

SISTEM TERDISTRIBUSI
“Replikasi Master-Slave untuk Database MySQL”



Disusun oleh :

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PROGRAM STUDI SISTEM KOMPUTER
FAKULTAS ILMU KOMPUTER
UNIVERSITAS SRIWIJAYA
PALEMBANG
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1. Konfigurasi Replikasi Di Server Master

```
slavebona@slave1: ~  
slavebona@slave1:~$ ifconfig  
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.1.10 netmask 255.255.255.0 broadcast 192.168.1.255  
    inet6 fe80::fe06:b3f5:d8e5:faa6 prefixlen 64 scopeid 0x20<link>  
    inet6 2001:448a:10b0:e652:e1d8:66a7:5dd0:951c prefixlen 64 scopeid 0x0  
<global>  
    inet6 2001:448a:10b0:e652:dbf0:78f2:da3e:d668 prefixlen 64 scopeid 0x0  
<global>  
    ether 08:00:27:76:72:b0 txqueuelen 1000 (Ethernet)  
    RX packets 1529 bytes 107324 (107.3 KB)  
    RX errors 0 dropped 4 overruns 0 frame 0  
    TX packets 256 bytes 29068 (29.0 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0  
    inet6 ::1 prefixlen 128 scopeid 0x10<host>  
    loop txqueuelen 1000 (Local Loopback)  
    RX packets 129 bytes 10713 (10.7 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 129 bytes 10713 (10.7 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
slavebona@slave1:~$
```

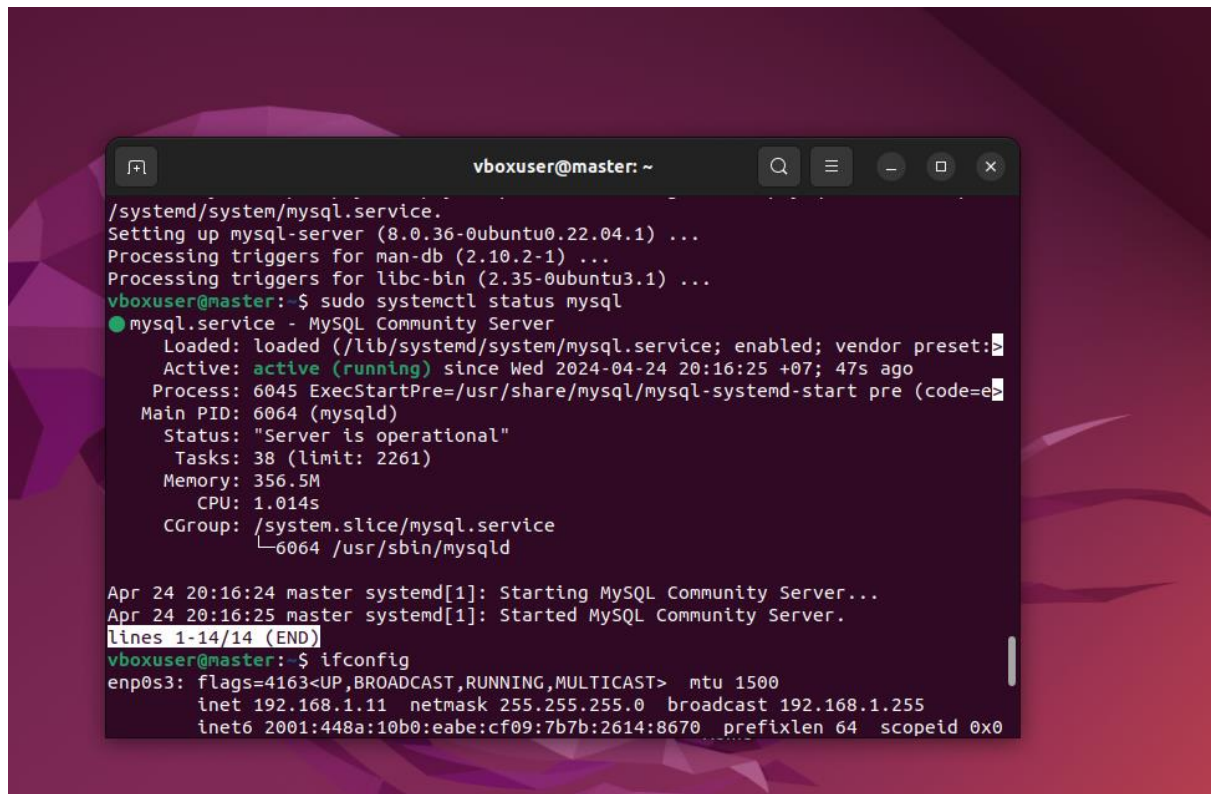
```
vboxuser@master: ~  
Apr 24 20:16:24 master systemd[1]: Starting MySQL Community Server...  
Apr 24 20:16:25 master systemd[1]: Started MySQL Community Server.  
lines 1-14/14 (END)  
vboxuser@master:~$ ifconfig  
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.1.11 netmask 255.255.255.0 broadcast 192.168.1.255  
    inet6 2001:448a:10b0:eabe:cf09:7b7b:2614:8670 prefixlen 64 scopeid 0x0  
<global>  
    inet6 2001:448a:10b0:e652:e57d:88f4:ee5d:5f7b prefixlen 64 scopeid 0x0  
<global>  
    inet6 2001:448a:10b0:e652:4732:994c:2241:d347 prefixlen 64 scopeid 0x0  
<global>  
    inet6 fe80::e2cc:cfcc:2038:9d90 prefixlen 64 scopeid 0x20<link>  
    inet6 2001:448a:10b0:eabe:5f81:b120:6572:5cbd prefixlen 64 scopeid 0x0  
<global>  
    ether 08:00:27:36:ec:16 txqueuelen 1000 (Ethernet)  
    RX packets 51014 bytes 34621816 (34.6 MB)  
    RX errors 0 dropped 10 overruns 0 frame 0  
    TX packets 32136 bytes 3048269 (3.0 MB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536  
    inet 127.0.0.1 netmask 255.0.0.0
```

