:
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
```

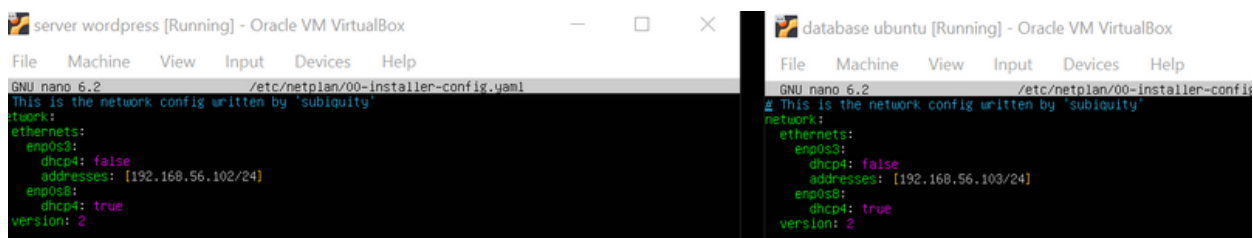
Pastikan server berjalan dengan starts systemctl `$ sudo systemctl start mysql.service`

```
nisrina@nisrinadb:~$ sudo systemctl start mysql.service
nisrina@nisrinadb:~$ _
```

C. Menghubungkan Web Server dengan Database Server

Konfigurasi ip statis dengan command `$ sudo nano /etc/netplan/00-installer-config.yaml`

Dilakukan agar ip tidak berubah-ubah sehingga untuk mengaksesnya akan mudah. Konfigurasi dapat mengikuti command di bawah. Atur dhcp menjadi false dan masukan ip pada addresses.



```
server wordpress [Running] - Oracle VM VirtualBox
GNU nano 6.2 /etc/netplan/00-installer-config.yaml
This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses: [192.168.56.102/24]
    enp0s8:
      dhcp4: true
  version: 2

database ubuntu [Running] - Oracle VM VirtualBox
GNU nano 6.2 /etc/netplan/00-installer-config
This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s3:
      dhcp4: false
      addresses: [192.168.56.103/24]
    enp0s8:
      dhcp4: true
  version: 2
```

Untuk menyimpannya, tekan ctrl+x lalu tekan y kemudian enter. Lakukan pengecekan dengan `$ sudo netplan apply` untuk mengetahui sistem dapat berjalan atau tidak.

```
nisrina@nisrinadb:~$ sudo netplan apply
nisrina@nisrinadb:~$ _
```


Masuk ke mysql pada server database dengan `$ mysql -u root -p` untuk membuat user dan database yang akan digunakan untuk web server.

```
nisrina@nisrinadb:~$ mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 8.0.30-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql>
```

Untuk membuat database baru untuk web wordpress, dapat mengetik `create database wordpress;`
Buat user untuk identifikasi, dengan `create user 'nama'@'ip web server' identified by 'password';`
Setelah membuat user dapat memberikan hak istimewa agar dapat mengakses seluruh fitur, dengan `grant all privileges on wordpress.* to 'nama'@'ip web server';`
Kosongkan seluruh memori yang di-cache server dengan `flush privileges;`

```
mysql> create database wordpress;
Query OK, 1 row affected (0.02 sec)

mysql> create user 'nisrina'@'192.168.56.102' identified by '123456';
Query OK, 0 rows affected (0.03 sec)

mysql> grant all privileges on wordpress.* to 'nisrina'@'192.168.56.102';
Query OK, 0 rows affected (0.00 sec)

mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
```

Untuk keluar dari database, dapat mengetik `exit`
Restart mysql agar perintah yang telah dibuat tadi berjalan dengan baik, dengan `restart mysql`

```
mysql> exit
Bye
nisrina@nisrinadb:~$ sudo systemctl restart mysql
[sudo] password for nisrina: _
```

```
GNU nano 6.2 /etc/mysql/mysql.conf.d/mysqld.cnf
#
# The MySQL database server configuration file.
#
# One can use all long options that the program supports.
# Run program with --help to get a list of available options and with
# --print-defaults to see which it would actually understand and use.
#
# For explanations see
# http://dev.mysql.com/doc/mysql/en/server-system-variables.html

