SQL Tutorial

SQL

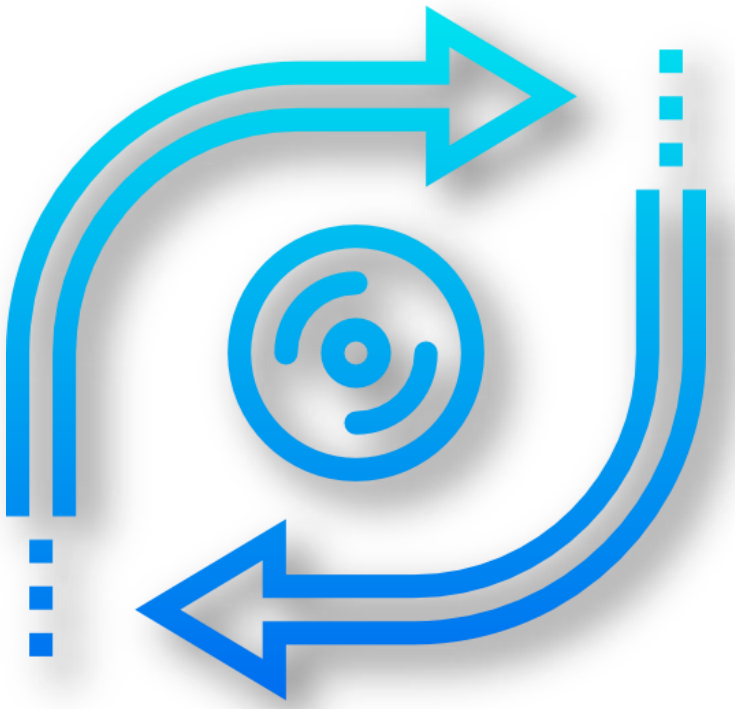
Agenda

1. Alter Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Alter Table

Alter Table statement is used to add, delete, or modify columns in a table.



Alter Table: Add Column


```
ALTER TABLE table_name
ADD column_name datatype;
```

Alter Table: Drop Column


```
ALTER TABLE table_name
DROP COLUMN column_name;
```

Agenda

1. AND Operator
2. OR Operator
3. NOT Operator

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

AND Operator

AND operator displays records if all the conditions separated by AND are TRUE.

AND

Age>60

Occupation="Doctor"

AND Operator: Syntax


```
SELECT column1, column2, columnN
FROM table_name WHERE
[condition1] AND [condition2]...AND
[conditionN];
```

OR Operator

OR operator displays records if any of the conditions separated by OR is TRUE.

OR

Occupation="Software Engineer"

Occupation="Doctor"

OR Operator: Syntax


```
SELECT column1, column2, columnN
FROM table_name WHERE
[condition1] OR [condition2]...OR
[conditionN];
```

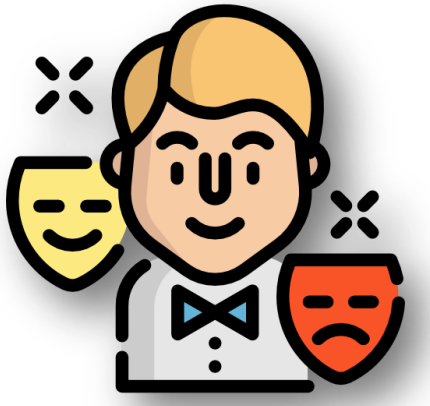
NOT Operator

NOT operator displays a record if the condition is NOT TRUE.

NOT

Occupation="Software Engineer"

Occupation="Doctor"



Occupation="Actor"

NOT Operator: Syntax

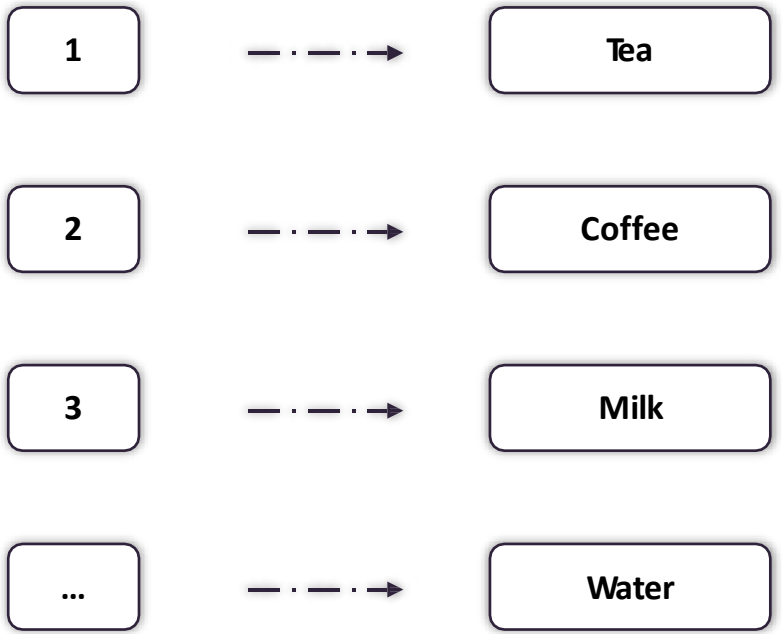

```
SELECT column1, column2, columnN
FROM table_name WHERE NOT
[condition];
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Case Statement

Case Statement helps in multi-way decision-making



Case Statement: Syntax


```
CASE
    WHEN condition1 THEN result1
    WHEN condition2 THEN result2
    WHEN conditionN THEN resultN
    ELSE result
END;
```

Agenda

1. Constraints in SQL

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Constraints in SQL

Constraints are used to specify rules for data in table

- Not Null
- Default
- Unique
- Primary Key

Not Null Constraint

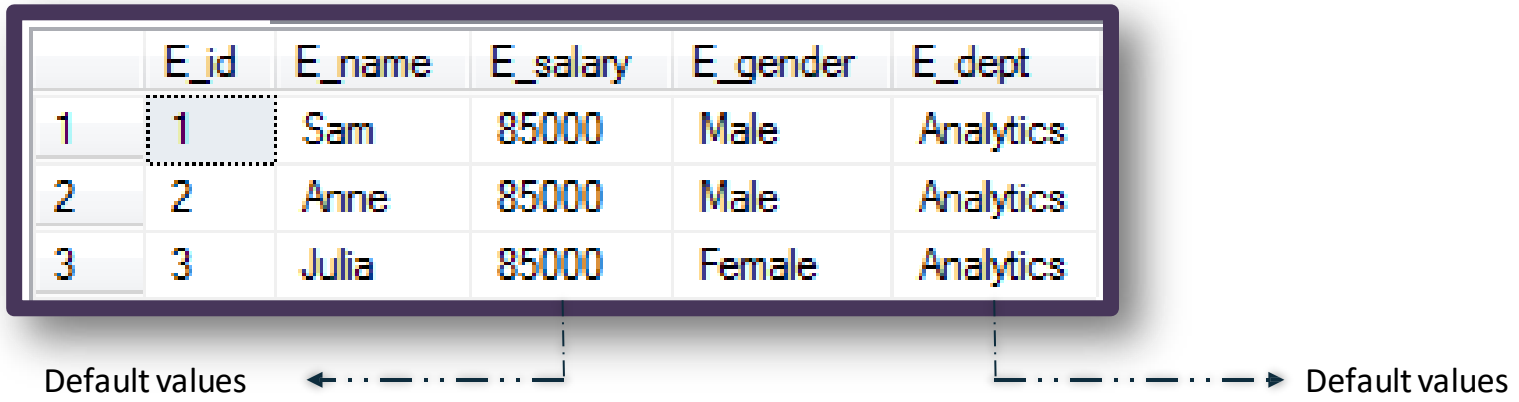
Not Null constraint ensures that a column cannot have a Null value

No null values

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Default Constraint

Default constraint sets a default value for a column when no value is specified



Unique Constraint

Unique constraint ensures that all values in a column are different

Unique values

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Primary Key Constraint

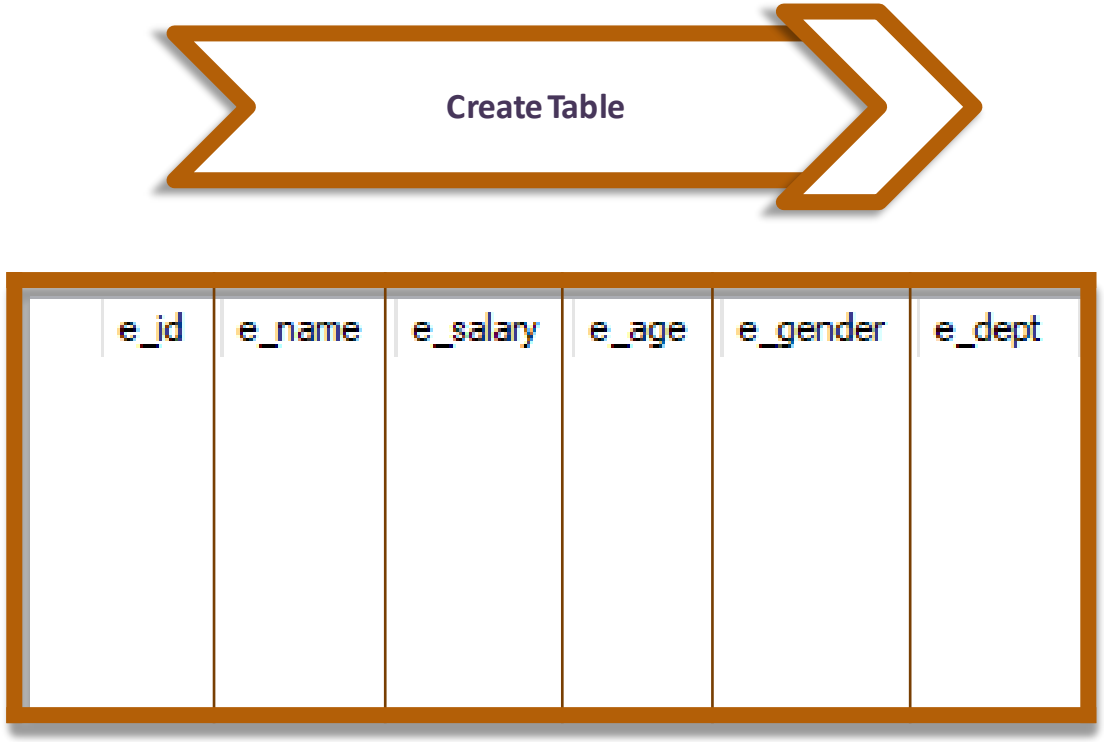
Primary Key constraint uniquely identifies each record in a table

Not Null + Unique

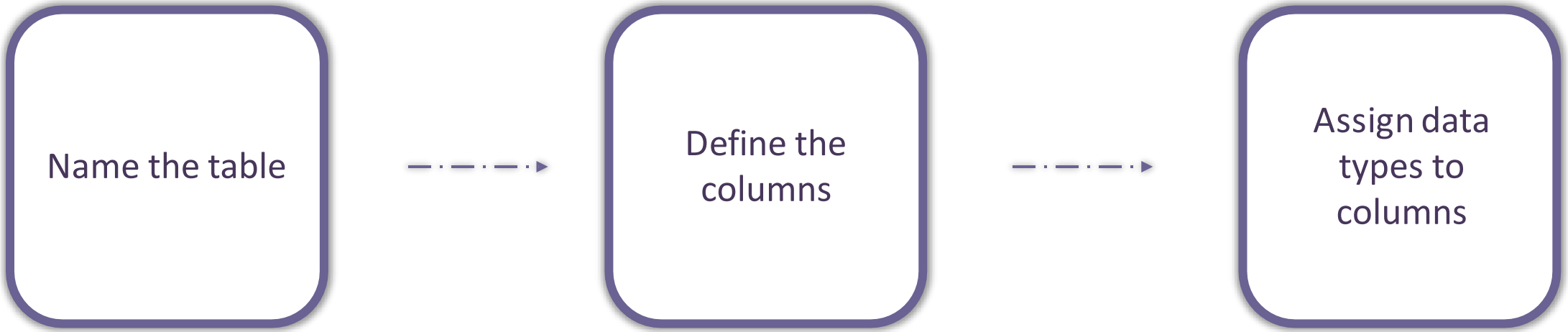
Primary Key

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Agenda



Create Table



Create Table Statement: Syntax