- Ip 192.168.1.11 Menggunakan MariaDB 10.3 sebagai master dan sudah ada database yang akan direplikasi dengan nama database zonetrik_namadb
- IP 192.168.1.10 Menggunakan MariaDB 10.3 sebagai slave

```
vboxuser@master: ~  
vboxuser@master:~$ sudo nano /etc/mysql/my.cnf  
vboxuser@master:~$ systemctl restart mariadb  
Failed to restart mariadb.service: Unit mariadb.service not found.  
vboxuser@master:~$ sudo apt install mariadb-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following packages were automatically installed and are no longer required:  
  libevent-pthreads-2.1-7 libmecab2 libprotobuf-lite23 mecab-ipadic  
  mecab-ipadic-utf8 mecab-utils  
Use 'sudo apt autoremove' to remove them.  
The following additional packages will be installed:  
  galera-4 gawk libconfig-inifiles-perl libdaxctl1 libdbd-mysql-perl  
  libdbi-perl libmariadb3 libmysqlclient21 libndctl6 libpmem1 libsigsegv2  
  libsnappy1v5 libterm-readkey-perl liburing2 mariadb-client-10.6  
  mariadb-client-core-10.6 mariadb-common mariadb-server-10.6  
  mariadb-server-core-10.6 socat  
Suggested packages:  
  gawk-doc libmldbm-perl libnet-daemon-perl libsql-statement-perl mailx  
  mariadb-test  
The following packages will be REMOVED:  
  mysql-client-8.0 mysql-client-core-8.0 mysql-server mysql-server-8.0  
  mysql-server-core-8.0  
The following NEW packages will be installed:
```

```
vboxuser@master: ~  
Removing user 'bonamaster' ...  
Warning: group 'bonamaster' has no more members.  
Done.  
vboxuser@master:~$ sudo apt install mysql-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  libcgi-fast-perl libcgi-pm-perl libevent-pthreads-2.1-7 libfcgi-bin  
  libfcgi-perl libfcgi0ldbl libhtml-template-perl libmecab2 libprotobuf-lite23  
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0  
  mysql-client-core-8.0 mysql-common mysql-server-8.0 mysql-server-core-8.0  
Suggested packages:  
  libipc-sharedcache-perl mailx tinyca  
The following NEW packages will be installed:  
  libcgi-fast-perl libcgi-pm-perl libevent-pthreads-2.1-7 libfcgi-bin  
  libfcgi-perl libfcgi0ldbl libhtml-template-perl libmecab2 libprotobuf-lite23  
  mecab-ipadic mecab-ipadic-utf8 mecab-utils mysql-client-8.0  
  mysql-client-core-8.0 mysql-common mysql-server mysql-server-8.0  
  mysql-server-core-8.0  
0 upgraded, 18 newly installed, 0 to remove and 214 not upgraded.  
Need to get 29.1 MB of archives.  
After this operation, 242 MB of additional disk space will be used.  
Do you want to continue? [Y/n] y
```

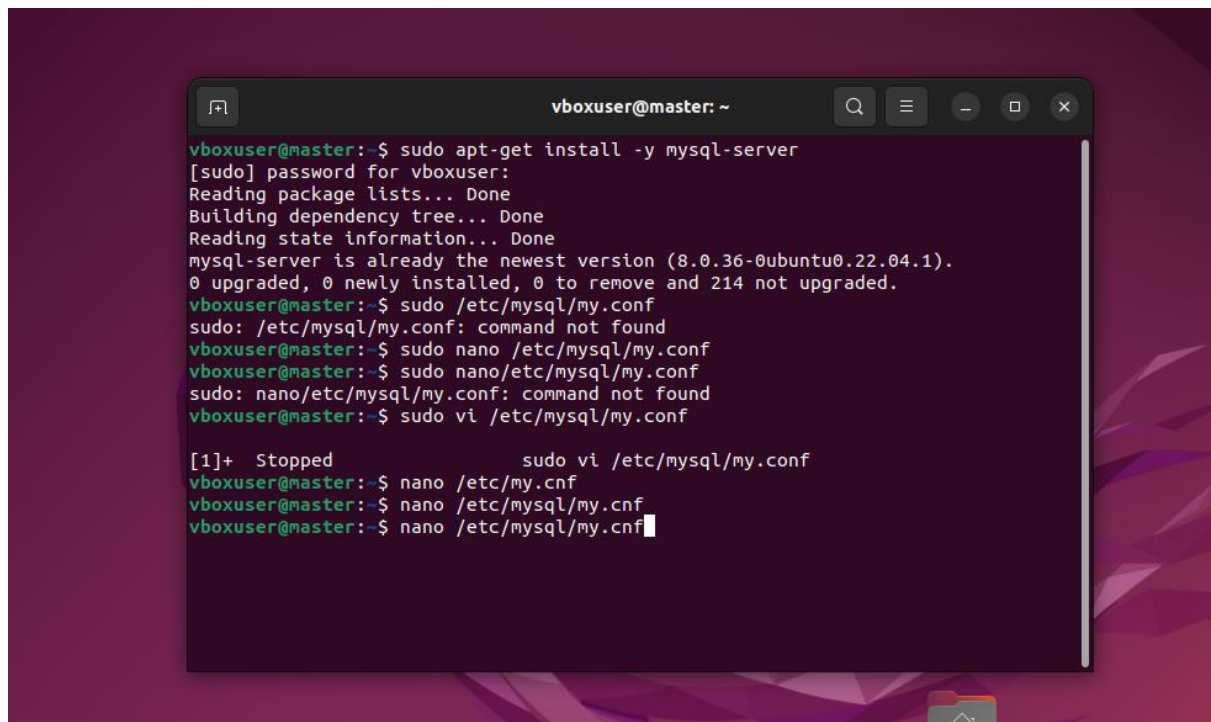
- Pertama instal seluruh aplikasi yang diperlukan seperti mariadb dan mysql-server pada pc master



