

LAPORAN PRAKTIKUM 1

Instalasi PostgreSQL

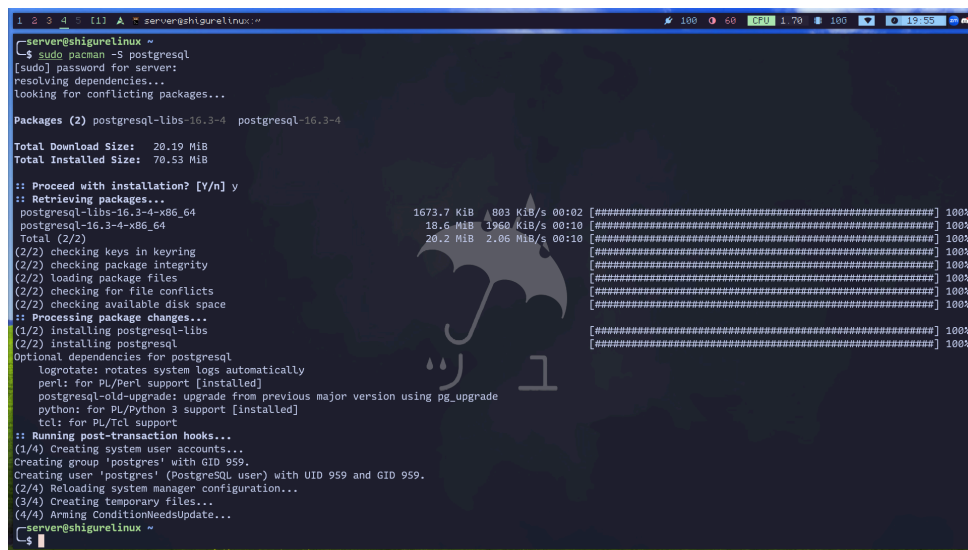
Mata Kuliah: Sistem basis data

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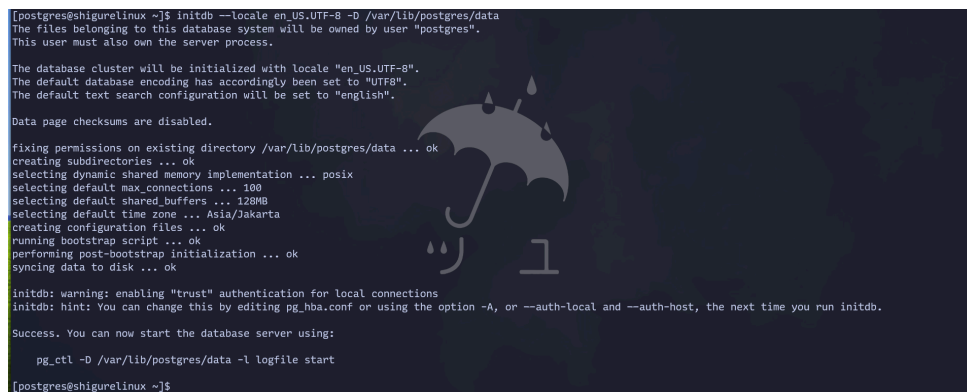
Untuk instalasi postgresQL ini akan dilakukan pada sistem operasi Arch linux, untuk menginstallnya menggunakan syntax “Sudo pacman -S postgresql” untuk menginstall postgresQL pada perangkat.



```
server@shigurelinux ~  
└─$ sudo pacman -S postgresql  
[sudo] password for server:  
resolving dependencies...  
looking for conflicting packages...  
  
Packages (2) postgresql-libs-16.3-4 postgresql-16.3-4  
  
Total Download Size: 20.19 MiB  
Total Installed Size: 70.53 MiB  
  
:: Proceed with installation? [Y/n] y  
:: Retrieving packages...  
postgresql-libs-16.3-4-x86_64 1673.7 KiB 803 KiB/s 00:02 [#####] 100%  
postgresql-16.3-4-x86_64 18.6 MiB 1960 KiB/s 00:10 [#####] 100%  
Total (2/2) 20.2 MiB 2.06 MiB/s 00:10 [#####] 100%  
(2/2) checking keys in keyring [#####] 100%  
(2/2) checking package integrity [#####] 100%  
(2/2) loading package files [#####] 100%  
(2/2) checking for file conflicts [#####] 100%  
(2/2) checking available disk space [#####] 100%  
:: Processing package changes...  
(1/2) installing postgresql-libs [#####] 100%  
(2/2) installing postgresql [#####] 100%  
Optional dependencies for postgresql  
logrotate: rotates system logs automatically  
perl: for PL/Perl support [installed]  
postgresql-oid-upgrader: upgrade from previous major version using pg_upgrade  
python: for PL/Python 3 support [installed]  
tcl: for PL/Tcl support  
:: Running post-transaction hooks...  
(1/4) Creating system user accounts...  
Creating group 'postgres' with GID 959.  
Creating user 'postgres' (PostgreSQL user) with UID 959 and GID 959.  
(2/4) Reloading system manager configuration...  
(3/4) Creating temporary files...  
(4/4) Arming ConditionNeedsUpdate...  
server@shigurelinux ~
```