```
CREATE TABLE table_name(
column1 datatype,
column2 datatype,
column3 datatype,
.....
columnN datatype,
PRIMARY KEY(column_x) );
```

Agenda

Creating, Using, and Dropping a Database in SQL

Creating a Database: Syntax


```
CREATE DATABASE databasename;
```

Using a Database: Syntax

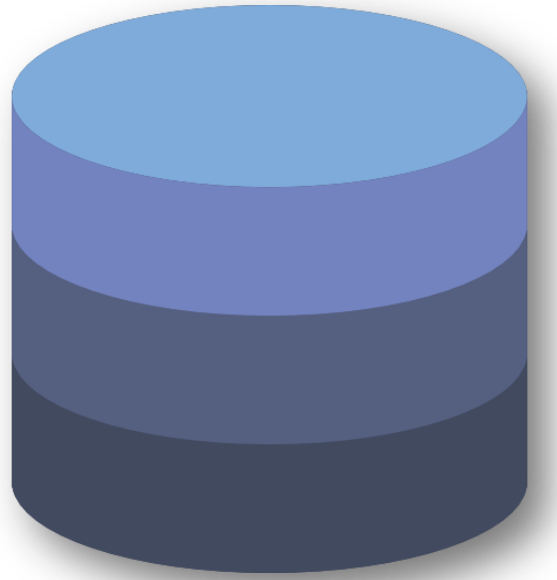

```
USE [DatabaseName];
```

Dropping a Database: Syntax


```
DROP DATABASE databasename;
```

Agenda

Data Types in SQL



Data Types in SQL

Data types define what type of data a column can hold.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Integer

Character

Different Data Types in SQL

Numerical Data Types

Data Type	Range
bigint	−9223372036854775808 <-> 9223372036854775808
int	−2147483648 <-> 2147483647
smallint	−32768 <-> -32767
tinyint	0 <-> 255
decimal(s,d)	−10^38 + 1 <-> 10^38 − 1

Character Data Types

Data Type	Range
char(s)	255 Characters
varchar(s)	255 Characters
text	65,535 Characters

Date and Time Data Types

Data Type	Format
date	YYYY-MM-DD
time	HH:MM:SS
Year	YYYY

Agenda

1. Delete Statement

2. Truncate Statement

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Delete Statement

DELETE statement is used to delete the existing records in a table.

```
DELETE FROM table_name
[WHERE condition];
```

Truncate Statement

TRUNCATE statement deletes all the data inside the table.

```
TRUNCATE TABLE table_name;
```

Agenda

1. Except Operator

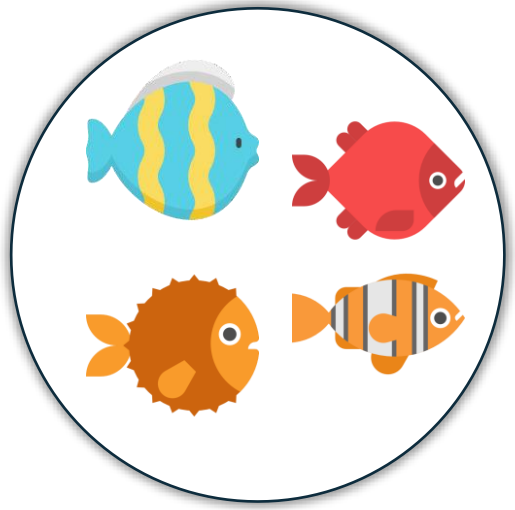
s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

—

s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

Except Operator

Except Operator combines two select statements and returns unique records from the left query which are not part of the right query.



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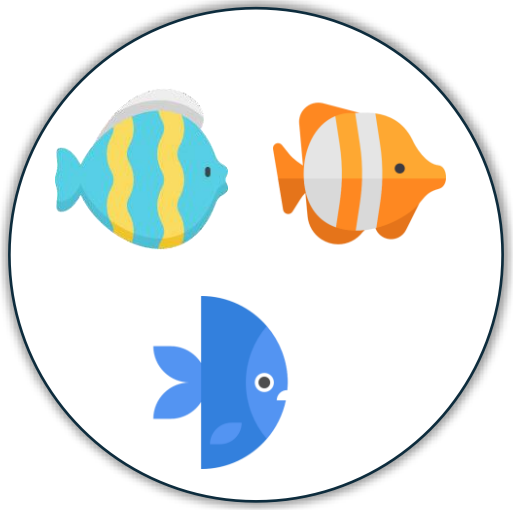

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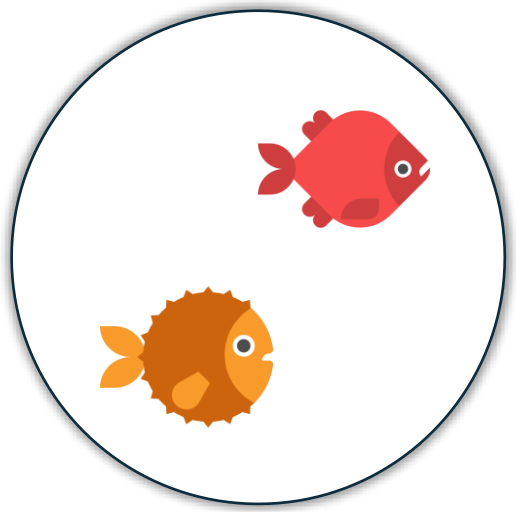


A - B

Except Operator: Syntax


```
SELECT column_list FROM table1
EXCEPT
SELECT column_list FROM table2
```

Except Operator

s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

Student_Details1

s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

Student_Details2

Agenda

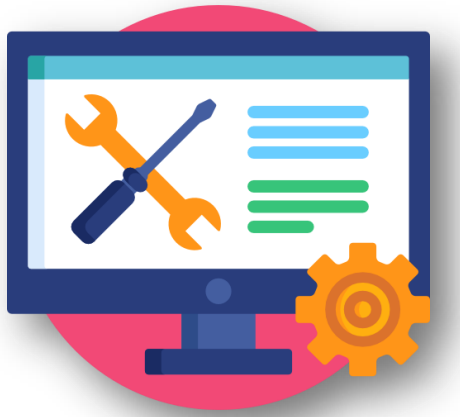
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Exception Handling

An error condition during a program execution is called an exception.

Exception

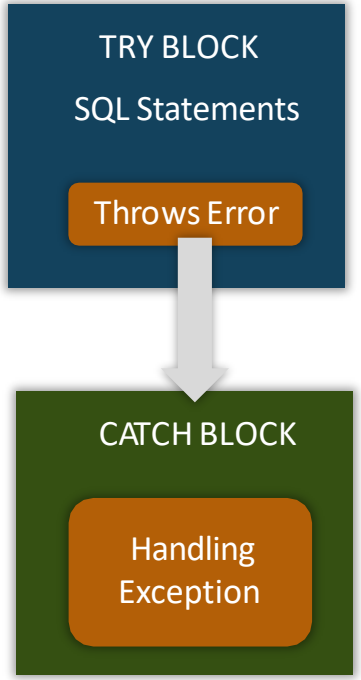
The mechanism for resolving such an exception is exception handling.



Exception Handling

Try/Catch

SQL provides try/catch blocks for exception handling.



Try/Catch: Syntax


```
BEGIN TRY

SQL Statements

END TRY

BEGIN CATCH


- Print Error OR
- Rollback Transaction

END CATCH
```

Agenda

1. Full Join in SQL

Employee

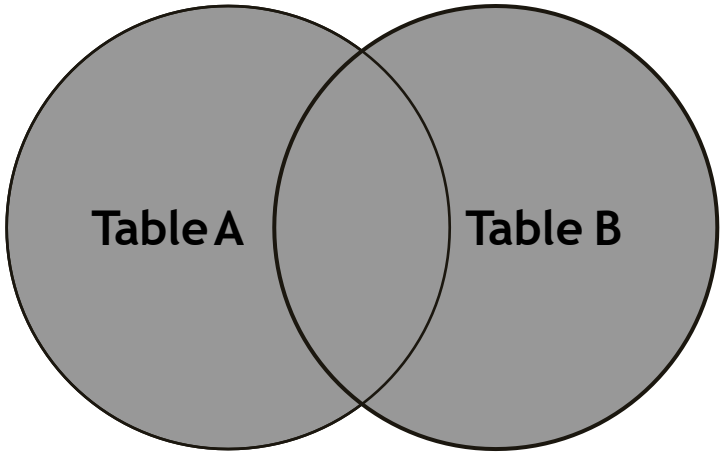
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Department

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Full Join

It returns all rows from the LEFT table and the RIGHT table with NULL values in place where the join condition is not met.



Full Join: Syntax


```
SELECT columns
FROM table1
FULL JOIN table2
ON table1.column_x = table2.column_y;
```

Agenda

1. MIN() Function
2. MAX() Function
3. COUNT() Function
4. SUM() Function
5. AVG() Function

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

MIN() Function

MIN() function gives you the smallest value.

