

Pengembangan Aplikasi Web

Pertemuan Ke-8 (Sistem Basisdata dan Aplikasi Web)

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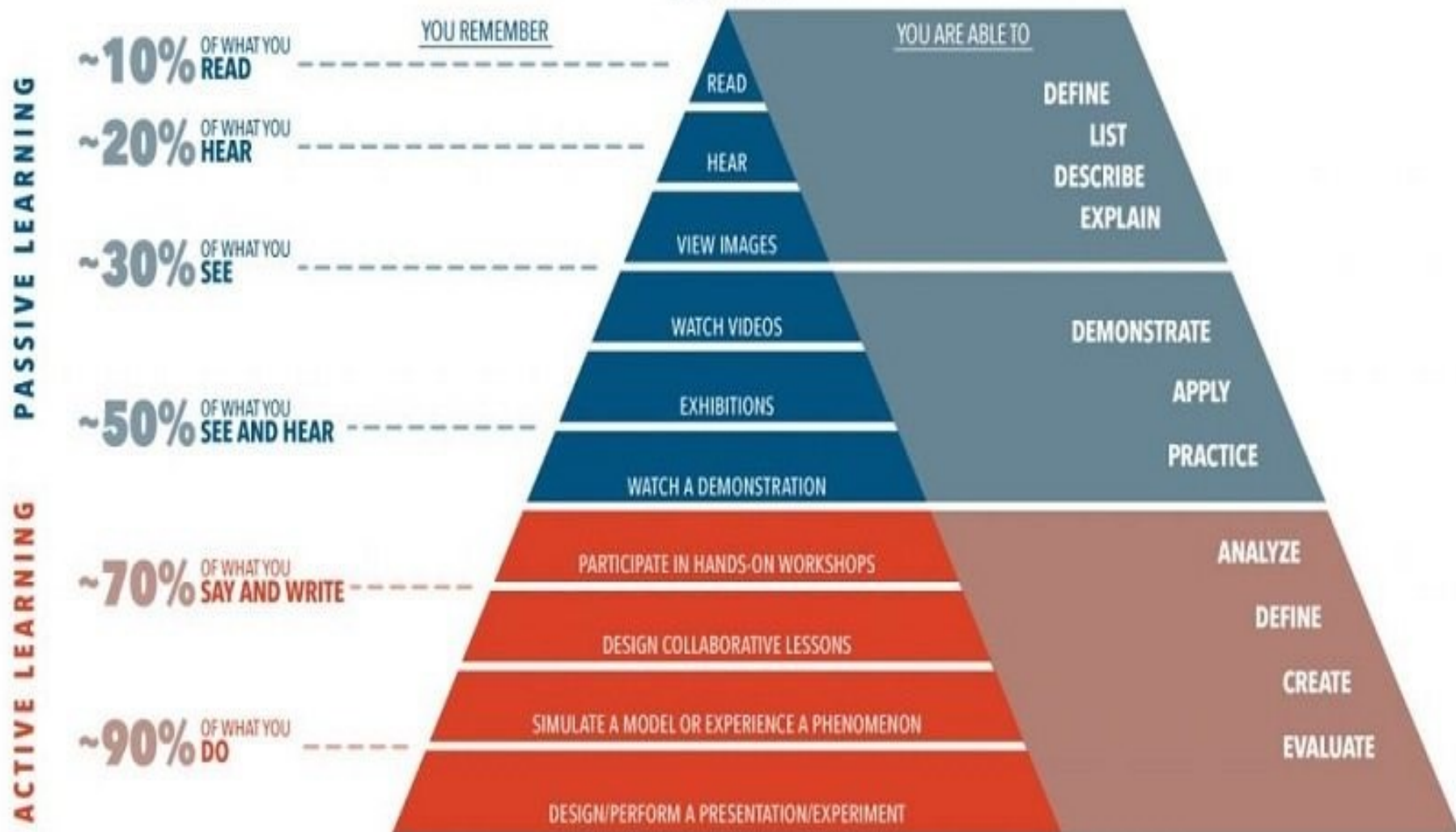
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Semester Gasal 2023/2024

S1 Teknik Informatika – Universitas Trunojoyo Madura (UTM)

CONE OF EXPERIENCE

EDGAR DALE



<https://elearningindustry.com/>

SOFT SKILLS FOR STUDENTS

6 SKILLS TO HELP YOU SUCCEED



1 Problem Solving

Do you see problems as interesting opportunities? Problem solvers anticipate potential stumbling blocks and act to prevent them or mitigate their effects.