A terminal window titled 'vboxuser@master: ~' showing the installation and status of MySQL. The user runs `/systemd/system/mysql.service`, followed by `Setting up mysql-server (8.0.36-0ubuntu0.22.04.1) ...`, `Processing triggers for man-db (2.10.2-1) ...`, and `Processing triggers for libc-bin (2.35-0ubuntu3.1) ...`. Then, the user runs `sudo systemctl status mysql`, which displays the status of the MySQL Community Server. The status shows it is loaded, enabled, and active (running) since Wed 2024-04-24 20:16:25 +07; 47s ago. The main PID is 6064 (mysqld), and the status is 'Server is operational'. The user then runs `ifconfig`, showing the network configuration for `enp0s3`.

```
vboxuser@master: ~  
/systemd/system/mysql.service.  
Setting up mysql-server (8.0.36-0ubuntu0.22.04.1) ...  
Processing triggers for man-db (2.10.2-1) ...  
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...  
vboxuser@master:~$ sudo systemctl status mysql  
● mysql.service - MySQL Community Server  
   Loaded: loaded (/lib/systemd/system/mysql.service; enabled; vendor preset:▶  
   Active: active (running) since Wed 2024-04-24 20:16:25 +07; 47s ago  
     Process: 6045 ExecStartPre=/usr/share/mysql/mysql-systemd-start pre (code=e▶  
    Main PID: 6064 (mysqld)  
      Status: "Server is operational"  
     Tasks: 38 (limit: 2261)  
    Memory: 356.5M  
       CPU: 1.014s  
    CGroup: /system.slice/mysql.service  
            └─6064 /usr/sbin/mysqld  
  
Apr 24 20:16:24 master systemd[1]: Starting MySQL Community Server...  
Apr 24 20:16:25 master systemd[1]: Started MySQL Community Server.  
lines 1-14/14 (END)  
vboxuser@master:~$ ifconfig  
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
        inet 192.168.1.11 netmask 255.255.255.0 broadcast 192.168.1.255  
        inet6 2001:448a:10b0:eabe:cf09:7b7b:2614:8670 prefixlen 64 scopeid 0x0
```

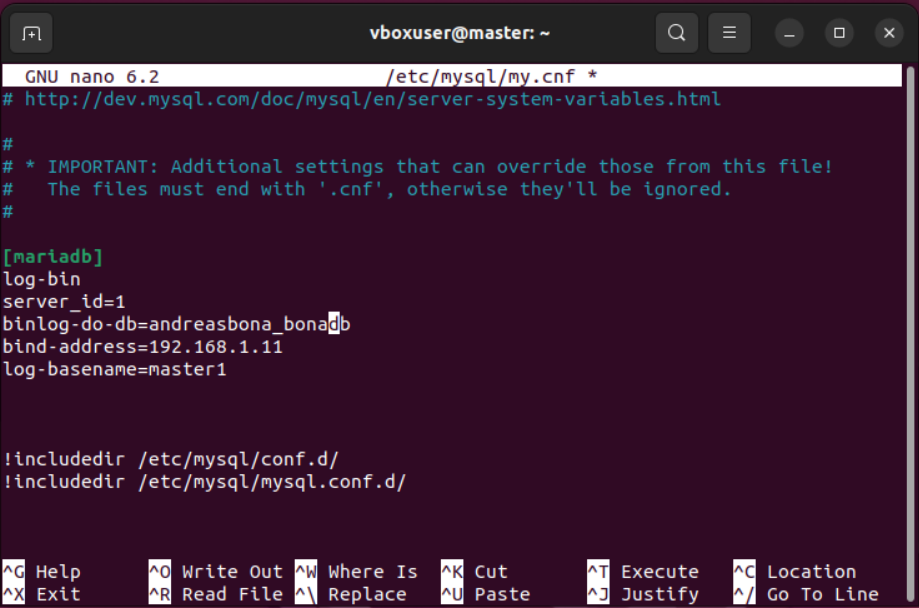
- Cek status system apakah sudah aktif atau belum



A terminal window titled 'vboxuser@master: ~' showing the installation of MySQL server. The user runs `sudo apt-get install -y mysql-server`, which prompts for a password and shows the package lists, dependency tree, and state information. The output indicates that MySQL server is already the newest version (8.0.36-0ubuntu0.22.04.1). The user then attempts to edit the configuration file `/etc/mysql/my.cnf` using `sudo nano /etc/mysql/my.cnf`, `sudo nano/etc/mysql/my.cnf`, and `sudo vi /etc/mysql/my.cnf`. The first two attempts result in 'command not found'. The third attempt results in a prompt to stop the service, which the user confirms by pressing '1'.

```
vboxuser@master:~$ sudo apt-get install -y mysql-server  
[sudo] password for vboxuser:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
mysql-server is already the newest version (8.0.36-0ubuntu0.22.04.1).  
0 upgraded, 0 newly installed, 0 to remove and 214 not upgraded.  
vboxuser@master:~$ sudo /etc/mysql/my.cnf  
sudo: /etc/mysql/my.cnf: command not found  
vboxuser@master:~$ sudo nano /etc/mysql/my.cnf  
vboxuser@master:~$ sudo nano/etc/mysql/my.cnf  
sudo: nano/etc/mysql/my.cnf: command not found  
vboxuser@master:~$ sudo vi /etc/mysql/my.cnf  
[1]+  Stopped                  sudo vi /etc/mysql/my.cnf  
vboxuser@master:~$ nano /etc/my.cnf  
vboxuser@master:~$ nano /etc/mysql/my.cnf  
vboxuser@master:~$ nano /etc/mysql/my.cnf
```