Figure 1: Proses Instalasi PostgreSQL

setelah itu menginisialisasi database dari postgresQL dengan syntax “Sudo -u postgres psql” untuk menjadi user postgres kemudian menginisialisasi database dengan syntax “initdb -D /var/lib/postgres/data” agar nantinya cache database tersimpan disana



```
[postgres@shigurelinux ~]$ initdb --locale en_US.UTF-8 -D /var/lib/postgres/data  
The files belonging to this database system will be owned by user "postgres".  
This user must also own the server process.  
  
The database cluster will be initialized with locale "en_US.UTF-8".  
The default database encoding has accordingly been set to "UTF8".  
The default text search configuration will be set to "english".  
  
Data page checksums are disabled.  
  
fixing permissions on existing directory /var/lib/postgres/data ... ok  
creating subdirectories ... ok  
selecting dynamic shared memory implementation ... posix  
selecting default max_connections ... 100  
selecting default shared_buffers ... 128MB  
selecting default time zone ... Asia/Jakarta  
creating configuration files ... ok  
running bootstrap script ... ok  
performing post-bootstrap initialization ... ok  
syncing data to disk ... ok  
  
initdb: warning: enabling "trust" authentication for local connections  
initdb: hint: You can change this by editing pg_hba.conf or using the option -A, or --auth-local and --auth-host, the next time you run initdb.  
  
Success. You can now start the database server using:  
  
pg_ctl -D /var/lib/postgres/data -l logfile start  
[postgres@shigurelinux ~]$
```

Figure 2: Proses Inisialisasi Database

setelah menginisialisasi database maka perlu dijalankan postgresQL nya sebagai *Daemon Service* dengan syntax “Sudo systemctl start postgresql” dan untuk mengetahui status dari service nya maka gunakan syntax “Sudo systemctl status postgresql”.

```
server@shigurelinux ~  
$ sudo systemctl enable postgresql  
Created symlink '/etc/systemd/system/multi-user.target.wants/postgresql.service' → '/usr/lib/systemd/system/postgresql.service'.  
server@shigurelinux ~  
$ sudo systemctl start postgresql  
server@shigurelinux ~  
$ sudo systemctl status postgresql  
● postgresql.service - PostgreSQL database server  
   Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; preset: disabled)  
   Active: active (running) since Fri 2024-09-13 20:07:03 WIB; 17s ago  
  Invocation: 637acafd15294adc92866796ad4325e7  
    Docs: man:postgres(1)  
  Process: 139774 ExecStartPre=/usr/bin/postgresql-check-db-dir ${PGROOT}/data (code=exited, status=0/SUCCESS)  
 Main PID: 139776 (postgres)  
   Tasks: 6 (limit: 4427)  
  Memory: 17.1M (peak: 17.6M)  
    CPU: 163ms  
   CGroup: /system.slice/postgresql.service  
           └─139776 /usr/bin/postgres -D /var/lib/postgres/data  
             └─139778 "postgres: checkpointer "  
               └─139779 "postgres: background writer "  
                 └─139781 "postgres: walwriter "  
                   └─139782 "postgres: autovacuum launcher "  
                     └─139783 "postgres: logical replication launcher "  
  
Sep 13 20:07:03 shigurelinux systemd[1]: Starting PostgreSQL database server...  
Sep 13 20:07:03 shigurelinux postgres[139776]: 2024-09-13 20:07:03.441 WIB [139776] LOG: starting PostgreSQL 16.3 on x86_64-pc-linux-gnu, compiled by gcc (GCC) 14.2.1 20240805, 64-bit  
Sep 13 20:07:03 shigurelinux postgres[139776]: 2024-09-13 20:07:03.442 WIB [139776] LOG: listening on IPv6 address ":::1", port 5432  
Sep 13 20:07:03 shigurelinux postgres[139776]: 2024-09-13 20:07:03.442 WIB [139776] LOG: listening on IPv4 address "127.0.0.1", port 5432  
Sep 13 20:07:03 shigurelinux postgres[139776]: 2024-09-13 20:07:03.752 WIB [139776] LOG: listening on unix socket "/run/postgresql/.s.PGSQL.5432"  
Sep 13 20:07:03 shigurelinux postgres[139780]: 2024-09-13 20:07:03.855 WIB [139780] LOG: database system was shut down at 2024-09-13 20:06:08 WIB  
Sep 13 20:07:03 shigurelinux postgres[139776]: 2024-09-13 20:07:03.936 WIB [139776] LOG: database system is ready to accept connections  
Sep 13 20:07:03 shigurelinux systemd[1]: Started PostgreSQL database server.  
server@shigurelinux ~  
$
```