# Here is entries for some specific programs
# The following values assume you have at least 32M ram

[mysqld]
#
# * Basic Settings
#
user                = mysql
# pid-file           = /var/run/mysqld/mysqld.pid
# socket             = /var/run/mysqld/mysqld.sock
# port               = 3306
# datadir            = /var/lib/mysql

# If MySQL is running as a replication slave, this should be
# changed. Ref https://dev.mysql.com/doc/refman/8.0/en/server-system-variables.html#sysvar_tmpdir
# tmpdir             = /tmp
#
# Instead of skip-networking the default is now to listen only on
# localhost which is more compatible and is not less secure.
bind-address         = 192.168.56.103
mysqlx-bind-address = 127.0.0.1
#
```

Setting bind-address database agar dapat terhubung ke server, dengan perintah `$ sudo nano /etc/mysql/mysql.conf.d/mysqld.cnf`

Untuk memeriksa apakah web server dan mysql database dapat terhubung, pada web server dapat mengetik `$ sudo mysql -u nama database -h ip database -p`

Jika tampilannya seperti gambar di bawah, maka database dan web server telah berhasil terhubung

```
nisrina@nisrinadb:~$ sudo mysql -u nisrina -h 192.168.56.103 -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 8
Server version: 8.0.30-0ubuntu0.22.04.1 (Ubuntu)

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affiliates. Other names may be trademarks of their respective
owners.

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

mysql>
```

D. Instalasi Wordpress pada Web Server

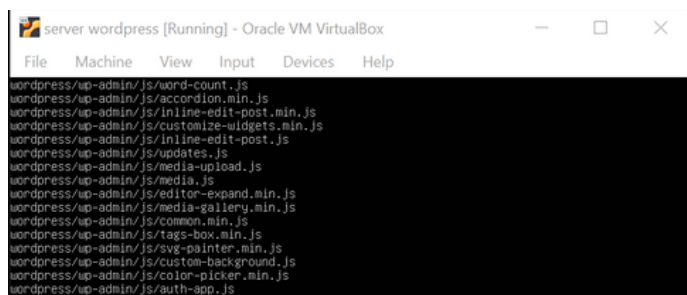
Unduh file wordpress pada direktori temp di web server menggunakan command berikut:

`$ cd /tmp && wget https://wordpress.org/latest.tar.gz`

```
nisrina@nisrinadb:/tmp$ cd /tmp && wget https://wordpress.org/latest.tar.gz
--2022-09-25 02:38:44-- https://wordpress.org/latest.tar.gz
Resolving wordpress.org (wordpress.org)... 198.143.164.252
Connecting to wordpress.org (wordpress.org)|198.143.164.252|:443... connected.
HTTP request sent, awaiting response... 200 OK
Length: 21172479 (20M) [application/octet-stream]
Saving to: 'latest.tar.gz'