```
SELECT MIN(col_name) FROM
table_name;
```

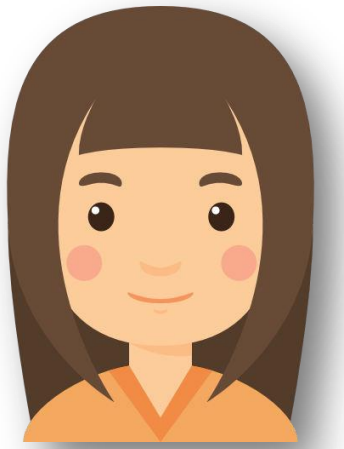
MAX() Function

MAX() function gives you the largest value.

```
SELECT MAX(col_name) FROM
table_name;
```

COUNT() Function

COUNT() function returns the number of rows that match with a specific criteria.



FEMALE

33

MALE

67

COUNT() Function

COUNT() function returns the number of rows that match with a specific criteria.

```
SELECT COUNT(*) FROM
table_name WHERE condition;
```

SUM() Function

SUM() function gives the total sum of a numeric column.

```
SELECT SUM(col_name) FROM
table_name;
```

AVG() Function

AVG() function gives the average value of a numeric column.

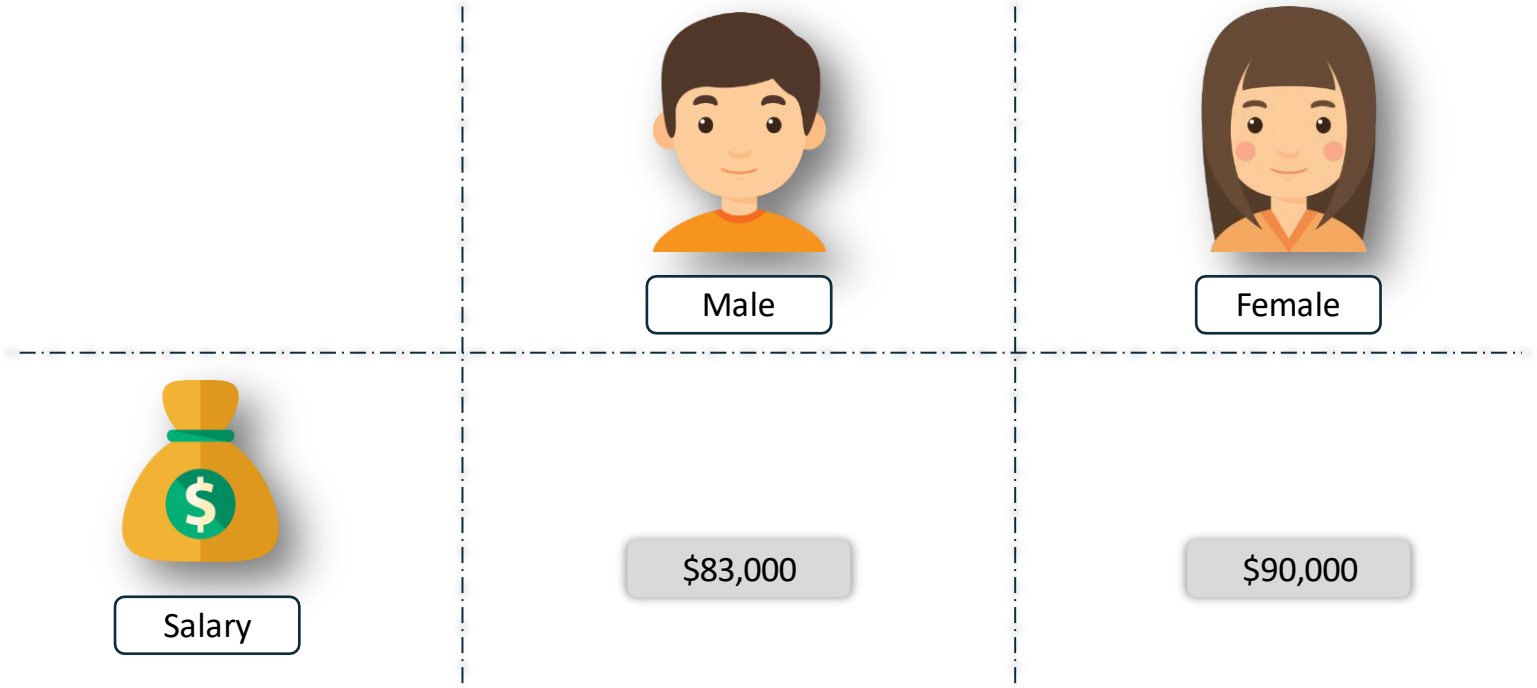
```
SELECT SUM(col_name) FROM
table_name;
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Group By

Group By is used to get an aggregate result with respect to a group.



Group By: Syntax

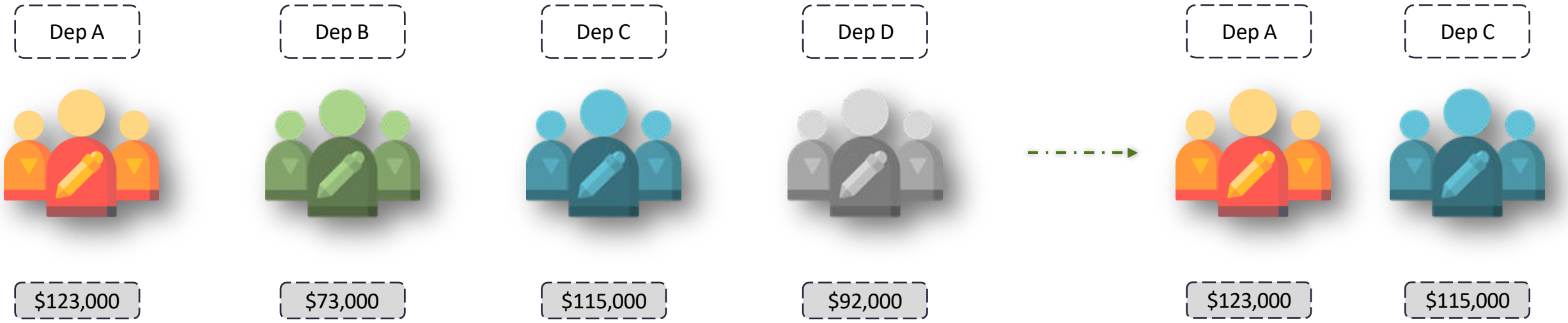

```
SELECT column_list
FROM table_name
WHERE condition
GROUP BY colname(s)
ORDER BY colname(s)
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Having Clause

Having clause is used in combination with Group By to impose conditions on groups.



Having Clause: Syntax


```
SELECT column_name(s)
FROM table_name
WHERE condition
GROUP BY column_name(s)
HAVING condition
ORDER BY column_name(s);
```

Agenda

1. IIF Function in SQL

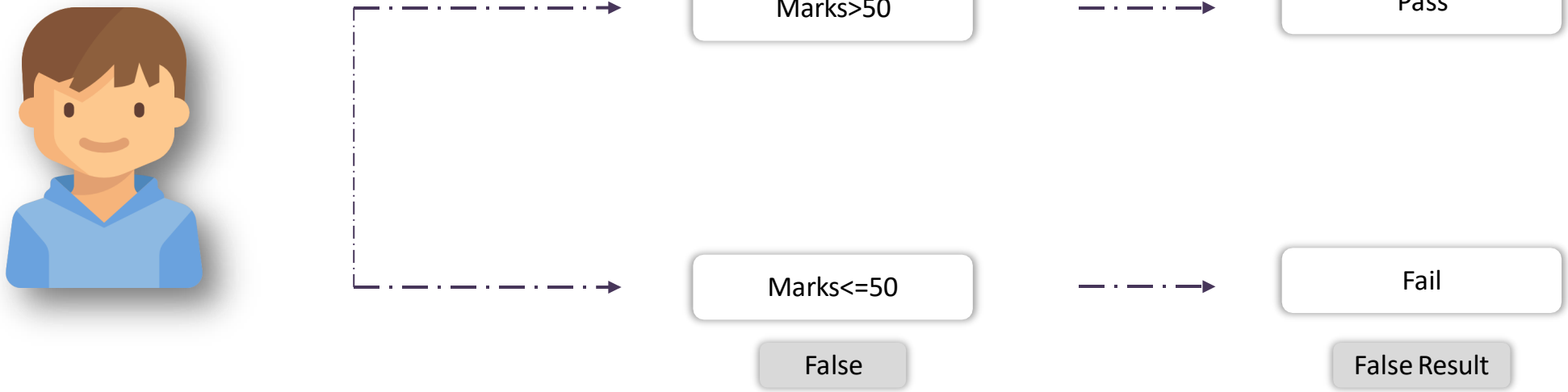
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

IIF() Function

IIF() function is an alternative for the case statement.