Figure 3: Proses Memulai PostgreSQL

kemudian membuka user interface dari postgresQL contohnya yang akan digunakan adalah phppgadmin pada web browser.

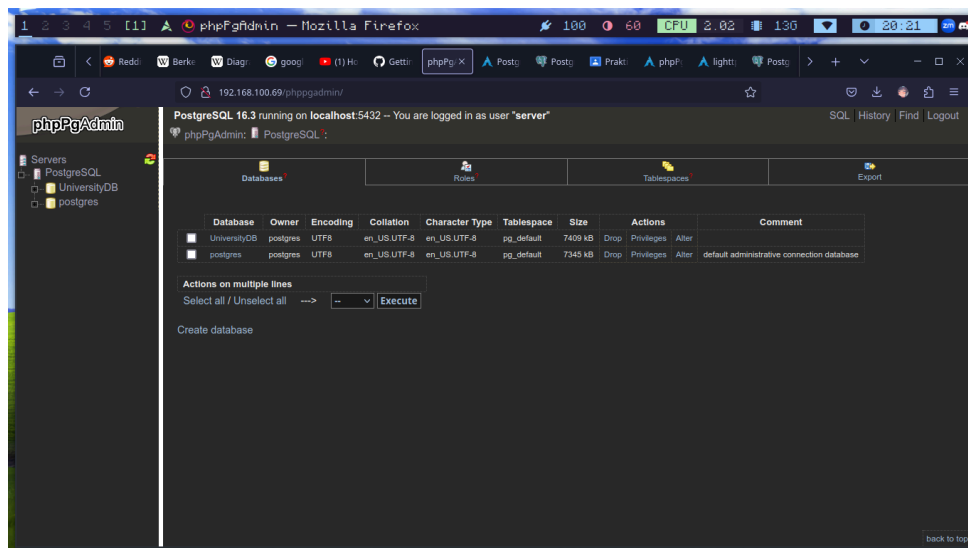


Figure 4: Interface phpPgAdmin

kemudian klik create database dan masukan nama database yang diinginkan, untuk contohnya “UniversityDB” untuk database universitas. setelah itu klik “UniversityDB” kemudian klik “SQL” untuk membuka interface SQL pada database.