latest.tar.gz           3%[>] 787.61K  189KB/s  eta 2m 1s
```

Extract file yang telah di unduh tadi, dengan `$ tar -xvf latest.tar.gz`



Lakukan serangkaian konfigurasi seperti gambar di bawah.

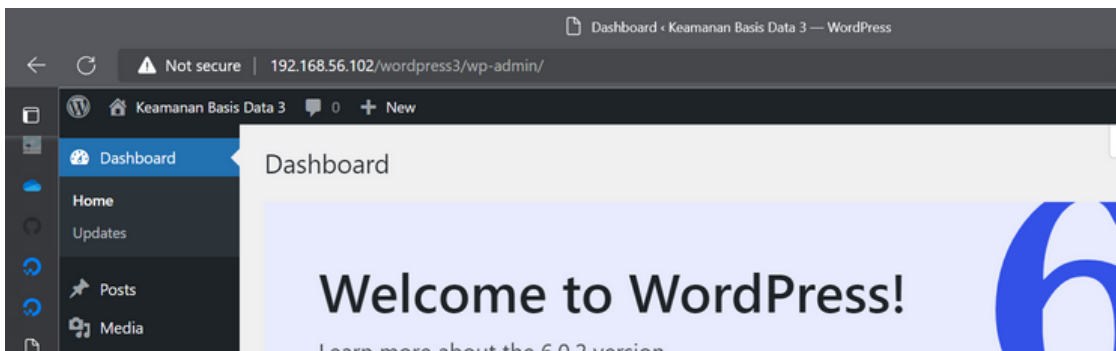
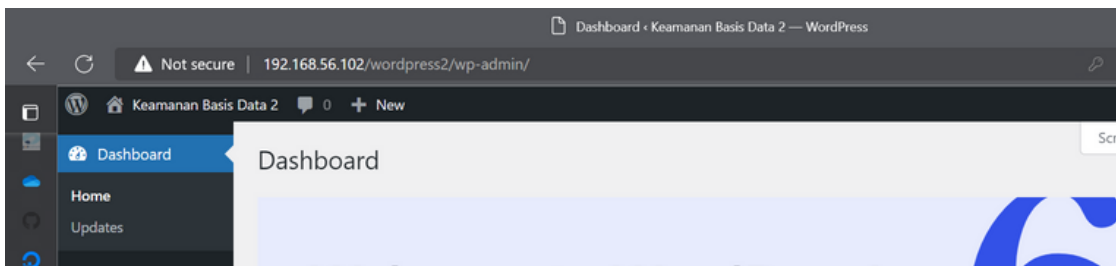
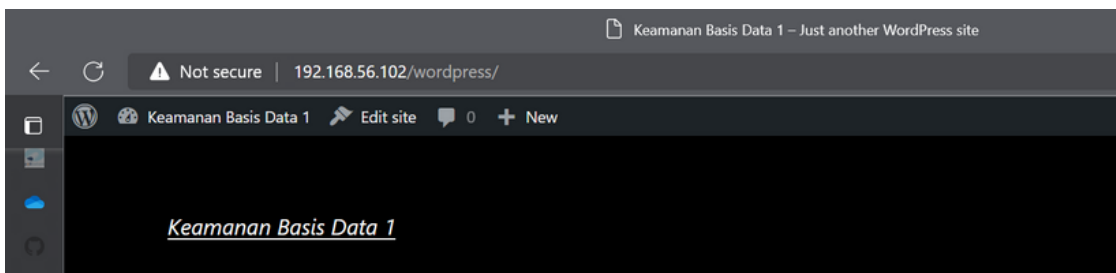
```
nisrina@nisrinadb:/tmp$ sudo cp -R wordpress /var/www/html/
[sudo] password for nisrina:
nisrina@nisrinadb:/tmp$ sudo chown -R www-data:www-data /var/www/html/wordpress/
nisrina@nisrinadb:/tmp$ sudo chmod -R 755 /var/www/html/wordpress/
nisrina@nisrinadb:/tmp$ sudo mkdir /var/www/html/wordpress/wp-content/uploads
mkdir: cannot create directory '/var/www/html/wordpress/wp-content/uploads': File exists
nisrina@nisrinadb:/tmp$ sudo chown -R www-data:www-data /var/www/html/wordpress/wp-content/up
```

- Perintah Cp -R Berfungsi Untuk Mengcopy File Wordpress Yang Tersimpan Pada Direktori
- Perintah Chown Atau Change Owner Berfungsi Untuk Mengganti Hak Akses Pada Www-Data
- Perintah Change Mode Atau Chmod Berfungsi Untuk Mengubah Semua User Agar Mendapatkan Hak Akses Untuk Mengeksekusi File Pada Direktori Yang Telah Di Pilih
- Membuat Direktori Dengan Perintah Mkdir Atau Make Directory untuk Membuat Directory Baru Pada File Wordpress Yaitu Wp_Content Dan Uploads
- Selanjutnya Kembali Mengganti Hak Akses Pada www-Data Kepada Wp_Content Dan Uploads

Untuk membuat sisa dua wordpress dengan database yang berbeda, dapat mengulangi konfigurasi yang telah dilakukan dengan menggunakan nama user yang berbeda.