```
IIF (boolean_expression, true_value,
false_value )
```

IIF() Function



Agenda

1. Inner Join in SQL

Employee

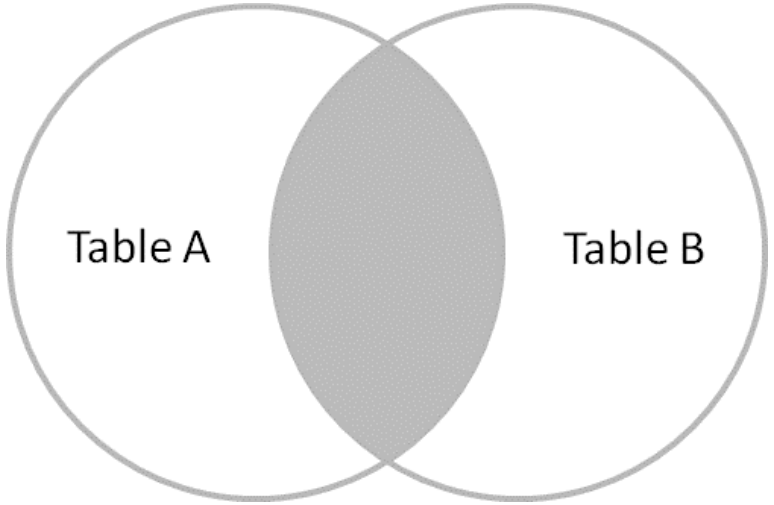
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Department

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Inner Join

Inner Join returns records that have matching values in both tables. It is also known as a simple join.



Inner Join: Syntax


```
SELECT columns
FROM table1
INNER JOIN table2
ON table1.column_x = table2.column_y;
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Insert Query: Syntax


```
INSERT INTO table_name
VALUES (value1,
value2,value3,...valueN);
```

Agenda

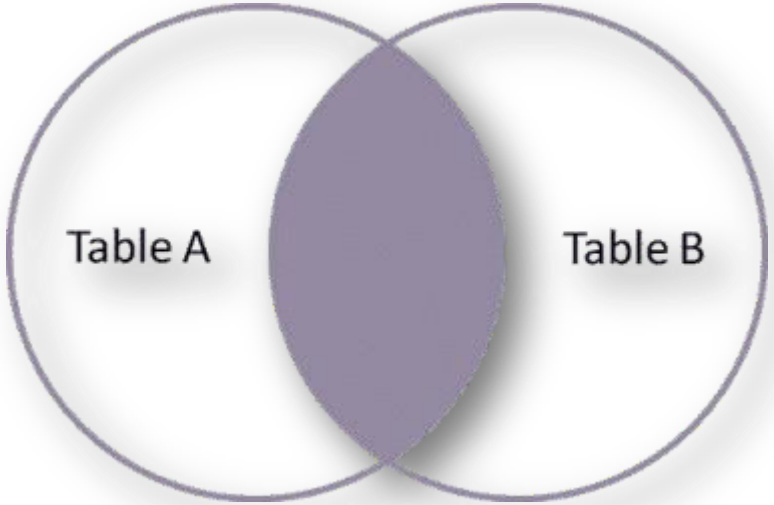
1. Intersect Operator

s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

Intersect Operator

Intersect Operator helps to combine two select statements and returns the records which are common to both the select statements.



A ∩ B

Intersect Operator: Syntax


```
SELECT column_list FROM table1
INTERSECT
SELECT column_list FROM table2
```

Intersect Operator

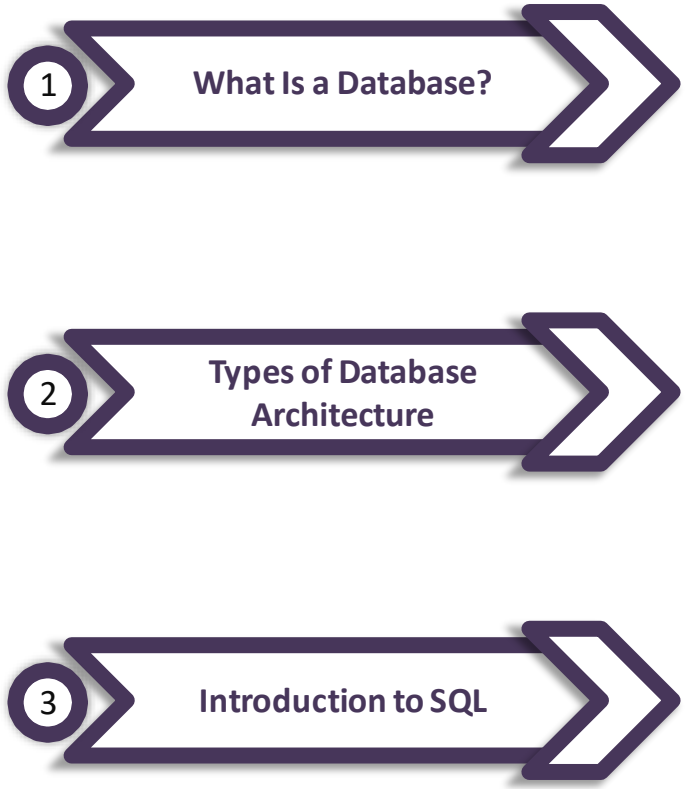
s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

Student_Details1

s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

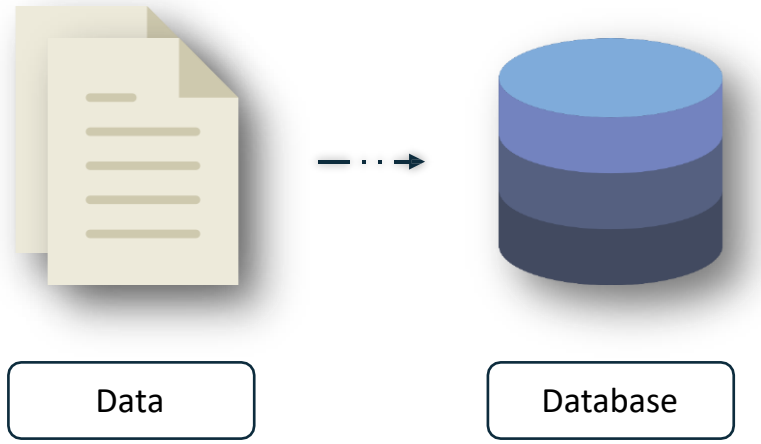
Student_Details2

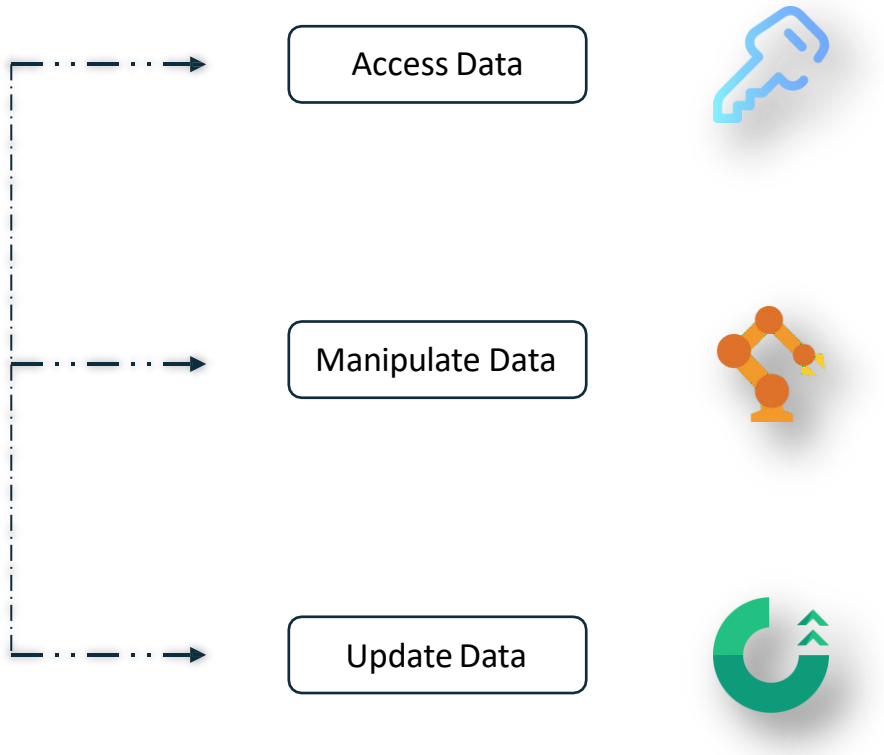
Agenda


1
What Is a Database?
2
Types of Database Architecture
3
Introduction to SQL

What Is a Database?

An organized collection of data stored in an electronic format

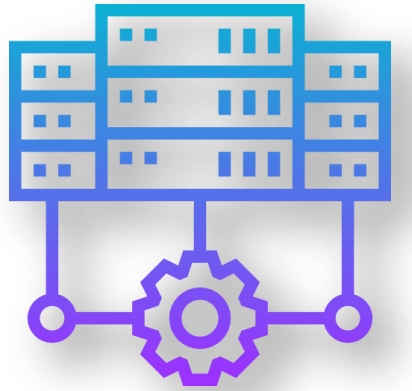




Database Management System

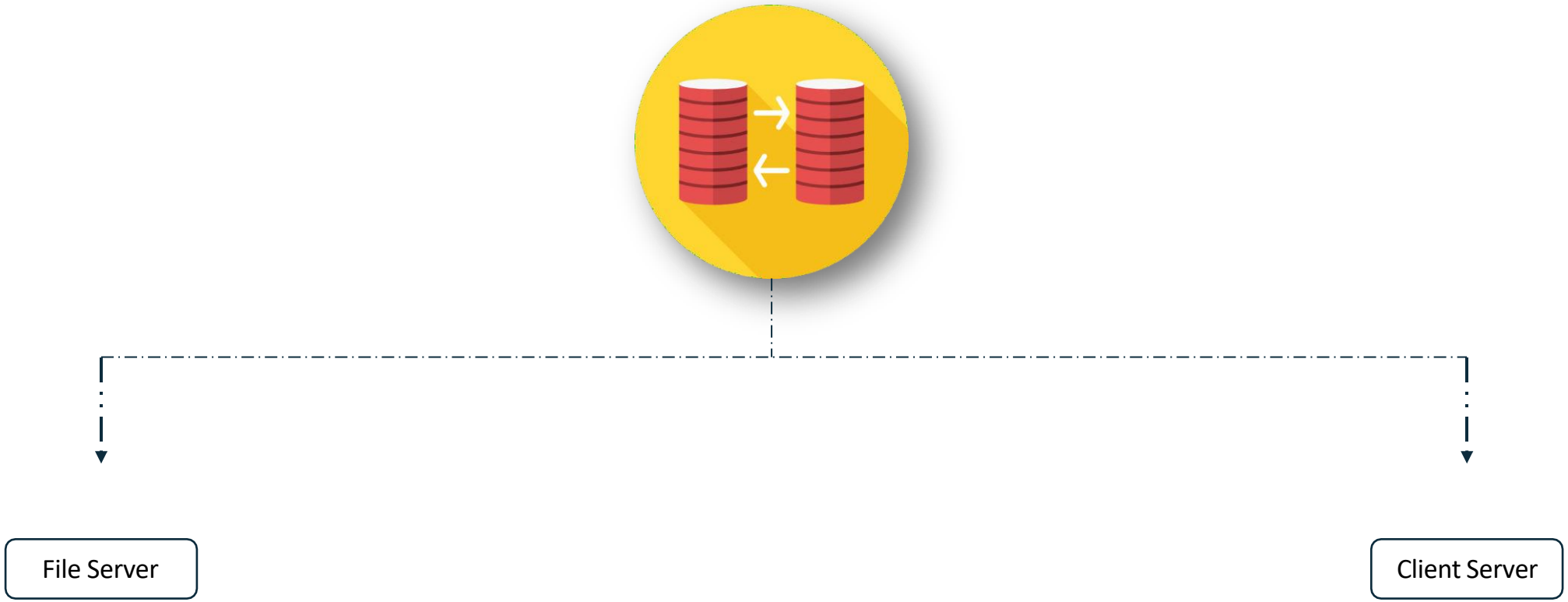
DBMS is a system software for creating and managing databases.