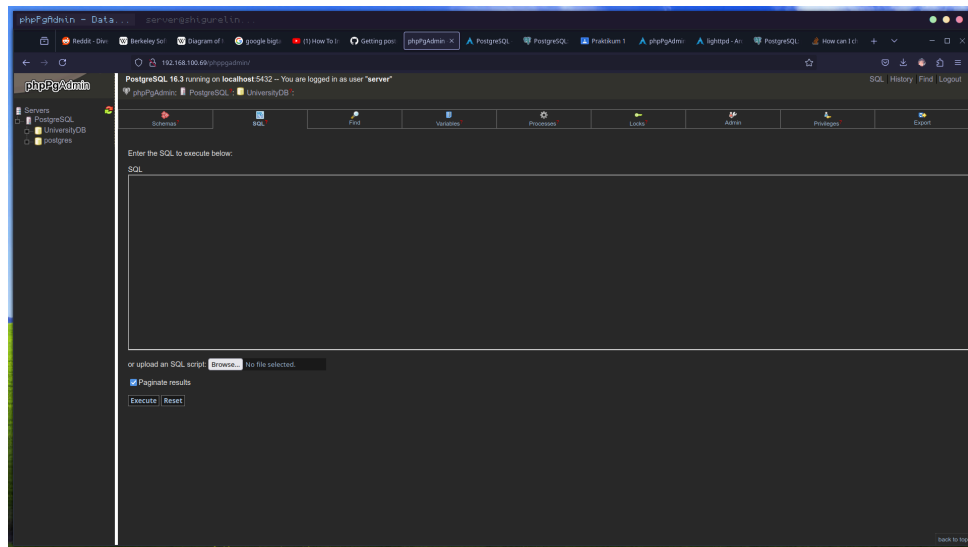


Figure 5: Interface SQL

kemudian klik tombol “Upload” pada bagian “or Upload an SQL scripts” untuk menjalankan scripts “UniversityDB.sql” yang telah disediakan

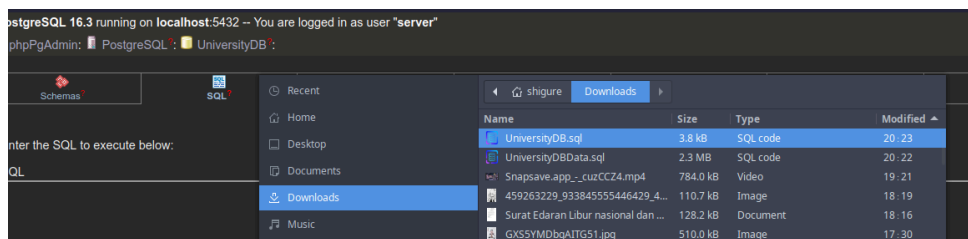


Figure 6: Upload SQL Script

tunggu beberapa saat untuk perangkat mengeksekusi scriptnya dan kemudian akan menampilkan hasilnya apakah error atau tidak.

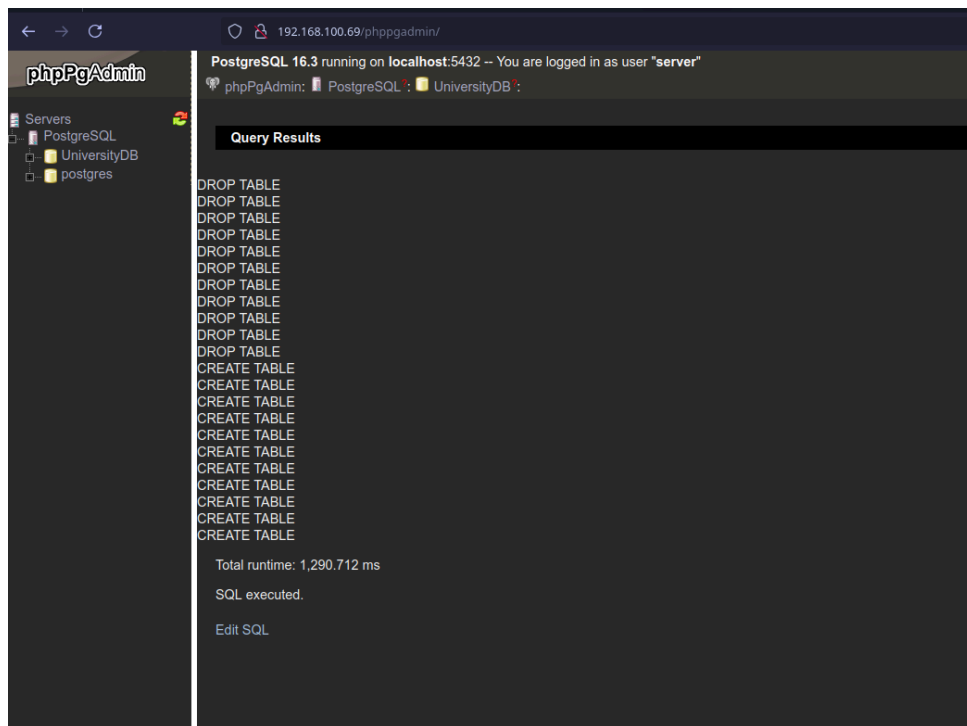


Figure 7: Output SQL

kemudian lakukan hal yang sama pada “UniversityDBData.sql”.