TIP: You don't always need to start by trying to solve the problem. First, aim to understand the root of the problem.



2 Creativity

Are you able to think outside of the box even when you're not asked to? Everyone has creative abilities. Creative thinking skills help you to look at problems and situations from a fresh perspective.



3 Communication

Are you an effective communicator and active listener? Communication skills will help you understand others and be better understood in return. This can help make each interaction you have in both your work and social life a more positive experience.




4 Time Management

Are you an organized person who meets deadlines? Good time management skills enable you to do more in less time, helping you reduce stress and maintain a better work-life balance.

TIP: Prioritize your tasks and delegate a time limit to how long you spend on each one.



5 Stress Management

Can you identify and tackle your stress triggers? Being able to manage stress allows you to break the hold it can have on your life. This will make you happier, healthier, and more productive in return.

TIP: Set limits and learn to say no to requests that would create excessive stress in your life.



6 Teamwork

Are you a team player who collaborates well with others? Teamwork requires leadership and goal orientation. Whether in school or a job, the better you work within a team, the better your work will be!

TIP: Always clarify roles, responsibilities and accountability with your team members.



END



You won't always be a priority to others,
and that's why you have to be a priority to yourself.


Learn to respect yourself, take care of yourself,
and become your own support system.

Your needs matter. Start meeting them. Don't wait
for others to choose you. Choose yourself.

Jazz Zo Marcellus

Tabu Bagi Mahasiswa Teknik Informatika

- ❖ Tidak dapat beradaptasi dengan (perkembangan) teknologi
- ❖ Tidak dapat membaca atau memahami instruksi
- ❖ Tidak dapat membuat program



**LEARNING IS NEVER
DONE WITHOUT
ERRORS AND DEFEAT**

VLADIMIR LENIN

PICTUREQUOTES.com



PICTUREQUOTES

Sub Pokok Bahasan

- Sistem Basisdata – MySQL/MariaDB
- PHPMyAdmin
 - Membuat (*Create*) Basisdata dan Tabel
 - Memasukkan (*Insert*) Data Tabel
 - Akun dan Hak Akses (*Priviledge*) User
 - *Structured Query Language* (SQL)
 - Menampilkan Data *Foreign Keys*