```
index.html  wordpress  wordpress2  wordpress3
nisrina@nisrinadb:/var/www/html$ cd wordpress2
nisrina@nisrinadb:/var/www/html/wordpress2$ ls
index.php      wp-blog-header.php  wp-includes      wp-settings.php
license.txt    wp-comments-post.php  wp-links-opml.php  wp-signup.php
readme.html    wp-config-sample.php  wp-load.php       wp-trackback.php
wp-activate.php  wp-content           wp-login.php      xmlrpc.php
wp-admin       wp-cron.php          wp-mail.php
```

Jika sudah dikonfigurasi keseluruhan, maka dapat langsung menjalankan wordpress pada web browser dengan mengetik *ip-server/folder-wordpress*
Lakukan konfigurasi pada wordpress seperti langkah pada awal laporan di atas. Jika sudah, maka ketiga website wordpress dapat langsung digunakan.



THE QUERY UNION, SELECT, WAIT AND --

[Union]

UNION in SQL is used to join two tables in the form of a new row down where the fields that are SELECTed between one table and another must be the same. Or simply i.e. to place the rows from the query with each other and the values are distinct/unique.

```

MySQL Workbench - mysql
14 rows in set (0.001 sec)
MariaDB [wordpress]> SELECT * FROM wp_e_events
-> UNION
-> SELECT * FROM wp_term_relationships;
.....
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | event_data | created_at |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | [{"event":"modal_load","version":"","details":{"placement":"Onboarding wizard","step":{"account"},"user_state":{"anon"},"ts":"2022-09-04T16:52:19.729-07:00"}]}] | 2022-09-04 16:52:19 |
| 2 | [{"event":"create account","version":"","details":{"placement":"Onboarding wizard","source":{"cta"},"ts":"2022-09-04T16:52:27.356-07:00"}]}] | 2022-09-04 16:52:27 |
| 3 | [{"event":"modal_load","version":"","details":{"placement":"Onboarding wizard","step":{"hello"},"user_state":{"logged"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04 16:53:03"}]}] | 2022-09-04 16:53:03 |
| 4 | [{"event":"indication prompt","version":"","details":{"placement":"Onboarding wizard","step":{"action_state"},"success":{"action"},"hello theme activation":{"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:53:03.882-07:00"}]}] | 2022-09-04 16:53:03 |
| 5 | [{"event":"next","version":"","details":{"placement":"Onboarding wizard","step":{"hello"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:53:29.059-07:00"}]}] | 2022-09-04 16:53:29 |
| 6 | [{"event":"indication prompt","version":"","details":{"placement":"Onboarding wizard","step":{"action_state"},"success":{"action"},"hello theme activation":{"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:53:29.882-07:00"}]}] | 2022-09-04 16:53:29 |
| 7 | [{"event":"modal_load","version":"","details":{"placement":"Onboarding wizard","step":{"goodbye"},"user_state":{"logged"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04 16:53:41"}]}] | 2022-09-04 16:53:41 |
| 8 | [{"event":"next","version":"","details":{"placement":"Onboarding wizard","step":{"welcome"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:53:48.884-07:00"}]}] | 2022-09-04 16:53:48 |
| 9 | [{"event":"modal_load","version":"","details":{"placement":"Onboarding wizard","step":{"welcome"},"user_state":{"logged"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:53:48.884-07:00"}]}] | 2022-09-04 16:53:48 |
| 10 | [{"event":"modal_load","version":"","details":{"placement":"Onboarding wizard","step":{"goodbye"},"user_state":{"logged"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:54:21.088-07:00"}]}] | 2022-09-04 16:54:21 |
| 11 | [{"event":"help","version":"","details":{"placement":"Onboarding wizard","step":{"sitecopy"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:54:21.648-07:00"}]}] | 2022-09-04 16:54:21 |
| 12 | [{"event":"help","version":"","details":{"placement":"Onboarding wizard","step":{"sitecopy"},"client_id":{"WordPressMentor1111Qp2k3ub0b9y"},"ts":"2022-09-04T16:54:28.831-07:00"}]}] | 2022-09-04 16:54:28 |
+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | 0 |
+-----+-----+-----+-----+-----+-----+-----+-----+

```