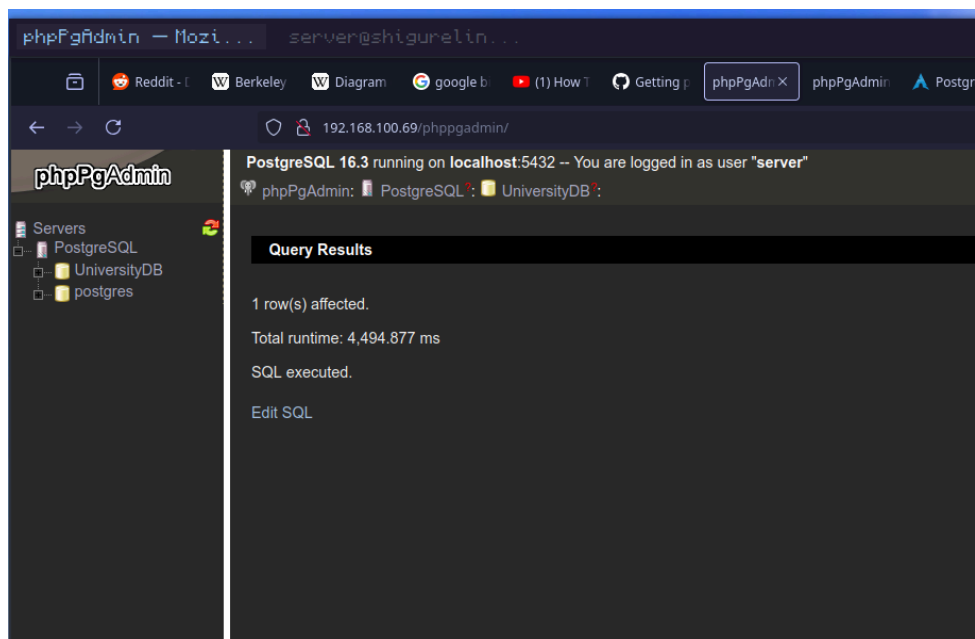


Figure 8: Output SQL

setelah itu maka data telah berhasil di import ke dalam postgresQL.

	Table	Owner	Tablespace	Estimated row count		
<input type="checkbox"/>	advisor	server		2000	Browse	Select
<input type="checkbox"/>	classroom	server		-1	Browse	Select
<input type="checkbox"/>	course	server		200	Browse	Select
<input type="checkbox"/>	department	server		-1	Browse	Select
<input type="checkbox"/>	instructor	server		-1	Browse	Select
<input type="checkbox"/>	prereq	server		100	Browse	Select
<input type="checkbox"/>	section	server		100	Browse	Select
<input type="checkbox"/>	student	server		2000	Browse	Select
<input type="checkbox"/>	takes	server		30000	Browse	Select
<input type="checkbox"/>	teaches	server		100	Browse	Select
<input type="checkbox"/>	time_slot	server		-1	Browse	Select
Actions on multiple lines						

