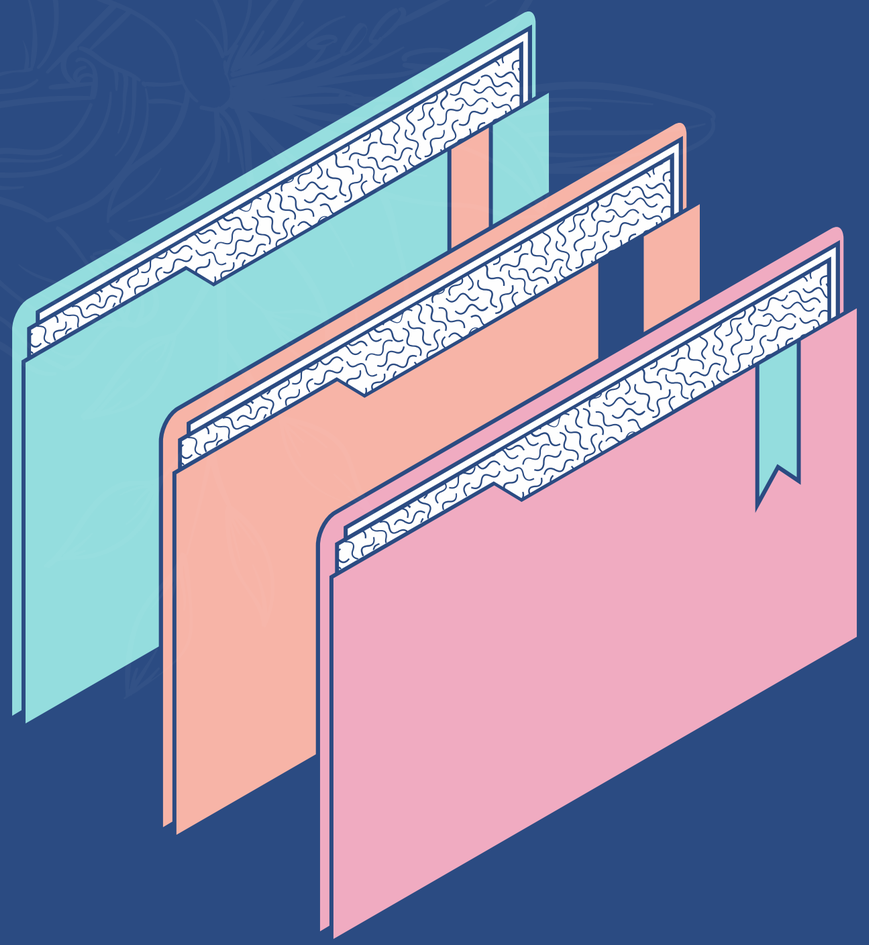
KAMPUS MERDEKA X MYEDUSOLVE

Database Week #3

Team 3 - Data Science A



Agenda

MAIN TOPIC IN THIS PRESENTATION

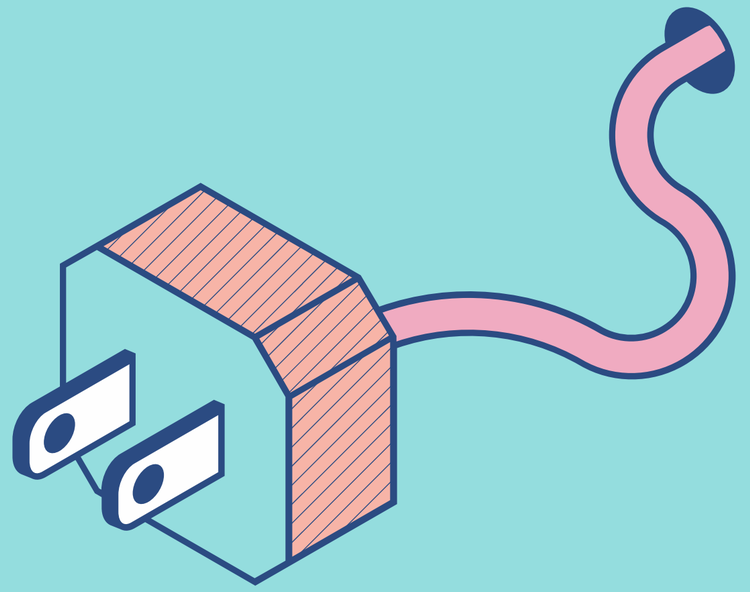
- Normalization
- Subquery
- Control Flow
- Stored Procedure
- Database Administrator
- Troubleshooting
- Common Table Expressions

Normalization

Normalization is the process of grouping data into one or more tables that will show each entity and its relationships.