- edit file my.cnf server database kamu melalui SSH, untuk letak file my.cnf biasanya ada di `/etc/my.cnf` atau `/etc/mysql/my.cnf` seperti gambar di bawah ini



```
GNU nano 6.2 /etc/mysql/my.cnf *
# http://dev.mysql.com/doc/mysql/en/server-system-variables.html

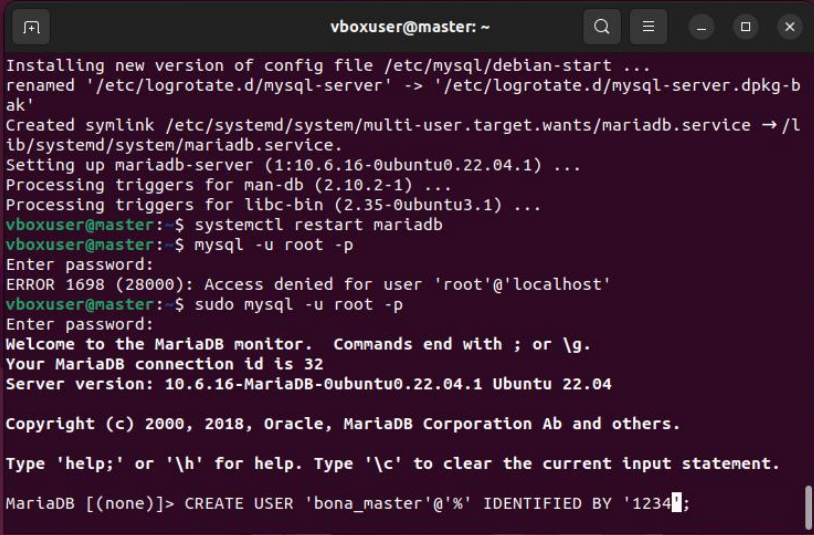
#
# * IMPORTANT: Additional settings that can override those from this file!
#   The files must end with '.cnf', otherwise they'll be ignored.
#

[mariadb]
log-bin
server_id=1
binlog-do-db=andreasbona_bonadb
bind-address=192.168.1.11
log-basename=master1

!includedir /etc/mysql/conf.d/
!includedir /etc/mysql/mysql.conf.d/

^G Help      ^O Write Out ^W Where Is  ^K Cut       ^T Execute  ^C Location
^X Exit      ^R Read File ^\ Replace   ^U Paste     ^J Justify  ^_/ Go To Line
```

- Simpan perubahan lalu restart service mariadb



```
Installing new version of config file /etc/mysql/debian-start ...
renamed '/etc/logrotate.d/mysql-server' -> '/etc/logrotate.d/mysql-server.dpkg-b
ak'
Created symlink /etc/systemd/system/multi-user.target.wants/mariadb.service ->/l
ib/systemd/system/mariadb.service.
Setting up mariadb-server (1:10.6.16-0ubuntu0.22.04.1) ...
Processing triggers for man-db (2.10.2-1) ...
Processing triggers for libc-bin (2.35-0ubuntu3.1) ...
vboxuser@master:~$ systemctl restart mariadb
vboxuser@master:~$ mysql -u root -p
Enter password:
ERROR 1698 (28000): Access denied for user 'root'@'localhost'
vboxuser@master:~$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 32
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

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 USER 'bona_master'@'%' IDENTIFIED BY '1234';
```

- Dan masukkan password mysql untuk user root kamu. Selanjutnya buat user replikasi dengan perintah berikut

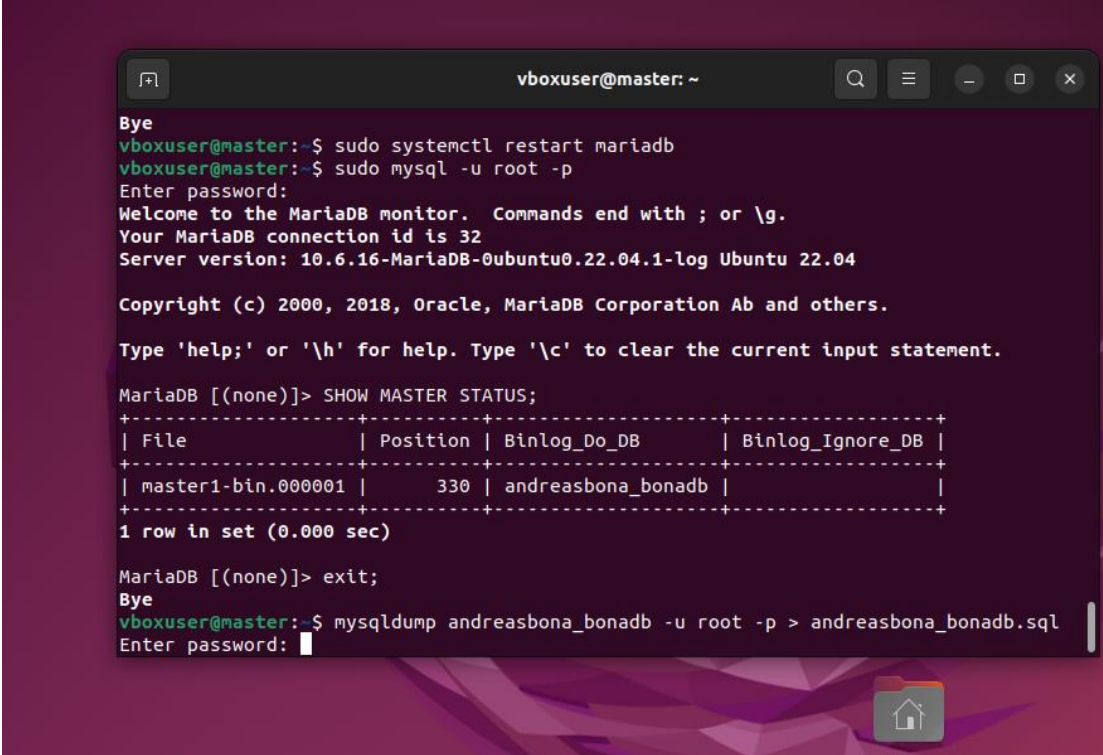
```
vboxuser@master: ~  
vboxuser@master:~$ systemctl restart mariadb  
vboxuser@master:~$ mysql -u root -p  
Enter password:  
ERROR 1698 (28000): Access denied for user 'root'@'localhost'  
vboxuser@master:~$ sudo mysql -u root -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 32  
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04  
  
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 USER 'bona_master'@'%' IDENTIFIED BY '1234';  
Query OK, 0 rows affected (0.008 sec)  
  
MariaDB [(none)]> GRANT REPLICATION SLAVE ON *.* TO 'bona_master'@'%';  
Query OK, 0 rows affected (0.002 sec)  
  
MariaDB [(none)]> FLUSH TABLES WITH READ LOCK;  
Query OK, 0 rows affected (0.012 sec)  
  
MariaDB [(none)]> 
```