```

MySQL Workbench - mysql
25 rows in set (0.031 sec)
MariaDB [wordpress]> SELECT * FROM wp_users;
.....
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | user_login | user_pass | user_nicename | user_email | user_url | user_registered | user_activation_key | user_status | display_name |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | nrisinuptr | SPS8cpxv08w08T0Sj0cAFfP0u37N2V | nrisinuptr | nrisina.emilia.n@gmail.com | http://localhost/wordpress | 2022-08-29 09:21:59 | 0 | nrisinuptr |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.000 sec)
MariaDB [wordpress]>

```

[Select]

The use of SELECT is to display tables in the database.

[Wait]

In the database, the WAIT function is not available so we use SLEEP for this command. SLEEP() is used to delay execution of the current script for a certain number of seconds.

```

MySQL Workbench - mysql
44 | 1 | 0 |
49 | 1 | 0 |
54 | 1 | 0 |
.....
25 rows in set (0.031 sec)
MariaDB [wordpress]> SELECT * FROM wp_users;
.....
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | user_login | user_pass | user_nicename | user_email | user_url | user_registered | user_activation_key | user_status | display_name |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | nrisinuptr | SPS8cpxv08w08T0Sj0cAFfP0u37N2V | nrisinuptr | nrisina.emilia.n@gmail.com | http://localhost/wordpress | 2022-08-29 09:21:59 | 0 | nrisinuptr |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.000 sec)
MariaDB [wordpress]> SELECT * SLEEP(2) FROM wp_users;
.....
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | user_login | user_pass | user_nicename | user_email | user_url | user_registered | user_activation_key | user_status | display_name | SLEEP(2) |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | nrisinuptr | SPS8cpxv08w08T0Sj0cAFfP0u37N2V | nrisinuptr | nrisina.emilia.n@gmail.com | http://localhost/wordpress | 2022-08-29 09:21:59 | 0 | nrisinuptr | 0 |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (2.001 sec)
MariaDB [wordpress]>

```

```

MySQL Workbench - mysql
1 row in set (2.001 sec)
MariaDB [wordpress]> SELECT * FROM wordpress.wp_users; --comment
.....
+-----+-----+-----+-----+-----+-----+-----+-----+
| id | user_login | user_pass | user_nicename | user_email | user_url | user_registered | user_activation_key | user_status | display_name |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 1 | nrisinuptr | SPS8cpxv08w08T0Sj0cAFfP0u37N2V | nrisinuptr | nrisina.emilia.n@gmail.com | http://localhost/wordpress | 2022-08-29 09:21:59 | 0 | nrisinuptr |
+-----+-----+-----+-----+-----+-----+-----+-----+
1 row in set (0.000 sec)
MariaDB [wordpress]>

```

[--]

-- is comment styles that available in SQL.

DAFTAR PUSTAKA

DigitalOcean. 2022. How To Install MySQL on Ubuntu 20.04. Diakses 10 September 2022 www.digitalocean.com/community/tutorials/how-to-install-mysql-on-ubuntu-20-04

DigitalOcean. 2021. How To Install Linux, Apache, MySQL, PHP (LAMP) stack on Ubuntu 20.04. Diakses 10 September 2022 www.digitalocean.com/community/tutorials/how-to-install-linux-apache-mysql-php-lamp-stack-on-ubuntu-20-04

MEDIA PRAKTIKUM 1: PHP ENVIRONMENT DAN WORDPRESS. Diakses 6 September 2022 https://learning-if.polibatam.ac.id/pluginfile.php/38926/mod_resource/content/1/Praktikum%201%20-%20PHP%20Environment.pdf

EkrutMedia. 2021. XAMPP adalah: Pengertian, fungsi, 5 komponen, dan cara menggunakannya. Diakses 5 September 2022 www.ekrut.com/media/xampp-adalah