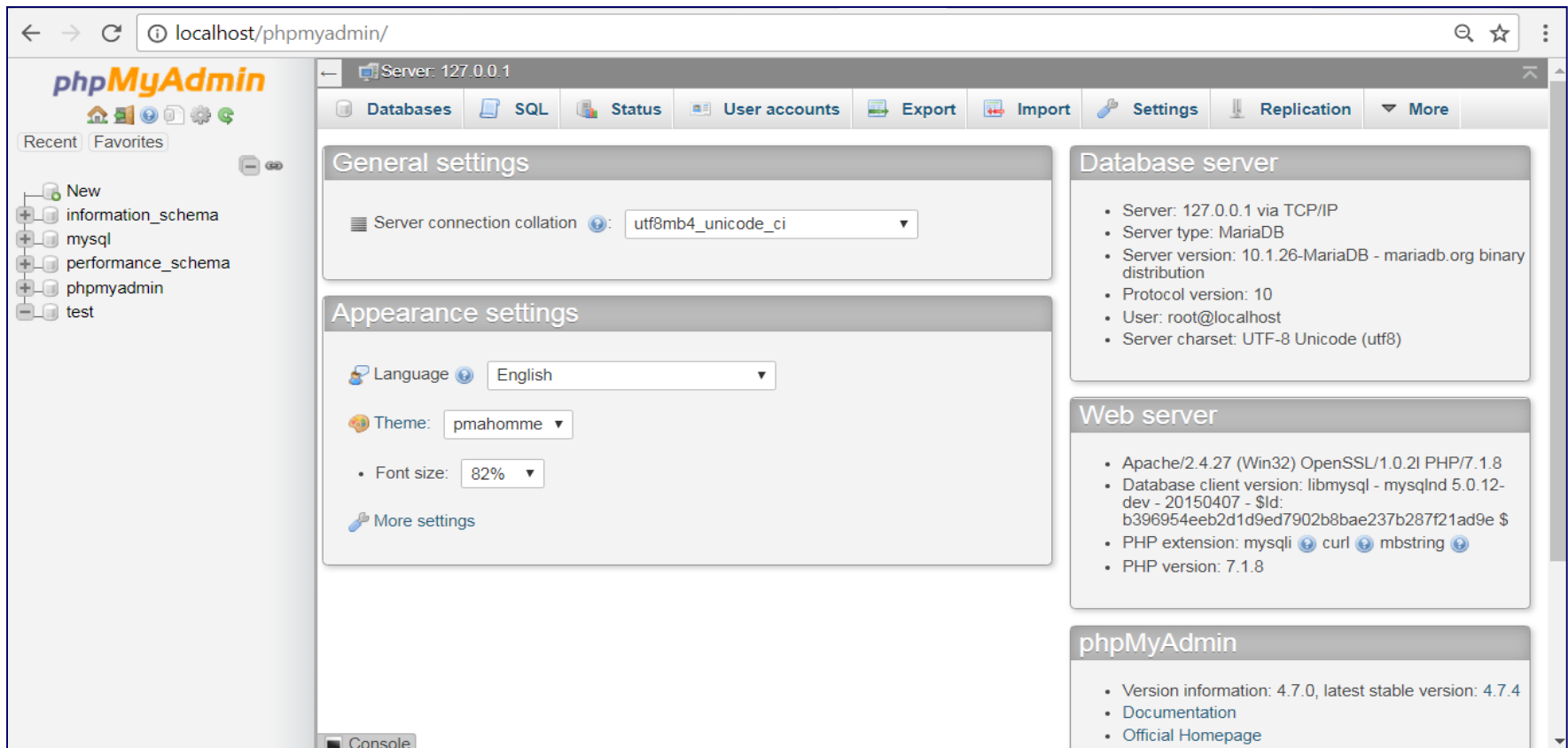
Sistem Basisdata – MySQL/MariaDB

- Sistem basisdata *open source* yang paling populer
- Sejarah:
 - Dikembangkan oleh Michael Widenius & David Axmark pada tahun 1994
 - Diakuisisi oleh Sun (sekarang dikenal sebagai Oracle) pada tahun 2008
(<http://www.mysql.com/>)
- *Cross Platform*
 - (*Free*) untuk Windows, Linux, Mac dan Unix → *community edition*
 - *Supported version* → *commercial customers*



PHPMyAdmin

- Dibuat khusus untuk mengelola basisdata MySQL/MariaDB
- Terintegrasi dalam instalasi XAMPP



Membuat (*Create*) Basisdata

1. Klik link **New** untuk membuat basisdata
2. Tentukan nama basisdata
3. Tentukan jenis *collation* basisdata
4. Klik tombol **Create**

The screenshot shows the phpMyAdmin interface. On the left sidebar, the 'New' link is highlighted with a red box and an arrow. The main area shows the 'Databases' tab with the 'Create database' form. The form has three fields: a text input for the database name containing 'customerDB', a dropdown menu for the collation set to 'utf8_bin', and a 'Create' button. All three fields are highlighted with red boxes and arrows. Below the form is a table listing existing databases and their collations.

Database	Collation	Action
<input type="checkbox"/> information_schema	utf8_general_ci	Check privileges
<input type="checkbox"/> mysql	latin1_swedish_ci	Check privileges
<input type="checkbox"/> performance_schema	utf8_general_ci	Check privileges
<input type="checkbox"/> phpmyadmin	utf8_bin	Check privileges
<input type="checkbox"/> test	latin1_swedish_ci	Check privileges
Total: 5	latin1_swedish_ci	

Below the table, there are checkboxes for 'Check all' and 'With selected: Drop'. A note at the bottom states: 'Note: Enabling the database statistics here might cause heavy traffic between the web server and the MySQL server.' with a link to 'Enable statistics'.

Membuat (*Create*) Tabel

1. Pilih basisdata yang akan dibuatkan tabel

2. Tentukan nama tabel

3. Tentukan jumlah kolom dalam tabel

4. Klik tombol **Go**

The screenshot displays the phpMyAdmin web interface. On the left sidebar, the 'customerdb' database is selected and highlighted with a red box. A red arrow points from the instruction 'Pilih basisdata yang akan dibuatkan tabel' to this box. The main panel shows the 'Structure' tab active, with a message 'No tables found in database.' Below this, the 'Create table' form is visible. The 'Name' field contains 'Customer' and is highlighted with a red box, with a red arrow pointing from the instruction 'Tentukan nama tabel'. The 'Number of columns' field contains '4' and is also highlighted with a red box, with a red arrow pointing from the instruction 'Tentukan jumlah kolom dalam tabel'. At the bottom right of the form, the 'Go' button is highlighted with a red box, with a red arrow pointing from the instruction 'Klik tombol Go'.