- Bona_master adalah user database yang akan digunakan untuk menjalankan replikasi dan bukan database yang akan direplikasi dan 1234 adalah password untuk user bona_master tersebut.

```
vboxuser@master: ~  
Empty set (0.000 sec)  
  
MariaDB [(none)]> exit  
Bye  
vboxuser@master:~$ sudo systemctl restart mariadb  
vboxuser@master:~$ sudo mysql -u root -p  
Enter password:  
Welcome to the MariaDB monitor. Commands end with ; or \g.  
Your MariaDB connection id is 32  
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1-log Ubuntu 22.04  
  
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 MASTER STATUS;  
+-----+-----+-----+-----+  
| File           | Position | Binlog_Do_DB | Binlog_Ignore_DB |  
+-----+-----+-----+-----+  
| master1-bin.000001 |      330 | andreasbona_bonadb |                  |  
+-----+-----+-----+-----+  
1 row in set (0.000 sec)  
  
MariaDB [(none)]> 
```

- Kunci tabel agar hanya bisa dibaca dan tidak ada perubahan.
- Kemudian periksa nama dan posisi log biner pada server master dengan perintah ini

- Catat dan simpan nama file dan posisi log tersebut kemudian keluar dari mysql



A terminal window titled 'vboxuser@master: ~' showing the following commands and output:

```
Bye
vboxuser@master:~$ sudo systemctl restart mariadb
vboxuser@master:~$ sudo mysql -u root -p
Enter password:
Welcome to the MariaDB monitor.  Commands end with ; or \g.
Your MariaDB connection id is 32
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1-log Ubuntu 22.04

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

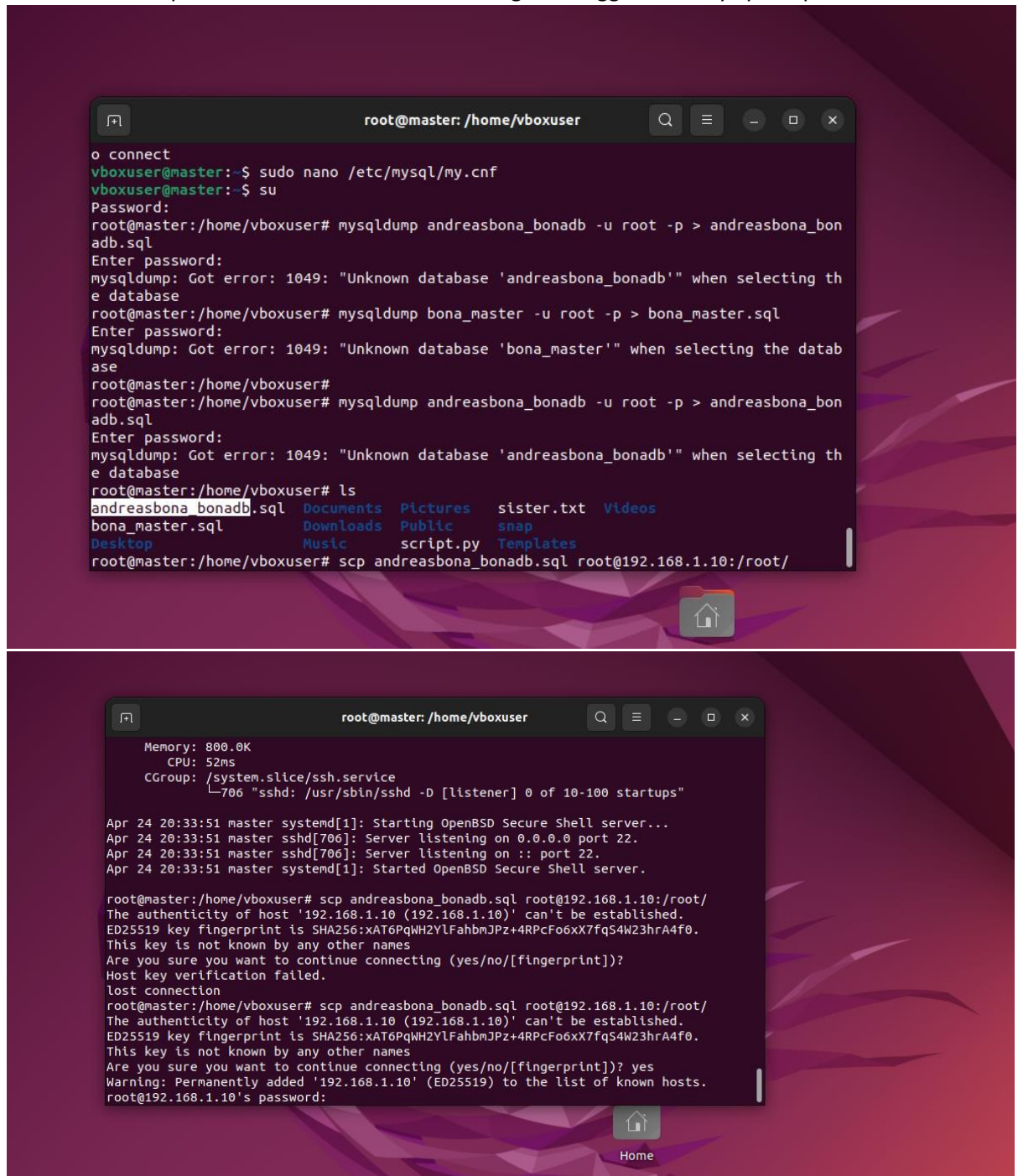
Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

MariaDB [(none)]> SHOW MASTER STATUS;
+-----+-----+-----+-----+
| File           | Position | Binlog_Do_DB | Binlog_Ignore_DB |
+-----+-----+-----+-----+
| master1-bin.000001 |      330 | andreasbona_bonadb |                    |
+-----+-----+-----+-----+
1 row in set (0.000 sec)

MariaDB [(none)]> exit;
Bye
vboxuser@master:~$ mysqldump andreasbona_bonadb -u root -p > andreasbona_bonadb.sql
Enter password: 
```