Normalization has several purposes:

1. No redundant data
2. No data has anomalies
3. Make existing data have strong integrity



Normalization Process

- Find each primary entity in the data model.
- Find the relationship between each entity.
- Find the attributes that each entity has.

Normalized Form

- Unnormalized Form
- First Normalized Form (1NF)
- Second Normalized Form (2NF)
- Third Normalized Form (3NF)

Note: There are still forms of 4NF and 5NF, but these forms are not commonly practiced, so they will not be discussed here.

Normalized Form

UNNORMALIZED FORM

- Each attribute of the relation has only a single value and there is no repetition of the attribute group in the row.
- Does not have repeating attribute groups.

0

1

FIRST NORMALIZED FORM (1NF)

- Each table cell should contain a single value.
- Each record needs to be unique.

2

SECOND NORMALIZED FORM (2NF)

- Be in 1NF.
- Single Column Primary Key that does not functionally dependant on any subset of candidate key relation.

3

THIRD NORMALIZED FORM (3NF)

- Be in 2NF.
- Has no transitive functional dependencies.

Subquery

A subquery is an SQL query that runs inside a parent or master query. Subqueries can be used to retrieve data in fields or columns in other tables.

How to use Subquery?

```
SELECT column_name
FROM table_name
WHERE column_name expression operator
    (SELECT COLUMN_NAME
     from TABLE_NAME); #This is a subquery
```

Control Flow

Control Flow (Flow of Control) is a function for comparison, which compares the condition of a data. There are several types of control flow:

1. IF
2. IFNULL
3. CASE

Control Flow

IF

IF() function is used to validate a condition The IF() function returns a value if condition is TRUE and another value if condition is FALSE.

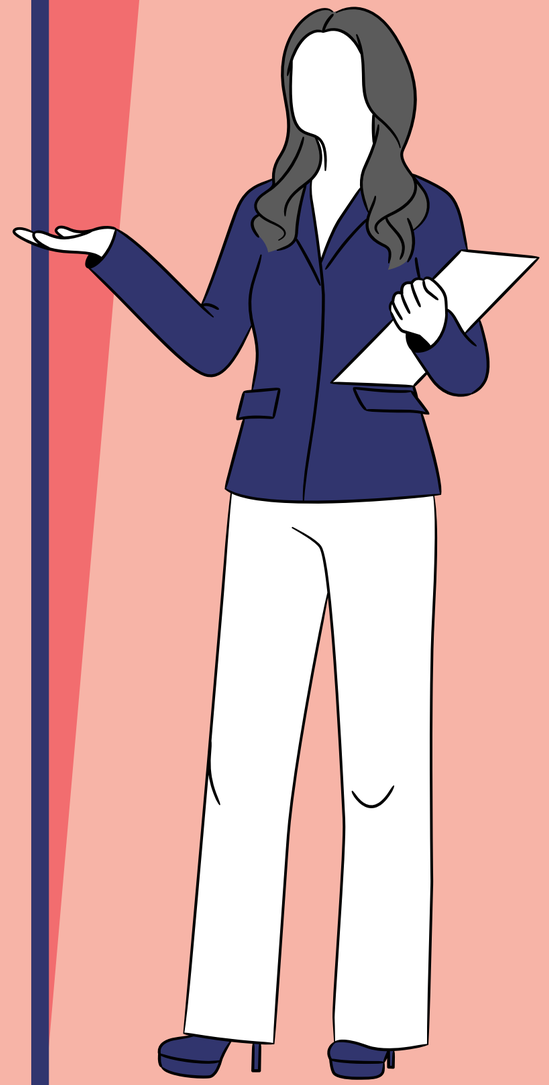
How to use IF?

IF(condition, true_value, false_value)

Control Flow

IFNULL

The IFNULL() function is one of the control flow functions that accepts two arguments and returns the first argument if it is not NULL. If not, the IFNULL function returns the second argument.



How to use IFNULL?

IFNULL(expression1, expression2);

Control Flow

CASE

The CASE WHEN function is used to display certain values depending on the conditions used.

How to use CASE?