Membuat (Create) Tabel [2]

Server: 127.0.0.1 » Database: customerdb » Table: Customer

Table name: Customer Add 1 column(s) Go

Name	Type	Length/Values	Default	Collation	Attributes	Null	Index	A_I	Comments
customerID	INT		None			<input type="checkbox"/>	PRIMARY	<input checked="" type="checkbox"/>	
firstname	VARCHAR	45	None			<input type="checkbox"/>	---	<input type="checkbox"/>	
address	VARCHAR	256	None			<input checked="" type="checkbox"/>	---	<input type="checkbox"/>	
balance	DECIMAL		None			<input type="checkbox"/>	---	<input type="checkbox"/>	

Table comments: Collation: Storage Engine: InnoDB

PARTITION definition:

Partition by: (Expression or column list)

Partitions:

Console Preview SQL Save

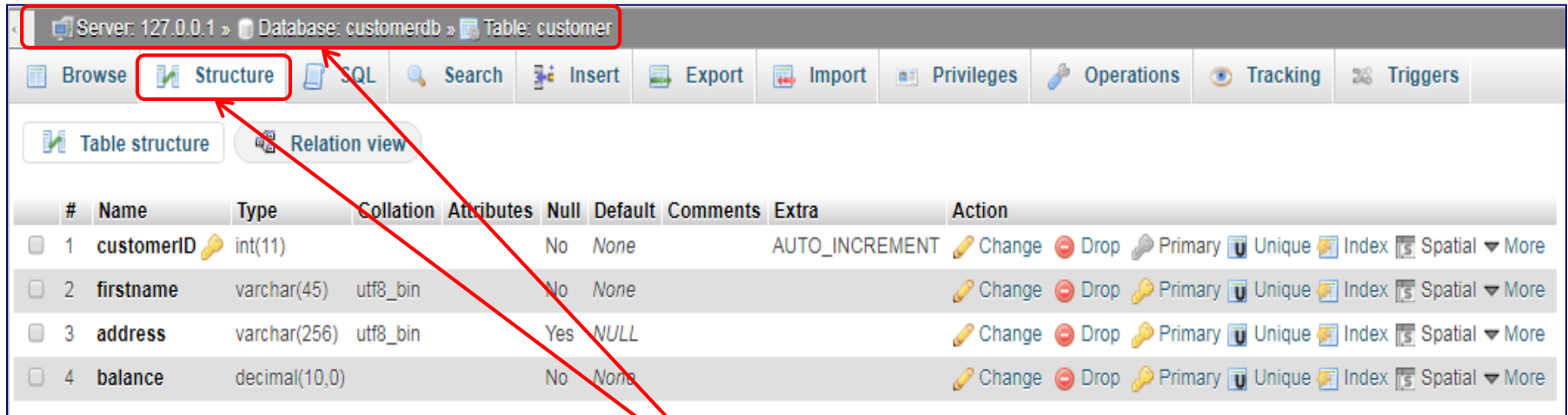
5. Lengkapi spesifikasi setiap kolom

7. Klik tombol **Save**

```
CREATE TABLE `customerdb`.`Customer`  
  (`customerID` INT NOT NULL AUTO_INCREMENT,  
  `firstname` VARCHAR(45) NOT NULL,  
  `address` VARCHAR(256) NULL ,  
  `balance` DECIMAL NOT NULL ,  
  PRIMARY KEY (`customerID`)) ENGINE =InnoDB;
```

6. Cek skrip SQL pembuatan tabel

Membuat (*Create*) Tabel [3]



Server: 127.0.0.1 » Database: customerdb » Table: customer

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Table structure Relation view

#	Name	Type	Collation	Attributes	Null	Default	Comments	Extra	Action
1	customerID	int(11)			No	None		AUTO_INCREMENT	Change Drop Primary Unique Index Spatial More
2	firstname	varchar(45)	utf8_bin		No	None			Change Drop Primary Unique Index Spatial More
3	address	varchar(256)	utf8_bin		Yes	NULL			Change Drop Primary Unique Index Spatial More
4	balance	decimal(10,0)			No	None			Change Drop Primary Unique Index Spatial More

Struktur tabel **customer** dalam basisdata **customerdb**

Memasukkan (*Insert*) Data Tabel

1. Aktifkan tab **Insert**

Column	Type	Function	Null	Value
customerID	int(11)			
firstname	varchar(45)			Amira
address	varchar(256)			Jl. Mawar No. 123, Surabaya
balance	decimal(10,0)			1000000