The terminal window has a dark background with a purple geometric pattern. The output of the `SHOW MASTER STATUS;` command is displayed in a table format with dashed borders. The cursor is currently on the password prompt for the `mysqldump` command.

- Membuat Backup database dari server master dengan menggunakan mysqldump



The first screenshot shows a terminal window with the following commands and output:

```

root@master: /home/vboxuser
o connect
vboxuser@master:~$ sudo nano /etc/mysql/my.cnf
vboxuser@master:~$ su
Password:
root@master: /home/vboxuser# mysqldump andreasbona_bonadb -u root -p > andreasbona_bonadb.sql
Enter password:
mysqldump: Got error: 1049: "Unknown database 'andreasbona_bonadb'" when selecting the database
root@master: /home/vboxuser# mysqldump bona_master -u root -p > bona_master.sql
Enter password:
mysqldump: Got error: 1049: "Unknown database 'bona_master'" when selecting the database
root@master: /home/vboxuser#
root@master: /home/vboxuser# mysqldump andreasbona_bonadb -u root -p > andreasbona_bonadb.sql
Enter password:
mysqldump: Got error: 1049: "Unknown database 'andreasbona_bonadb'" when selecting the database
root@master: /home/vboxuser# ls
andreasbona_bonadb.sql  Documents  Pictures  sister.txt  Videos
bona_master.sql        Downloads  Public    snap
Desktop               Music      script.py Templates
root@master: /home/vboxuser# scp andreasbona_bonadb.sql root@192.168.1.10:/root/

```

The second screenshot shows the terminal window with the following commands and output:

```

root@master: /home/vboxuser
Memory: 800.0K
CPU: 52ms
CGroup: /system.slice/ssh.service
└─706 "sshd: /usr/sbin/sshd -D [listener] 0 of 10-100 startups"

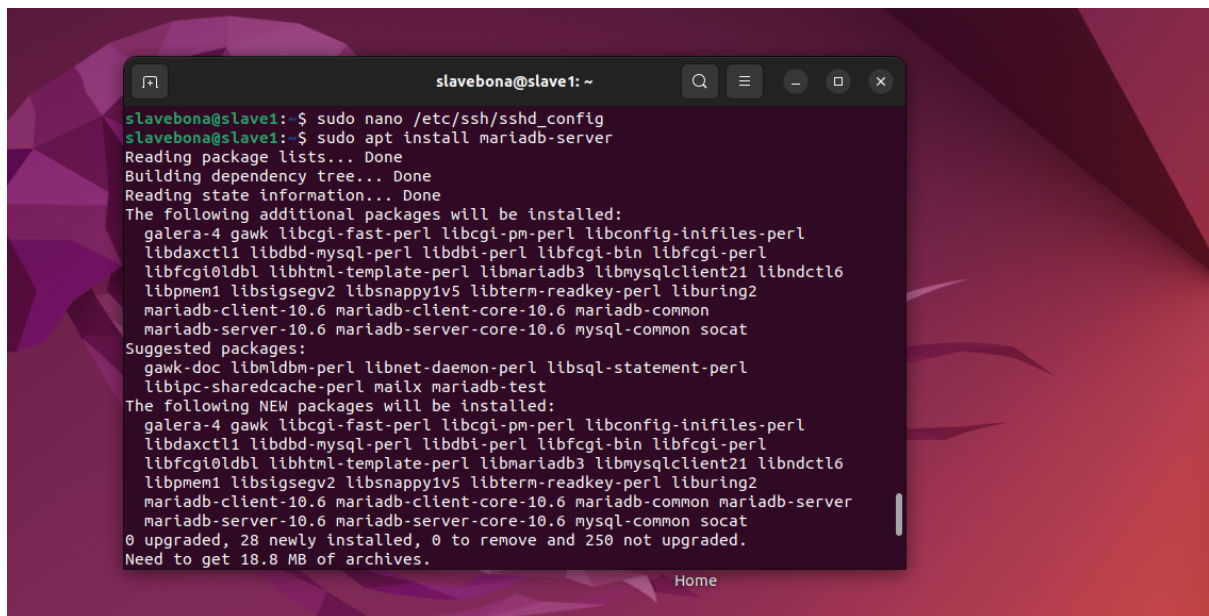
Apr 24 20:33:51 master systemd[1]: Starting OpenBSD Secure Shell server...
Apr 24 20:33:51 master sshd[706]: Server listening on 0.0.0.0 port 22.
Apr 24 20:33:51 master sshd[706]: Server listening on :: port 22.
Apr 24 20:33:51 master systemd[1]: Started OpenBSD Secure Shell server.

root@master: /home/vboxuser# scp andreasbona_bonadb.sql root@192.168.1.10:/root/
The authenticity of host '192.168.1.10 (192.168.1.10)' can't be established.
ED25519 key fingerprint is SHA256:xAT6PqWH2YLFahbnJPz+4RPFo6xX7fqS4W23hrA4f0.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])?
Host key verification failed.
lost connection
root@master: /home/vboxuser# scp andreasbona_bonadb.sql root@192.168.1.10:/root/
The authenticity of host '192.168.1.10 (192.168.1.10)' can't be established.
ED25519 key fingerprint is SHA256:xAT6PqWH2YLFahbnJPz+4RPFo6xX7fqS4W23hrA4f0.
This key is not known by any other names
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added '192.168.1.10' (ED25519) to the list of known hosts.
root@192.168.1.10's password:

```

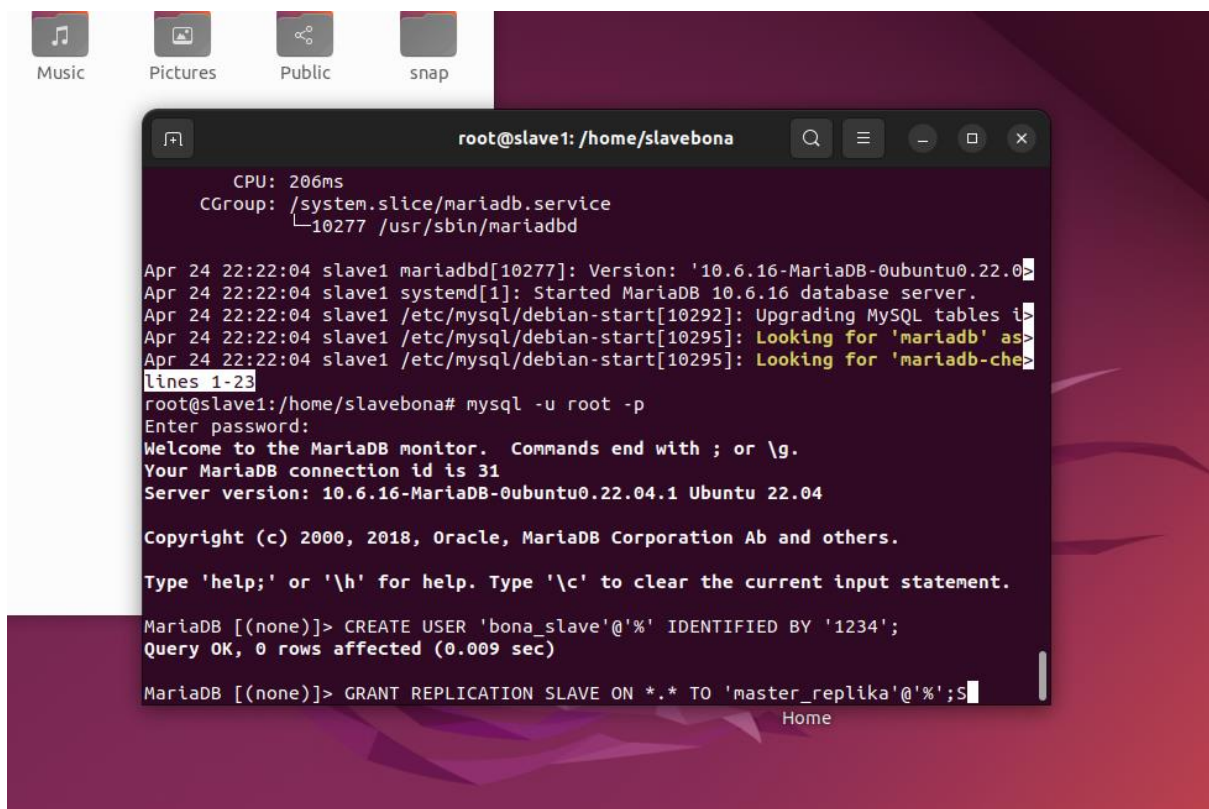
- Transfer file backup database tersebut ke server slave
- Dan masukkan password root untuk login ke ssh server slave.
- Sekarang kembali login ke mysql server master dan buka kunci database yang dikunci tadi.

2. Konfigurasi Replikasi Di Server Master



```
slavebona@slave1: ~  
slavebona@slave1:~$ sudo nano /etc/ssh/sshd_config  
slavebona@slave1:~$ sudo apt install mariadb-server  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  galera-4 gawk libcgi-fast-perl libcgi-pm-perl libconfig-inifiles-perl  
  libdaxctl1 libdbd-mysql-perl libdbi-perl libfcgi-bin libfcgi-perl  
  libfcgi0ldbl libhtml-template-perl libmariadb3 libmysqlclient21 libndctl6  
  libpmem1 libsigsegv2 libsnappy1v5 libterm-readkey-perl liburing2  
  mariadb-client-10.6 mariadb-client-core-10.6 mariadb-common  
  mariadb-server-10.6 mariadb-server-core-10.6 mysql-common socat  
Suggested packages:  
  gawk-doc libnldb-perl libnet-daemon-perl libsql-statement-perl  
  libipc-sharedcache-perl mailx mariadb-test  
The following NEW packages will be installed:  
  galera-4 gawk libcgi-fast-perl libcgi-pm-perl libconfig-inifiles-perl  
  libdaxctl1 libdbd-mysql-perl libdbi-perl libfcgi-bin libfcgi-perl  
  libfcgi0ldbl libhtml-template-perl libmariadb3 libmysqlclient21 libndctl6  
  libpmem1 libsigsegv2 libsnappy1v5 libterm-readkey-perl liburing2  
  mariadb-client-10.6 mariadb-client-core-10.6 mariadb-common mariadb-server  
  mariadb-server-10.6 mariadb-server-core-10.6 mysql-common socat  
0 upgraded, 28 newly installed, 0 to remove and 250 not upgraded.  
Need to get 18.8 MB of archives.  
Home
```