Database



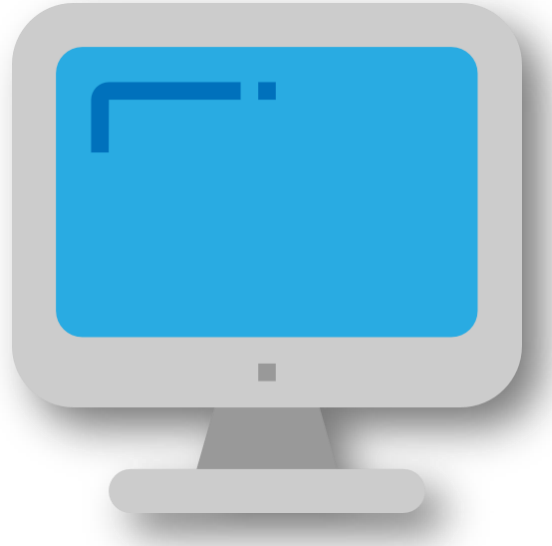
DBMS

Types of Database Architecture



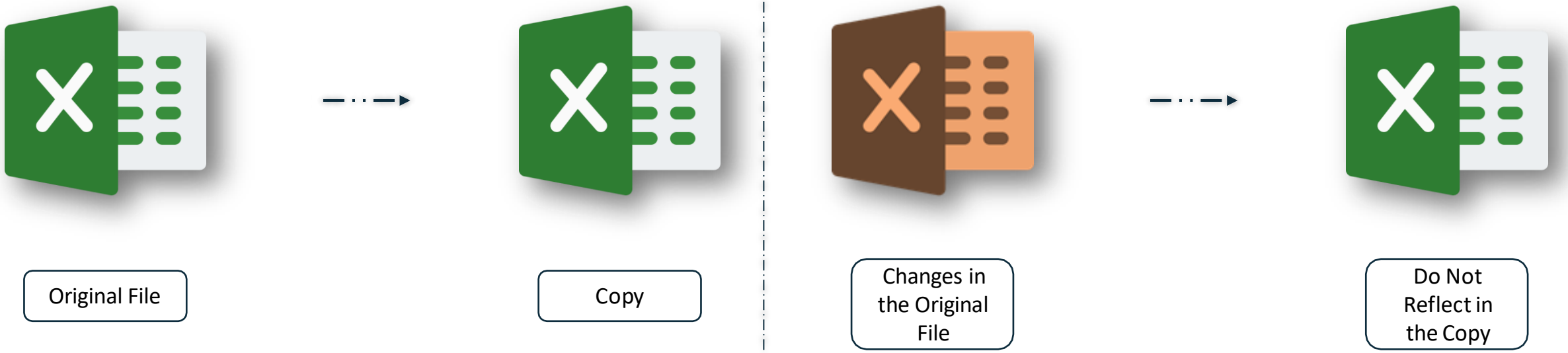
File Server Architecture

Files

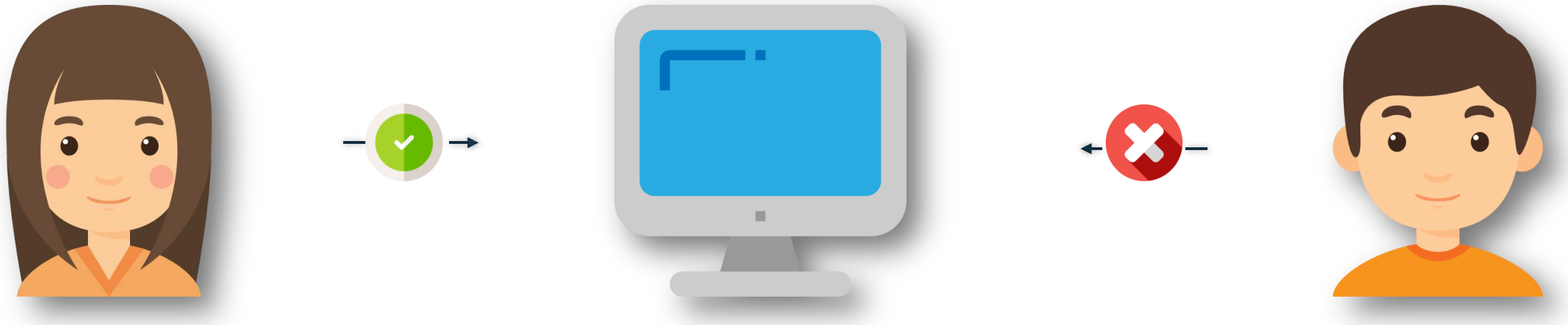


Local System

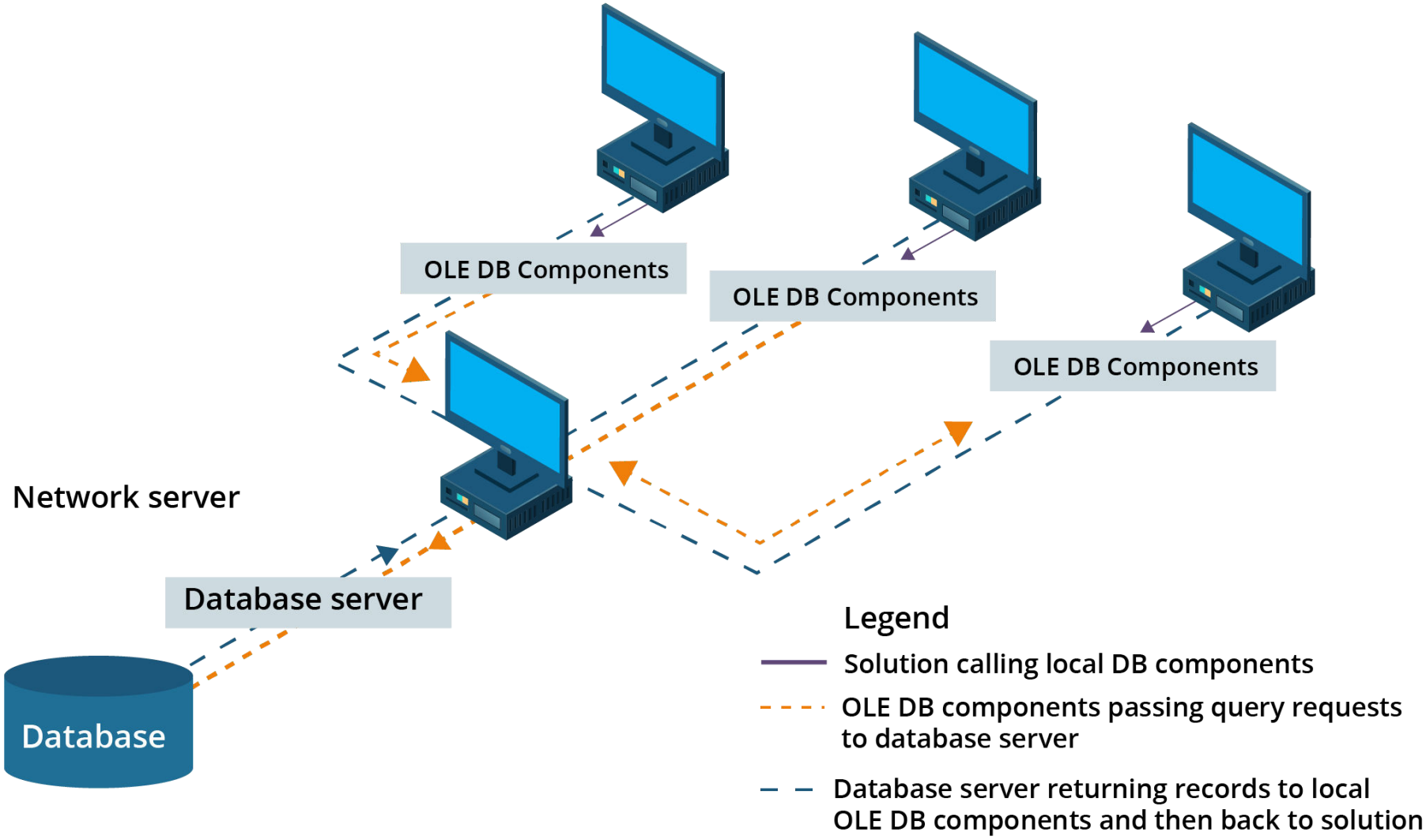
File Server Architecture



File Server Architecture



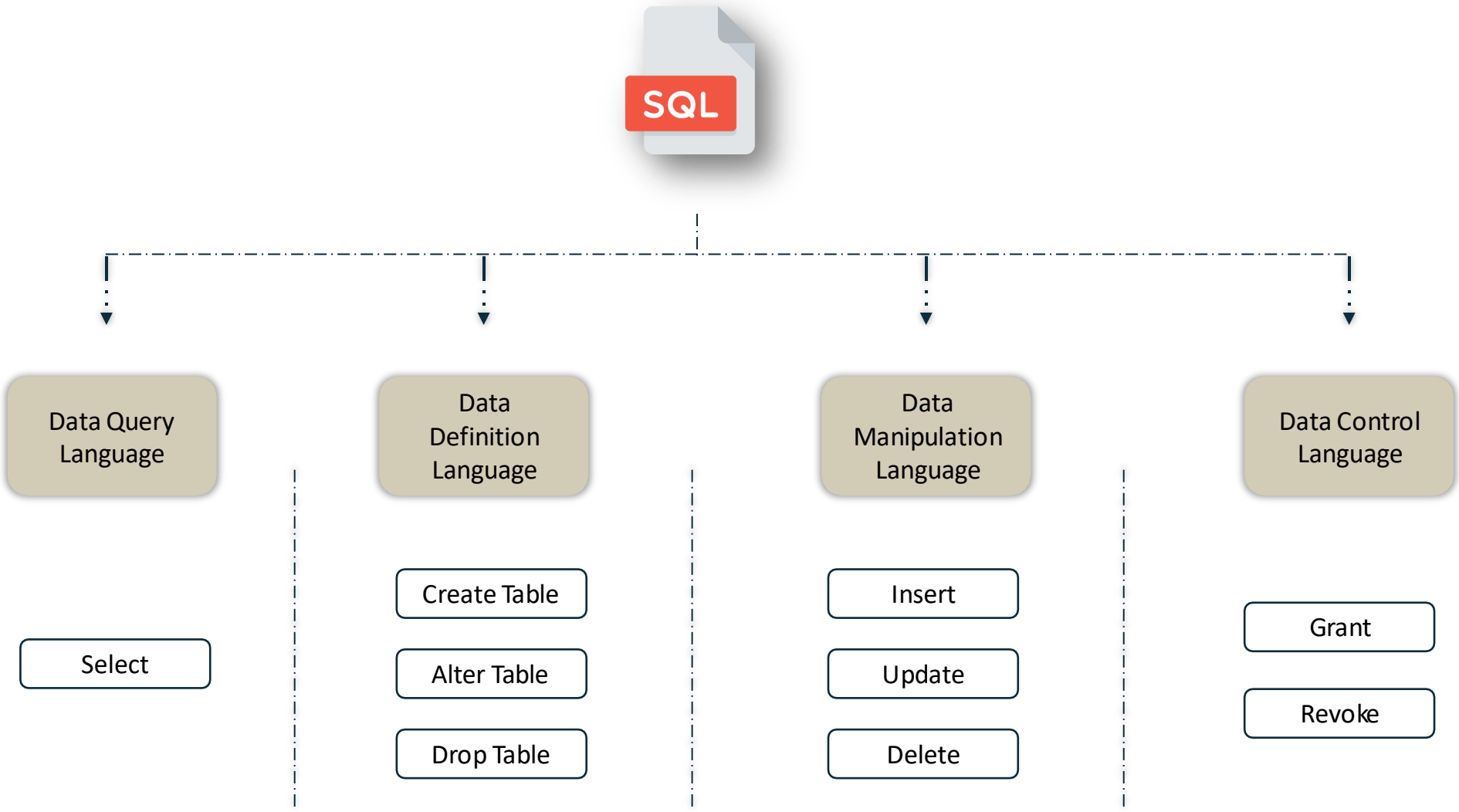
Client Server Architecture



Introduction to SQL

SQL stands for Structured Query Language which is a standard language for accessing and manipulating databases.

Categories of SQL Commands



Agenda

1. Left Join in SQL

Employee

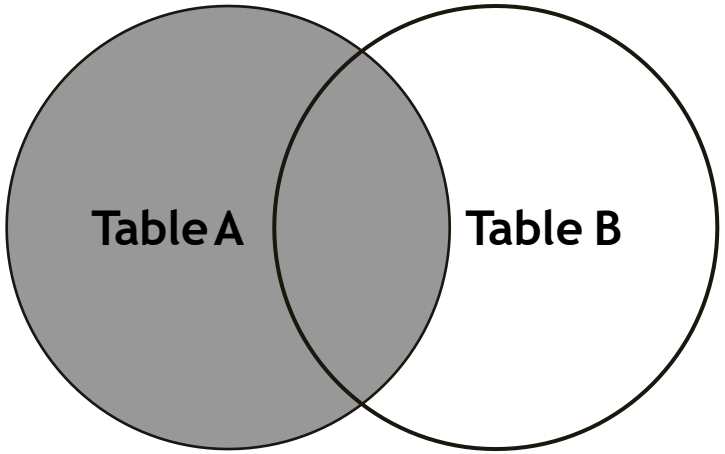
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Department

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Left Join

Left Join returns all the records from the left table and the matched records from the right table.



Left Join: Syntax


```
SELECT columns
FROM table1
LEFT JOIN table2
ON table1.column_x = table2.column_y;
```

Agenda

1. LIKE Operator
2. BETWEEN Operator

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

LIKE Operator

LIKE Operator is used to extract records where a particular pattern is present.

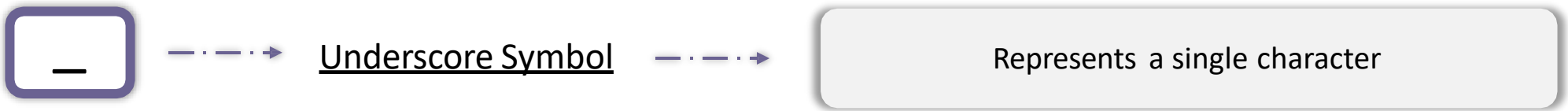
John

Johnathon

Johny

Marcus

Wild Card Characters



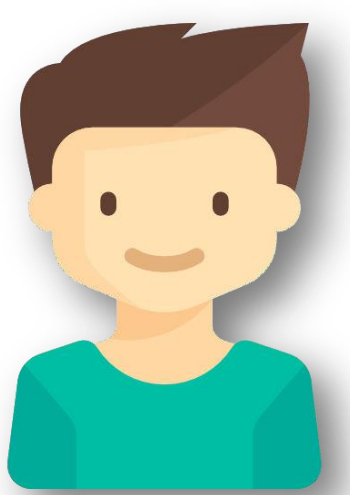
LIKE Operator: Syntax


```
SELECT col_list FROM table_name
WHERE column_N LIKE ‘_XXXX%’;
```

BETWEEN Operator

BETWEEN Operator is used to select values within a given range.

AGE



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25

BETWEEN Operator: Syntax


```
SELECT col_list FROM table_name
WHERE column_N BETWEEN val1 AND
val2;
```

Agenda

1. Merge in SQL

Employee

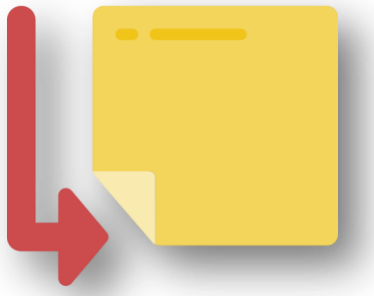
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Department

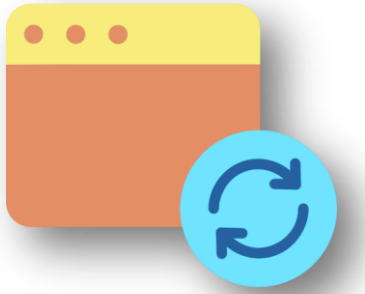
d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Merge