2. Isikan data pada masing-masing kolom

3. Klik tombol **Go**

✓ 1 row inserted.
Inserted row id: 1

```
INSERT INTO `customer` (`customerID`, `firstname`, `address`, `balance`) VALUES (NULL, 'Amira', 'Jl. Mawar No. 123, Surabaya', '1000000');
```

Memasukkan (*Insert*) Data Tabel [2]

Server: 127.0.0.1 » Database: customerdb » Table: customer

Buttons: Browse, Structure, SQL, Search, Insert, Export, Import

Showing rows 0 - 0 (1 total, Query took 0.0030 seconds.)

```
SELECT * FROM `customer`
```

Show all | Number of rows: 25 | Filter rows: Search this table

+ Options

customerID	firstname	address	balance
1	Amira	Jl. Mawar No. 123, Surabaya	1000000

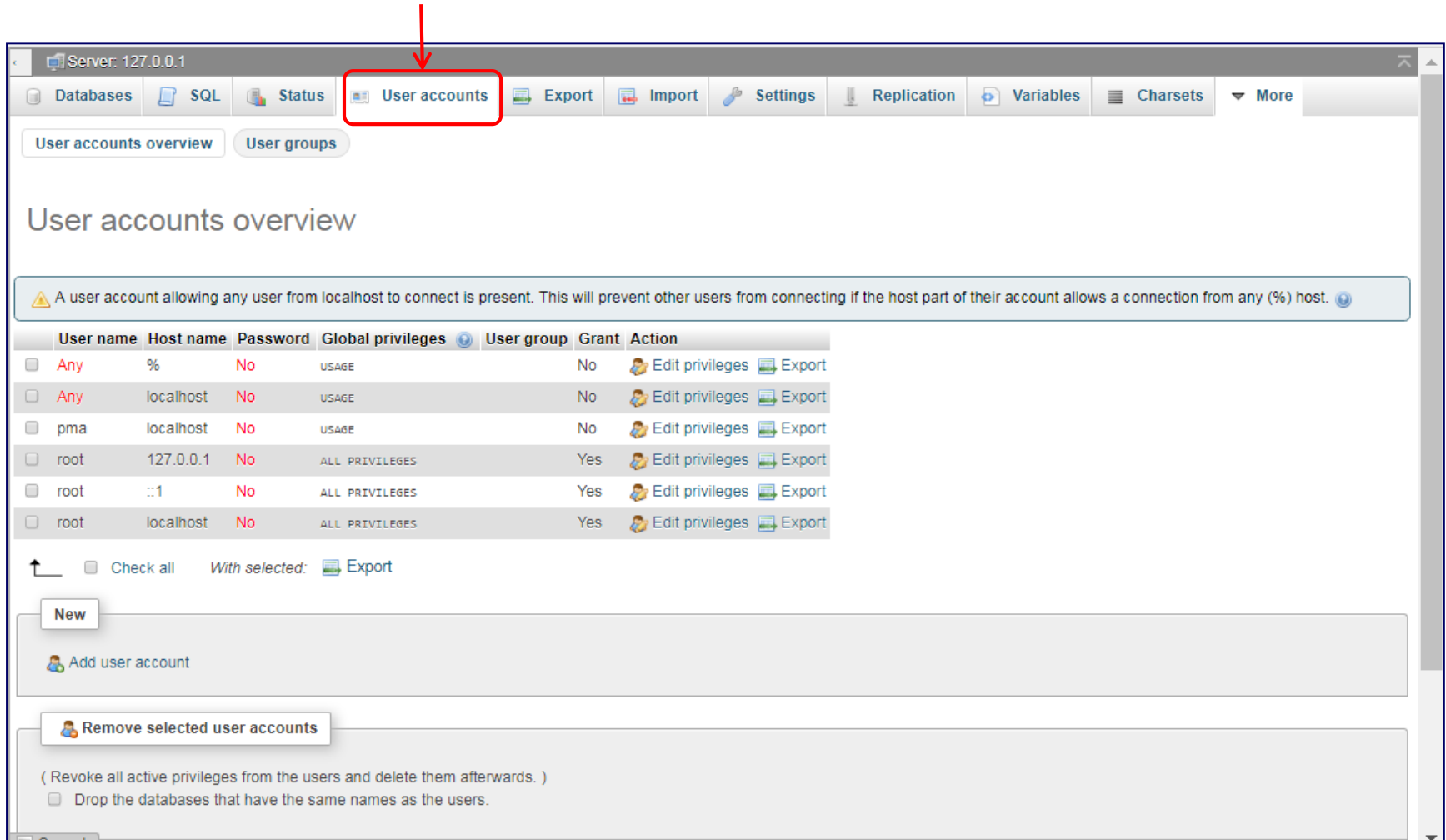
Check all | With selected: Edit, Copy, Delete, Export