- Lakukan hal yang sama instal semua aplikasi yang diperlukan



```
root@slave1: /home/slavebona  
CPU: 206ms  
CGroup: /system.slice/mariadb.service  
└─10277 /usr/sbin/mariabdb  
Apr 24 22:22:04 slave1 mariabdb[10277]: Version: '10.6.16-MariaDB-0ubuntu0.22.04.1'  
Apr 24 22:22:04 slave1 systemd[1]: Started MariaDB 10.6.16 database server.  
Apr 24 22:22:04 slave1 /etc/mysql/debian-start[10292]: Upgrading MySQL tables i  
Apr 24 22:22:04 slave1 /etc/mysql/debian-start[10295]: Looking for 'mariadb' as  
Apr 24 22:22:04 slave1 /etc/mysql/debian-start[10295]: Looking for 'mariadb-che  
lines 1-23  
root@slave1:/home/slavebona# mysql -u root -p  
Enter password:  
Welcome to the MariaDB monitor.  Commands end with ; or \g.  
Your MariaDB connection id is 31  
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04  
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 USER 'bona_slave'@'%' IDENTIFIED BY '1234';  
Query OK, 0 rows affected (0.009 sec)  
MariaDB [(none)]> GRANT REPLICATION SLAVE ON *.* TO 'master_replika'@'%';S  
Home
```

- Selanjutnya login ke MySQL menggunakan user root di SSH

```
root@slave1: /home/slavebona

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

MariaDB [(none)]> CREATE DATABASE bona_slave;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> CREATE DATABASE andreasbona_bonadb;
Query OK, 1 row affected (0.000 sec)

MariaDB [(none)]> GRANT ALL PRIVILEGES ON andreasbona_bonadb.* TO 'bona_slave'@'%' IDENTIFIED BY '1234';
Query OK, 0 rows affected (0.002 sec)

MariaDB [(none)]> FLUSH PRIVILEGES;
Query OK, 0 rows affected (0.001 sec)

MariaDB [(none)]> exit
Bye
root@slave1:/home/slavebona# ls
andreasbona_bonadb.sql  Documents  Music      Public  Templates
Desktop                Downloads  Pictures   snap    Videos
root@slave1:/home/slavebona# mysql -u root -p andreasbona_bonadb < andreasbona_bonadb.sql
Enter password:
root@slave1:/home/slavebona#
```

```
root@slave1: /home/slavebona

-> MASTER_PASSWORD='PASSWORD_USER_master_replika',
-> MASTER_PORT=3306,
-> MASTER_LOG_FILE='master1-bin.000002',
-> Ctrl-C -- exit!
Aborted
root@slave1:/home/slavebona# mysql -u root -p
Enter password:
Welcome to the MariaDB monitor. Commands end with ; or \g.
Your MariaDB connection id is 32
Server version: 10.6.16-MariaDB-0ubuntu0.22.04.1 Ubuntu 22.04

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

MariaDB [(none)]> CHANGE MASTER TO MASTER_HOST='192.168.1.11',
-> MASTER_USER='bona_master',
-> MASTER_PASSWORD='1234',
-> MASTER_PORT=3306,
-> MASTER_LOG_FILE='master1-bin.000001',
-> MASTER_LOG_POS=330;
Query OK, 0 rows affected (0.016 sec)

MariaDB [(none)]>
```

- Ganti bagian MASTER_HOST dengan IP server master

- MASTER_USER dan MASTER_PASSWORD isi dengan user dan password yang dibuat di server master untuk replikasi tadi
- MASTER_LOG_FILE isi dengan nama file log dari server master yang disalin tadi
- MASTER_LOG_POS di isi dengan posisi log pada output di server master tadi.

Jika sudah kita mulai server slave dengan perintah:

```

root@slave1: /home/slavebona
MariaDB [(none)]> SHOW SLAVE STATUS\G;
***** 1. row *****
Slave_IO_State: Connecting to master
Master_Host: 192.168.1.11
Master_User: bona_master
Master_Port: 3306
Connect_Retry: 60
Master_Log_File: master1-bin.000001
Read_Master_Log_Pos: 330
Relay_Log_File: slave1-relay-bin.000001
Relay_Log_Pos: 4
Relay_Master_Log_File: master1-bin.000001
Slave_IO_Running: Connecting
Slave_SQL_Running: Yes
Replicate_Do_DB: andreasbona_bonadb
Replicate_Ignore_DB:
Replicate_Do_Table:
Replicate_Ignore_Table:
Replicate_Wild_Do_Table:
Replicate_Wild_Ignore_Table:
Last_Errno: 0
Last_Error:
Skip_Counter: 0
Exec_Master_Log_Pos: 330
  
```

- Status conencting to master

3. Kesimpulan

Replikasi database adalah proses menyalin database dari suatu server ke server database lainnya setiap ada perubahan pada database yang dijadikan sebagai master, Sehingga jika kita memiliki database yang sama di beberapa server yang berbeda dan ingin menambah atau menghapus isi database tersebut kita tidak perlu melakukan perubahan di setiap database secara manual, kita cukup merubah isi database di server yang dijadikan master dan otomatis database yang ada di server slave akan ikut berubah.

Tujuan dari penggunaan replikasi database ini banyak, tapi secara umum biasanya digunakan untuk backup database atau untuk keperluan analisa database yang cukup besar, karena saat melakukan analisa database yang memiliki isi cukup banyak biasanya menguras resource server sehingga jika analisa database dilakukan di server produksi tentu akan membebani server tersebut dan akan mempengaruhi kinerja dari situs atau aplikasi yang berjalan di server tersebut.