MERGE is the combination of INSERT, DELETE, and UPDATE statements.



Insert



Update

Delete

Merge

Source Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	130000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	100000	28	Male	Content
8	Priya	85000	37	Female	Tech

Target Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Merge

Source Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	130000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	100000	28	Male	Content
8	Priya	85000	37	Female	Tech

Target Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Merge


```
MERGE [Target] AS T
USING [Source] AS S
        ON [Join Condition]
WHEN MATCHED
        THEN [Update Statement]
WHEN NOT MATCHED BY TARGET
        THEN [Insert Statement]
WHEN NOT MATCHED BY SOURCE
        THEN [Delete Statement];
```

Merge

Source Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	130000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	100000	28	Male	Content
8	Priya	85000	37	Female	Tech

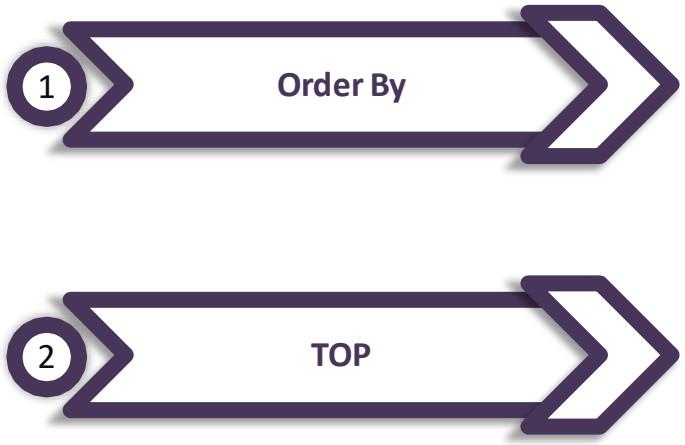
Employee_Source

Target Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Employee_Target

Agenda



e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Order By

ORDER BY is used to sort the data in ascending or descending order.

Ascending

Descending

Order By: Syntax


```
SELECT column_list FROM table_name
ORDER BY col1, col2,……. ASC |
DSC
```

TOP Clause

TOP clause is used to fetch the **top N** records.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

TOP Clause: Syntax

SELECT TOP **x** column_list FROM table_name;

Agenda

1. Right Join in SQL

Employee

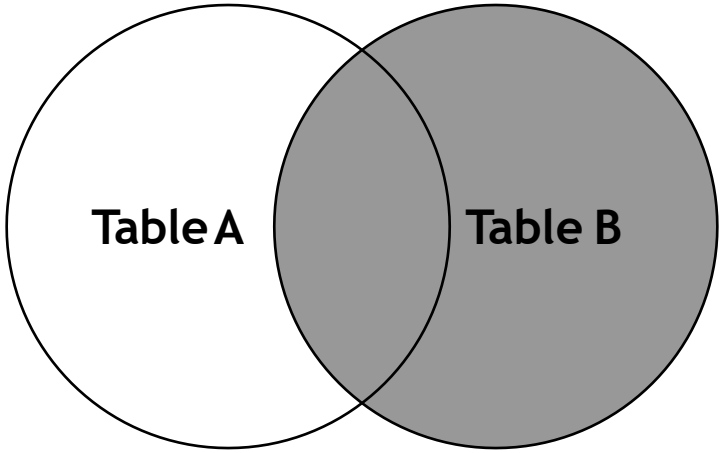
e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Department

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Right Join

RIGHT JOIN returns all the records from the right table and the matched records from the left table.