Figure 9: database postgres

Menjalankan Query

1. `SELECT * FROM instructor;`

Query Results			
select * from instructor;			
Submit Query			
Id	name	dept_name	salary
63395	McKinnon	Cybernetics	94333.99
78699	Pingr	Statistics	59303.62
96895	Mird	Marketing	119921.41
4233	Luo	English	88791.45
4034	Murata	Athletics	61387.56
50885	Konstantinides	Languages	32570.50
79653	Levine	Elec. Eng.	89805.83
50330	Shuming	Physics	108011.81
80759	Queiroz	Biology	45538.32
73623	Sullivan	Elec. Eng.	90038.09
97302	Bertolino	Mech. Eng.	51647.57
57180	Hau	Accounting	43966.29
74420	Voronina	Physics	121141.99
35579	Soisalon-Soininen	Psychology	62579.61
31955	Moreira	Accounting	71351.42
37687	Arias	Statistics	104563.38
6569	Mingoz	Finance	105311.38
16807	Yazdi	Athletics	98333.65
14365	Lembr	Accounting	32241.56
90643	Choll	Statistics	57807.09
81991	Valtchev	Biology	77036.18
95030	Arinb	Statistics	54805.11
15347	Bawa	Athletics	72140.88
74426	Kenje	Marketing	106554.73
42782	Vicentino	Elec. Eng.	34272.67
58558	Dusserre	Marketing	66143.25
63287	Jaekel	Athletics	103146.87
59795	Desyl	Languages	48803.38
22591	DAgostino	Psychology	59706.49
48570	Sarkar	Pol. Sci.	87549.80

30 row(s)

Figure 10: Menjalankan Query No. 1

2. `select name from instructor where dept_name = 'Comp. Sci.' and salary > 70000;`

select name from instructor where dept_name = 'Comp. Sci.' and salary > 70000	
Submit Query	
name	
Bondi	
Bourrier	

2 row(s)

Edit SQL Expand Download Refresh

Figure 11: Menjalankan Query No. 2

3. `select * from instructor, department where instructor.dept_name = department.dept_name;`

```
select * from instructor, department where instructor.dept_name = department.dept_name
```

Submit Query

id	name	dept_name	salary	dept_name	building	budget
63395	McKinnon	Cybernetics	94333.99	Cybernetics	Mercer	794541.46
78699	Pingr	Statistics	59303.62	Statistics	Taylor	395051.74
96895	Mird	Marketing	119921.41	Marketing	Lambeau	210627.58
4233	Luo	English	88791.45	English	Palmer	611042.66
4034	Murata	Athletics	61387.56	Athletics	Bronfman	734550.70
50885	Konstantinides	Languages	32570.50	Languages	Linderman	601283.60
79653	Levine	Elec. Eng.	89805.83	Elec. Eng.	Main	276527.61
50330	Shuming	Physics	108011.81	Physics	Wrigley	942162.76
80759	Queiroz	Biology	45538.32	Biology	Candlestick	647610.55
73623	Sullivan	Elec. Eng.	90038.09	Elec. Eng.	Main	276527.61
97302	Bertolino	Mech. Eng.	51647.57	Mech. Eng.	Rauch	520350.65
57180	Hau	Accounting	43966.29	Accounting	Saucon	441840.92
74420	Voronina	Physics	121141.99	Physics	Wrigley	942162.76
35579	Soisalon-Soininen	Psychology	62579.61	Psychology	Thompson	848175.04
31955	Moreira	Accounting	71351.42	Accounting	Saucon	441840.92
37687	Arias	Statistics	104563.38	Statistics	Taylor	395051.74
6569	Mingoz	Finance	105311.38	Finance	Candlestick	866831.75
16807	Yazdi	Athletics	98333.65	Athletics	Bronfman	734550.70
14365	Lembr	Accounting	32241.56	Accounting	Saucon	441840.92
90643	Choll	Statistics	57807.09	Statistics	Taylor	395051.74
81991	Vaitchev	Biology	77036.18	Biology	Candlestick	647610.55
95030	Arinb	Statistics	54805.11	Statistics	Taylor	395051.74
15347	Bawa	Athletics	72140.88	Athletics	Bronfman	734550.70
74426	Kenje	Marketing	106554.73	Marketing	Lambeau	210627.58
42782	Vicentino	Elec. Eng.	34272.67	Elec. Eng.	Main	276527.61
58558	Dusserre	Marketing	66143.25	Marketing	Lambeau	210627.58
63287	Jaekel	Athletics	103146.87	Athletics	Bronfman	734550.70
59795	Desyl	Languages	48803.38	Languages	Linderman	601283.60
22591	D'Agostino	Psychology	59706.49	Psychology	Thompson	848175.04
48570	Sarkar	Pol. Sci.	87549.80	Pol. Sci.	Whitman	573745.09

30 row(s)

Figure 12: Menjalankan Query No. 3