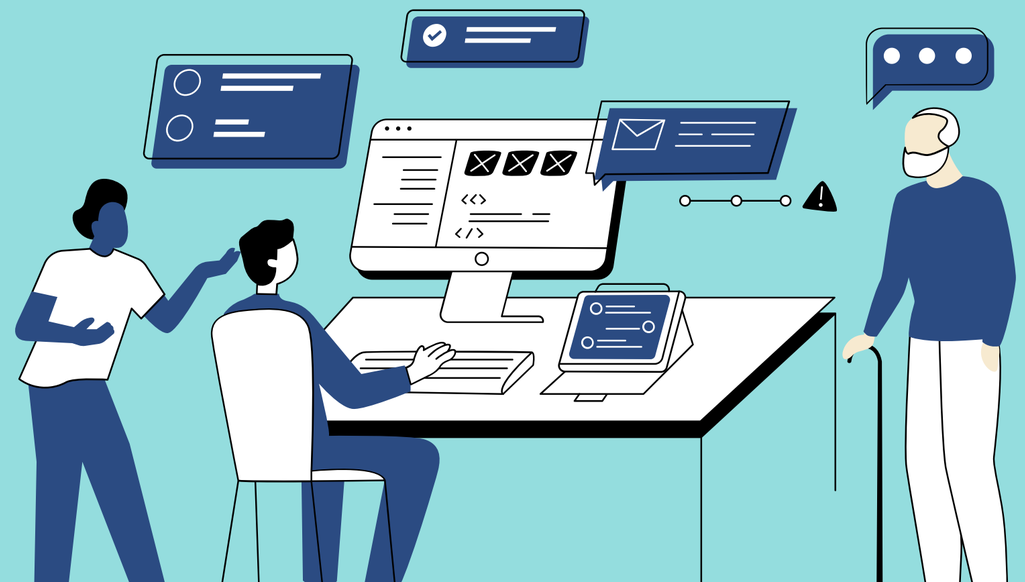
```
CASE
    [WHEN search_condition THEN statement_list]
    [WHEN search_condition THEN statement_list] ...
    [ELSE statement_list]
END
```

Stored Procedure

Stored Procedures are created for performing one or more DML operations. Arguably is a group of commands that take some input in the form of parameters and perform tasks which may or may not return a value.

How to use Stored Procedure?

```
CREATE or REPLACE PROCEDURE name(parameters)
BEGIN
//statements;
END
```



Database Administrator

Material regarding User management and Access Rights that will use the database.

Grant Privileges

GRANT privileges_names ON object TO user;

Revoke Privileges

REVOKE privileges_names ON object TO user;

Privileges: SELECT, INSERT, DELETE, INDEX, CREATE, ALTER, DROP, ALL, UPDATE, GRANT

Backup dan Restore

Backup is the process of copying data from one device to another.

Restore is to restore data according to the backup file.

Benefits of backups:

1. Corrupt data prevention
2. Recovering a failed system
3. Make it easier to move data
4. etc.

Troubleshooting

Search for the source of the problem systematically, so that the problem can be solved.

Error Type

- **Syntax Error**
  Errors that occur due to grammatical errors.

- **Runtime Error**
  An error that occurs because the program ordered to the computer cannot be completed.

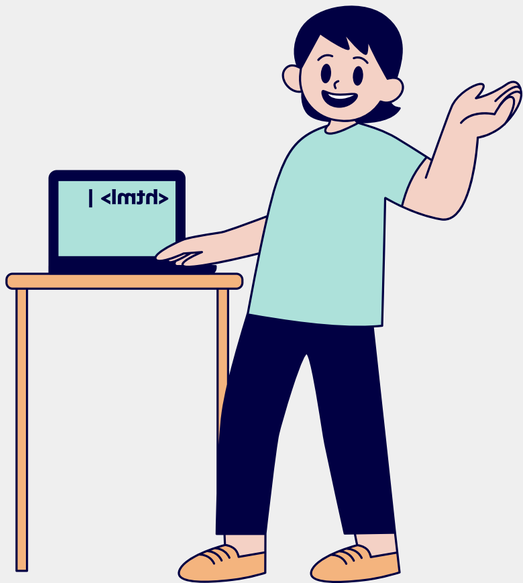
- **Logic Error**
  Errors that occur due to errors in program design.

Common Table Expressions

Common Table Expression (CTE) is a temporary named result set that you can reference in a SELECT, INSERT, UPDATE, or DELETE statement.

How to use CTE?

```
WITH <common_table_expression> ([column names])
AS
(
   <cte_query_definition>
)
<operation>
```



THANK YOU!

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