Right Join: Syntax


```
SELECT columns
FROM table1
RIGHT JOIN table2
ON table1.column_x = table2.column_y;
```

Agenda

1. Select
2. Select Distinct

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Select Statement: Syntax


```
SELECT column1, column2, columnN
FROM table_name;
```

Select Distinct: Syntax

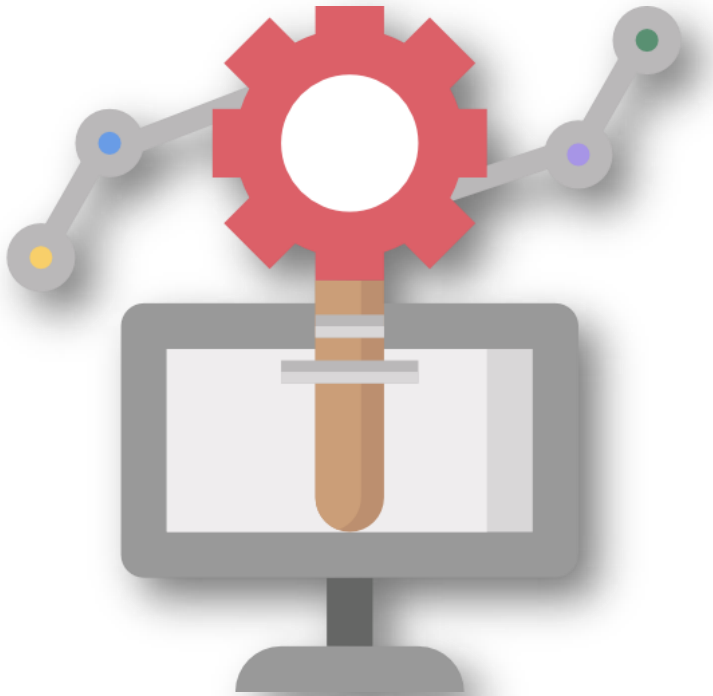

```
SELECT DISTINCT column1,
column2, columnN FROM table_name;
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Stored Procedure in SQL

STORED PROCEDURE is a prepared SQL code which can be saved and reused.



Stored Procedure without Parameter: Syntax


```
CREATE PROCEDURE procedure_name
AS
sql_statement
GO;
```

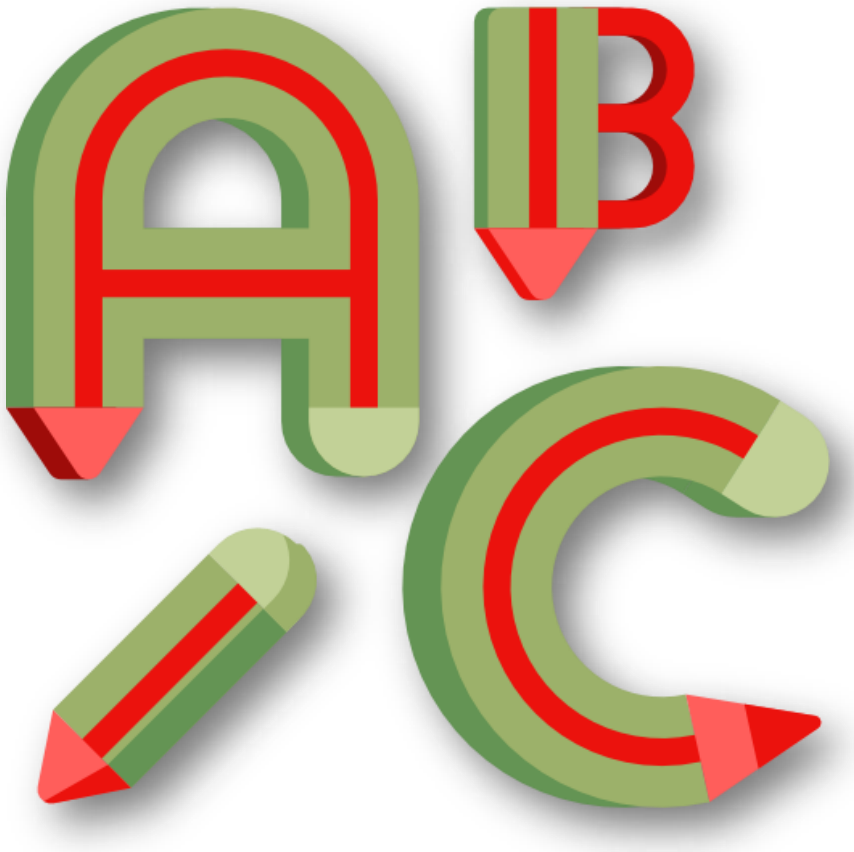
```
EXEC procedure_name
```

Stored Procedure with Parameter: Syntax

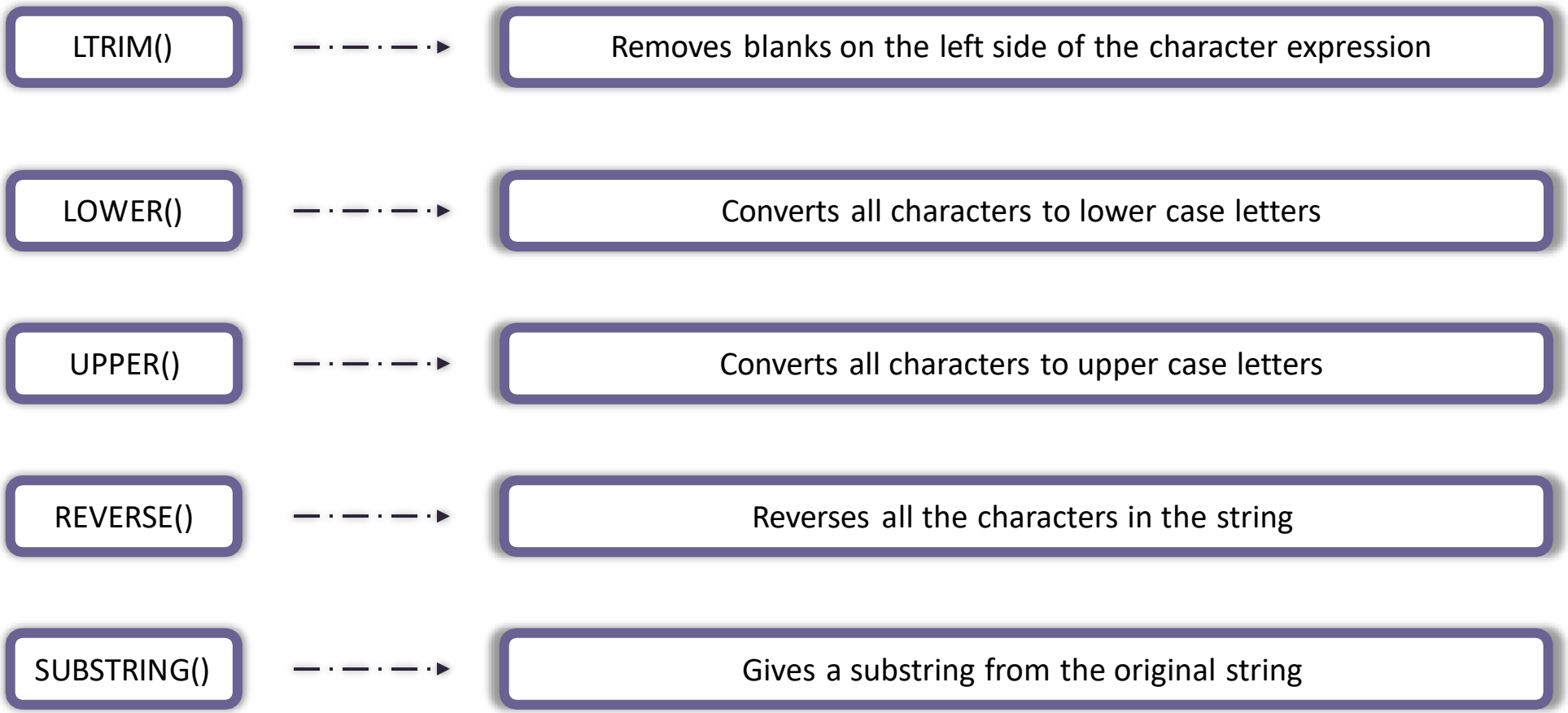

```
CREATE PROCEDURE procedure_name
@param1 data-type, @param2 data-type
AS
sql_statement
GO;
```

Agenda

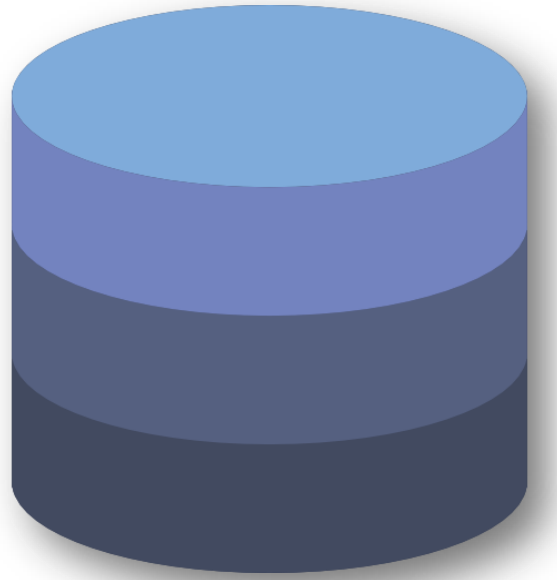
1. String Functions in SQL



String Functions



Agenda



Tables in SQL

A table is a database object which comprises rows and columns.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Fields and Records

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Record

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Field

Fields

A field provides specific information about the data in a table.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Records

Each individual entry in a table is called a record.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Temporary Table

Temporary tables are created in tempDB and deleted as soon as the session is terminated.

Syntax to Create Temporary Table


```
CREATE TABLE #table_name(
);
```

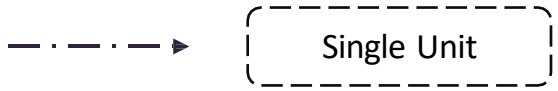
Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Transactions in SQL

Transaction is a group of commands that change the data stored in a database.

```
begin try
   begin transaction
            update employee set e_salary=50
where e_gender='Male'
            update employee set
e_salary=195/0 where e_name='Female'
            commit transaction
   Print 'transaction committed'
end try
begin catch
   rollback transaction
            print 'transaction rolledback'
end catch
```



Transactions in SQL

Transaction is a group of commands that change the data stored in a database.

```
begin try
   begin transaction
            update employee set e_salary=50
where e_gender='Male'
            update employee set
e_salary=195/0 where e_name='Female'
            commit transaction
   Print 'transaction committed'
end try
begin catch
   rollback transaction
            print 'transaction rolledback'
end catch
```

Transactions in SQL

Transaction is a group of commands that change the data stored in a database.