Show all | Number of rows: 25 | Filter rows: Search this table

Data tabel
customer dalam
basisdata
customerdb

Akun dan Hak Akses (*Priviledge*) User

Aktifkan tab **User accounts**



Server: 127.0.0.1

Databases SQL Status **User accounts** Export Import Settings Replication VariablesCharsets More

User accounts overview User groups

User accounts overview

⚠ A user account allowing any user from localhost to connect is present. This will prevent other users from connecting if the host part of their account allows a connection from any (%) host. ⓘ

	User name	Host name	Password	Global privileges	User group	Grant	Action
<input type="checkbox"/>	Any	%	No	USAGE		No	Edit privileges Export
<input type="checkbox"/>	Any	localhost	No	USAGE		No	Edit privileges Export
<input type="checkbox"/>	pma	localhost	No	USAGE		No	Edit privileges Export
<input type="checkbox"/>	root	127.0.0.1	No	ALL PRIVILEGES		Yes	Edit privileges Export
<input type="checkbox"/>	root	::1	No	ALL PRIVILEGES		Yes	Edit privileges Export
<input type="checkbox"/>	root	localhost	No	ALL PRIVILEGES		Yes	Edit privileges Export

⬆ ☐ Check all With selected: Export

New

Add user account

Remove selected user accounts

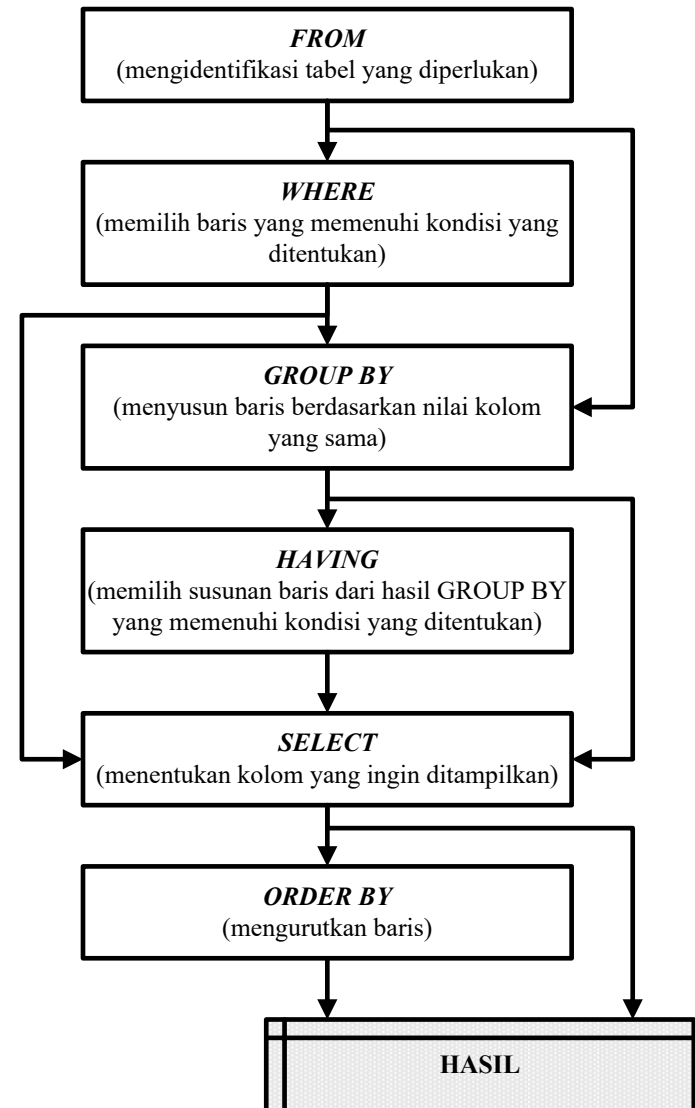
(Revoke all active privileges from the users and delete them afterwards.)

☐ Drop the databases that have the same names as the users.