```
begin try
   begin transaction
            update employee set
e_salary=50 where e_gender='Male'
            update employee set
e_salary=195 where e_name='Female'
            commit transaction
   Print 'transaction committed'
end try
begin catch
   rollback transaction
            print 'transaction rolledback'
end catch
```

Agenda

1. Union Operator

2. Union All Operator

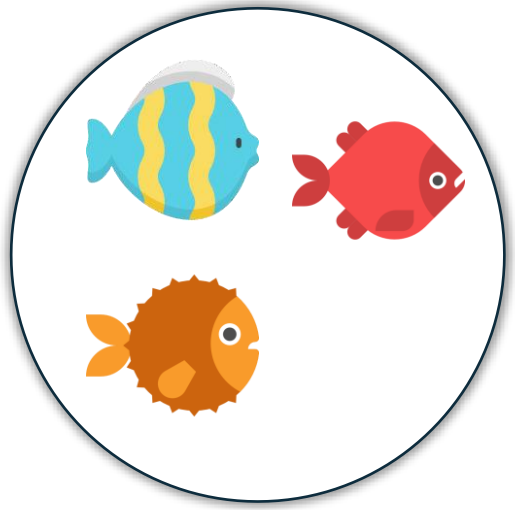
s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

+

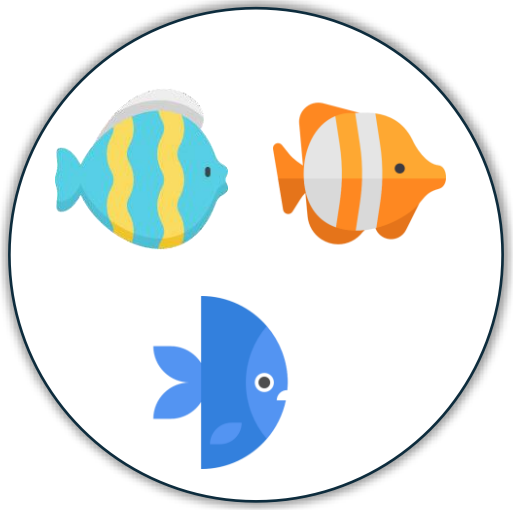
s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

Union Operator

Union operator is used to combine the result set of two or more SELECT statements.



A



B

A U B

Union Operator: Syntax


```
SELECT column_list FROM table1
Union
SELECT column_list FROM table2
```

Union Operator

s_id	s_name	s_marks
1	Sam	45
2	Bob	87
3	Anne	73
4	Julia	92

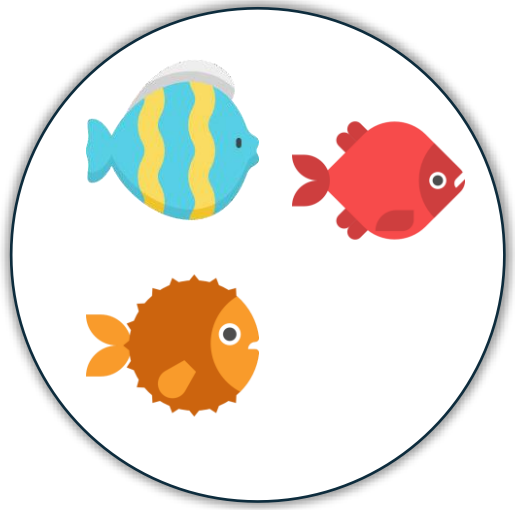
Student_Details1

s_id	s_name	s_marks
3	Anne	73
4	Julia	92
5	Matt	65

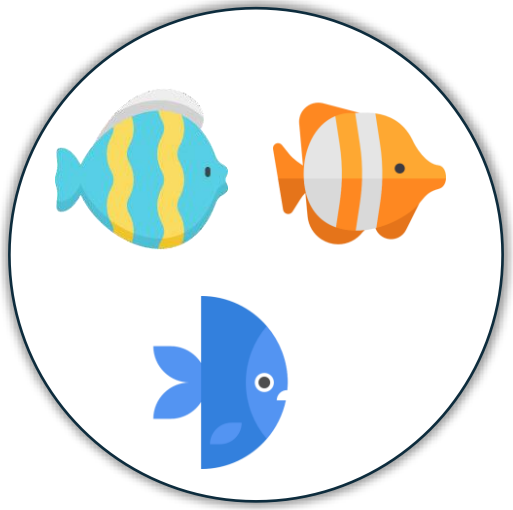
Student_Details2

Union All Operator

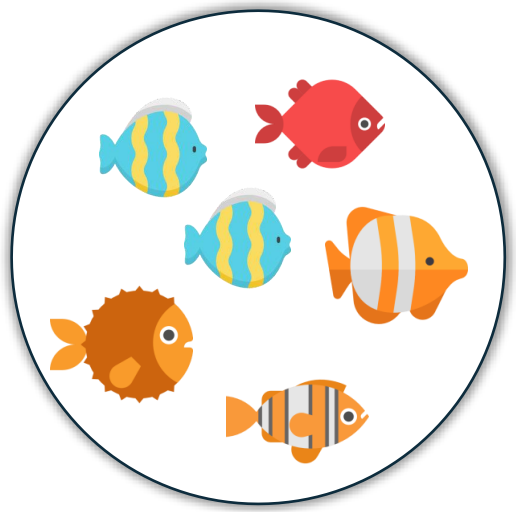
Union All operator gives all rows from both tables including the duplicates.



A



B



A union all B

Agenda

1. Update Using Join

2. Delete Using Join

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
3	Anne	140000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	110000	28	Male	Content
8	Priya	85000	37	Female	Tech

Update Using Join

Department Table

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Employee Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
3	Anne	140000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	110000	28	Male	Content
8	Priya	85000	37	Female	Tech

Updated Employee Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
3	Anne	140000	35	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	110000	38	Male	Content
8	Priya	85000	37	Female	Tech

Delete Using Join

Department Table

d_id	d_name	d_location
1	Content	New York
2	Support	Chicago
3	Analytics	New York
4	Sales	Boston
5	Tech	Dallas
6	Finance	Chicago

Employee Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
3	Anne	140000	25	Female	Analytics
6	Jeff	112000	27	Male	Operations
7	Adam	110000	28	Male	Content
8	Priya	85000	37	Female	Tech

Modified Employee Table

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	93000	40	Male	Operations
6	Jeff	112000	27	Male	Operations
8	Priya	85000	37	Female	Tech

Agenda

1. Update Statement

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Update Statement

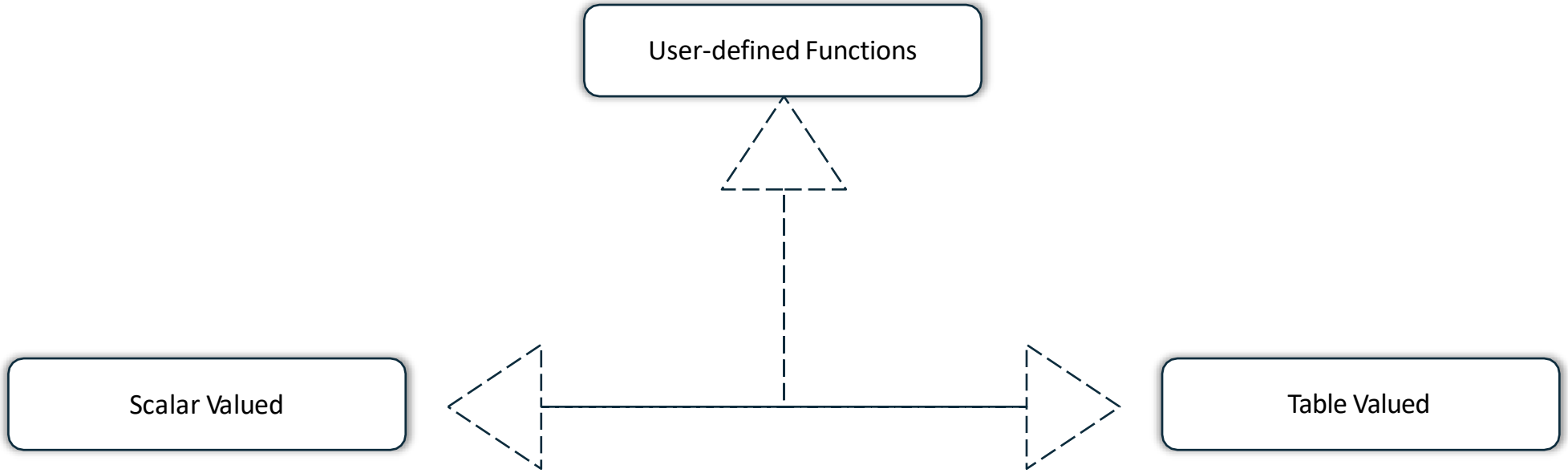
Update is used to modify the existing records in a table.

```
UPDATE table_name
SET col1=val1, col2=val2.....
[WHERE condition];
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Types of User-defined Functions



Scalar Valued Function

Scalar valued function always returns a scalar value.

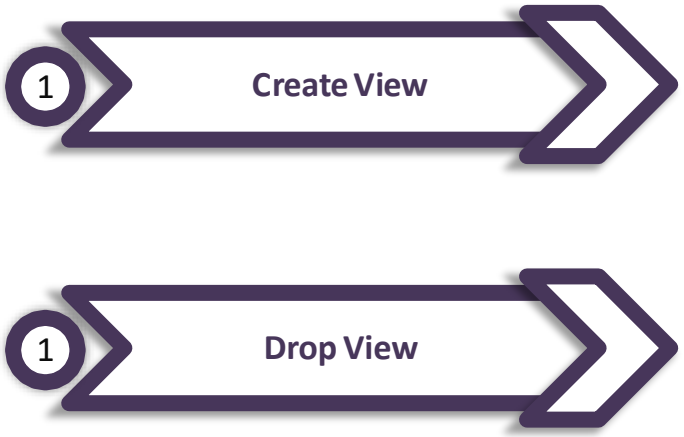
```
CREATE FUNCTION function_name(@param1 data_type, @param2
data_type…)
RETURNS return_datatype
AS
BEGIN
        -----Function body
RETURN value
 END
```

Table Valued Function

Table valued function returns a table.

```
CREATE FUNCTION function_name(@param1 data_type, @param2
data_type…)
RETURNS table
AS
RETURN (SELECT column_list FROM table_name WHERE [condition] )
```

Agenda



e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Views

View is a virtual table based on the result of an SQL statement.

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Employee Table

	e_id	e_name	e_salary	e_age	e_gender	e_dept
1	3	Anne	125000	25	Female	Analytics
2	4	Julia	112000	30	Male	Analytics

"Female_Employee" View

Create View: Syntax


```
CREATE VIEW view_name
AS
SELECT column1, column2,..
FROM table_name
WHERE condition;
```

Drop View: Syntax


```
DROP VIEW view_name;
```

Agenda

e_id	e_name	e_salary	e_age	e_gender	e_dept
1	Sam	95000	45	Male	Operations
2	Bob	80000	21	Male	Support
3	Anne	125000	25	Female	Analytics
4	Julia	73000	30	Female	Analytics
5	Matt	159000	33	Male	Sales
6	Jeff	112000	27	Male	Operations

Where Clause

Where clause is used to extract records which satisfy a condition.

Age>60

Occupation="Doctor"

Where Clause: Syntax


```
SELECT column1, column2, columnN
FROM table_name WHERE [condition]
```

Thank You