Console

Structured Query Language (SQL)

- Alur kerja klausa dalam Perintah **SELECT**



Structured Query Language (SQL) [2]



The screenshot shows a database management tool interface. At the top, there's a header bar with a server icon, the text "Server: 127.0.0.1 » Database: customerdb", and a settings gear icon. Below this is a toolbar with buttons for "Structure", "SQL", "Search", "Query", "Export", "Import", "Operations", and a "More" dropdown. A central panel has a title bar that says "Run SQL query/queries on database customerdb:". Below the title bar is a large text area containing a SQL script. The script consists of four numbered lines: 1. A SELECT statement to retrieve the first name and address of customers with a balance greater than 0. 2. An UPDATE statement to set the balance to 4,500,000 and the first name to 'Almira' for the customer with ID 1. 3. A DELETE statement to remove customers with a balance less than 0. 4. An INSERT statement to add a new customer with the first name 'Baharudin', address 'Jl. Mengkudu No. 456, Surabaya', and balance 120,000.

```
1 SELECT firstname, address
2 FROM customer
3 WHERE balance > 0;
4
5 UPDATE customer
6 SET balance = 4500000, firstname = 'Almira'
7 WHERE customerID = 1;
8
9 DELETE
10 FROM customer
11 WHERE balance < 0;
12
13 INSERT INTO customer (firstname, address, balance)
14 VALUES ('Baharudin', 'Jl. Mengkudu No. 456, Surabaya', 1200000);
```

✓ Showing rows 0 - 0 (1 total, Query took 0.0470 seconds.)

```
SELECT firstname, address FROM customer WHERE balance > 0
```

✓ 1 row affected. (Query took 0.0900 seconds.)

```
UPDATE customer SET balance = 4500000, firstname = 'Almira' WHERE customerID = 1
```

✓ 0 rows affected. (Query took 0.0210 seconds.)

```
DELETE FROM customer WHERE balance < 0
```

✓ 1 row inserted.
Inserted row id: 2 (Query took 0.0110 seconds.)

```
INSERT INTO customer (firstname, address, balance) VALUES ('Baharudin', 'Jl. Mengkudu No. 456, Surabaya', 1200000)
```

Structured Query Language (SQL) [3]

Server: 127.0.0.1 » Database: customerdb » Table: customer

[Browse](#) [Structure](#) [SQL](#) [Search](#) [Insert](#) [Export](#) [Import](#) [Privileges](#) [More](#)

✓ Showing rows 0 - 1 (2 total, Query took 0.0050 seconds.)

```
SELECT * FROM `customer`
```

☐ Profiling [\[Edit inline \]](#) [\[Edit \]](#) [\[Explain SQL \]](#) [\[Create PHP code \]](#) [\[Refresh \]](#)

☐ Show all | Number of rows: 25 ▼ Filter rows: Sort by key: None ▼

+ Options

	customerID	firstname	address	balance
<input type="checkbox"/> Edit Copy Delete	1	Almira	Jl. Mawar No. 123, Surabaya	4500000
<input type="checkbox"/> Edit Copy Delete	2	Baharudin	Jl. Mengkudu No. 456, Surabaya	1200000

[↑](#) ☐ Check all With selected: [Edit](#) [Copy](#) [Delete](#) [Export](#)

Challenge #1

Buatlah SQL untuk menampilkan nama dan *balance* Customer yang memiliki tabungan setidaknya 10000000!
Urutkan data tampilan berdasarkan *balance* secara *descending*!

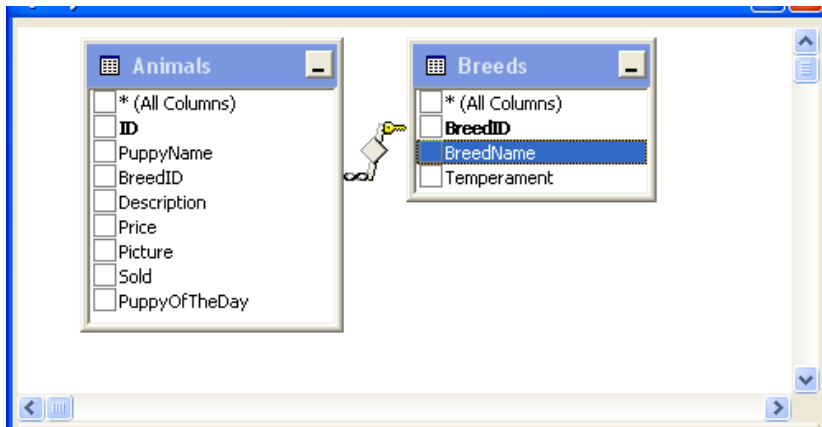
Challenge #2

Buatlah SQL untuk menampilkan nama dan *balance* Customer yang memiliki tabungan antara 1000000 hingga 2000000!
Urutkan data tampilan berdasarkan nama secara *descending*!

Challenge #3

Buatlah SQL untuk menampilkan nama dan *balance* Customer yang tinggal di “Surabaya”!

Menampilkan Data *Foreign Keys*



ID	PuppyName	BreedID	Description	Price	Picture	Sold	PuppyOfTheDay
1	Johnny	4	Good for a farm	\$100.00	Johnny.jpg	<input type="checkbox"/>	<input type="checkbox"/>
2	Bully	3	A fighter - Excellent watchdog	\$599.00	Bully.jpg	<input type="checkbox"/>	<input type="checkbox"/>
3	Bo-Bo	2	Suit sweet old lady	\$150.00	Bo-Bo.jpg	<input type="checkbox"/>	<input type="checkbox"/>
4	Albert	6	Family dog	\$20.00	Albert.jpg	<input type="checkbox"/>	<input type="checkbox"/>
5	Fritz	1	Watchdog	\$129.00	Fritz.jpg	<input type="checkbox"/>	<input type="checkbox"/>
7	Sam	7	Good for nothing	\$10.00	Sam.jpg	<input type="checkbox"/>	<input type="checkbox"/>
8	Teddy	8	Cuddly	\$150.00	Teddy.jpg	<input type="checkbox"/>	<input type="checkbox"/>
9	Bandit	9	Rat dog	\$99.00	Bandit.jpg	<input checked="" type="checkbox"/>	<input type="checkbox"/>
10	Bruiser	8	Good with kids	\$79.00	Bruiser.jpg	<input type="checkbox"/>	<input checked="" type="checkbox"/>
13	Fred	4	Best drover's companion	\$123.50	NoPicture.gif	<input checked="" type="checkbox"/>	<input type="checkbox"/>
14	WatchDog	1	blah de blah	\$33.95		<input checked="" type="checkbox"/>	<input type="checkbox"/>
15	Bob	3	A builder's dog	\$99.99		<input checked="" type="checkbox"/>	<input type="checkbox"/>

BreedID	BreedName	Temperament
1	Dobeman	Aggressive
2	Poodle	Nervous
3	Pitt Bull	Nasty
4	Cattle Dog	Friendly
5	Alsatian	Faithful
6	Beagle	Smooches
7	Schnauzer	Fluffy
8	Jack Russel	Psychopathic

- **Primary Key** atau **Foreign Key** biasanya tidak perlu ditampilkan, kecuali jika memang dianggap sangat penting untuk diketahui oleh *end-user*

- Terkadang operasi **JOIN** perlu dilakukan untuk menampilkan data **Foreign Key**

```
contoh: SELECT PuppyName, Breed.BreedName, Picture, Sold
        FROM Animals, Breeds
        WHERE Animals.BreedID = Breeds.BreedID
```

Challenge #4

Buatlah basisdata dengan nama “**bookstore**”!
Buatlah tabel dengan nama “**series**” dan “**books**”
agar dapat diisi data berikut:

seriesID	seriesDescription
1	Harry Potter
2	The Lord of the Rings
3	The Chronicles of Narnia

bookID	bookTitle	seriesID	yearPublished
1	The Fellowship of the Ring	2	1954
2	The Two Towers	2	1954
3	The Return of the King	2	1955
4	The Lion, the Witch and the Wardrobe	3	1950
5	The Philosopher's Stone	1	1997
6	The Chambers of Secrets	1	1998
7	The Prisoners of Azkaban	1	1999
8	The Goblet of Fire	1	2000

Hint: Kroscek implementasi Foreign Key melalui diagram Designer!

Challenge #5

Buatlah SQL untuk menampilkan judul buku yang termasuk dalam series “Harry Potter”!

Video Perkuliahan

- Penjelasan materi kuliah dapat dilihat via YouTube (*recording* Semester Gasal 2020/2021):
<https://youtu.be/GzhWF1zne18> mulai dari *timestamp* 00:00 hingga 09:06 dan 29:33 hingga 32:48
- *Note: Kerjakan Challenge(s) berdasarkan slide Semester Gasal 2023/2024 (bukan berdasarkan slide yang ditampilkan dalam recording Semester Gasal 2020/2021)*



there is
ALWAYS
something to
BE GRATEFUL
for



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YOURSELF
WITH POSITIVE
PEOPLE WHO
ARE GOING TO
PUSH YOU
TOWARD
GREATNESS.**

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