

1331206 /PENGENALAN BASIS DATA

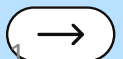
1131205/PENGENALAN BASIS DATA



## *Query a Table*



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# Target

D3TK

Sub-CPMK6: Mahasiswa mampu mengimplementasikan DML Lanjutan Query tabel, mis: select [C3]

D3TI

Sub-CPMK8: Mahasiswa mampu mengimplementasikan DML lanjutan: Basic query, mis: select [C3]

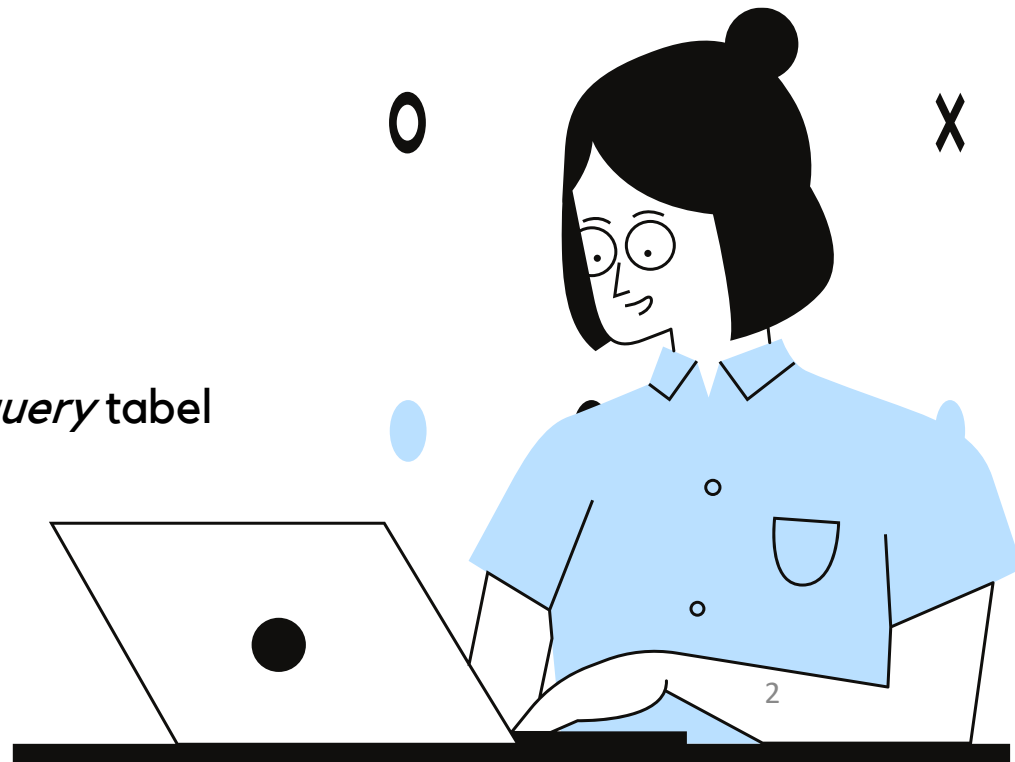
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**Indikator:**

Ketepatan dalam mengimplementasikan *query* tabel

Lihat RPS



## Fundamentals of Select Statement (1)

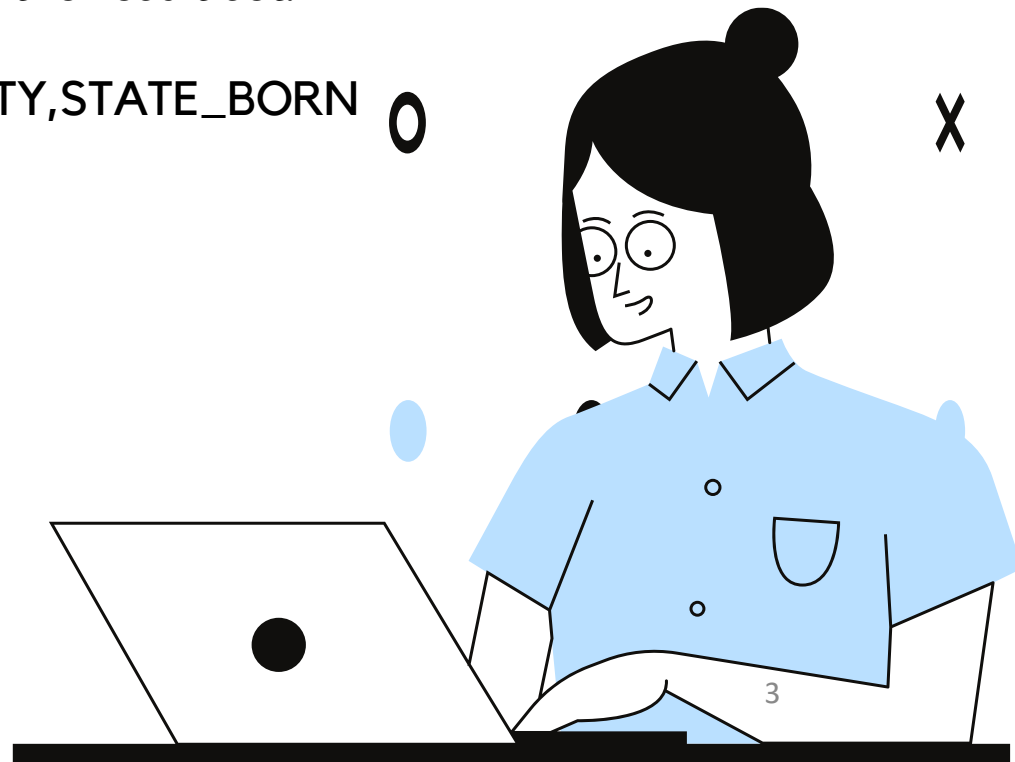
- A SELECT in Transact-SQL enables you to retrieve existing data from SQL Server database. Four primary properties of a result set described by SELECT statement:
  - ❑ The columns to be included
  - ❑ The tables from which the result set data is retrieved
  - ❑ The conditions that the rows in the source table must meet in order to qualify for the result set.
  - ❑ The ordering sequence of the rows in the result set.

■ E.g

```
SELECT PRES_NAME, YRS_SERV, PARTY, STATE_BORN  
FROM PRESIDENT
```

```
Where YRS_SERV > 8
```

```
ORDER by YRS_SERV ASC
```



## Fundamentals of Select Statement (2)

- The main clause of SELECT statement:

SELECT *select\_list*

[INTO *new\_table\_name*]

FROM *table\_list*

[WHERE *search\_conditions*] [GROUP BY *group\_by\_list*]

[HAVING *search\_conditions*] [ORDER BY *order\_list*

[ASC|DESC] ]

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0                      X



## Selecting Columns (1)

- The SELECT statement can be used to retrieve specific column (columns) from certain table by specifying the name of the column from the table which you want to retrieve.

- Syntax:

SELECT

*column\_name1, column\_name2...*

FROM *table\_name*

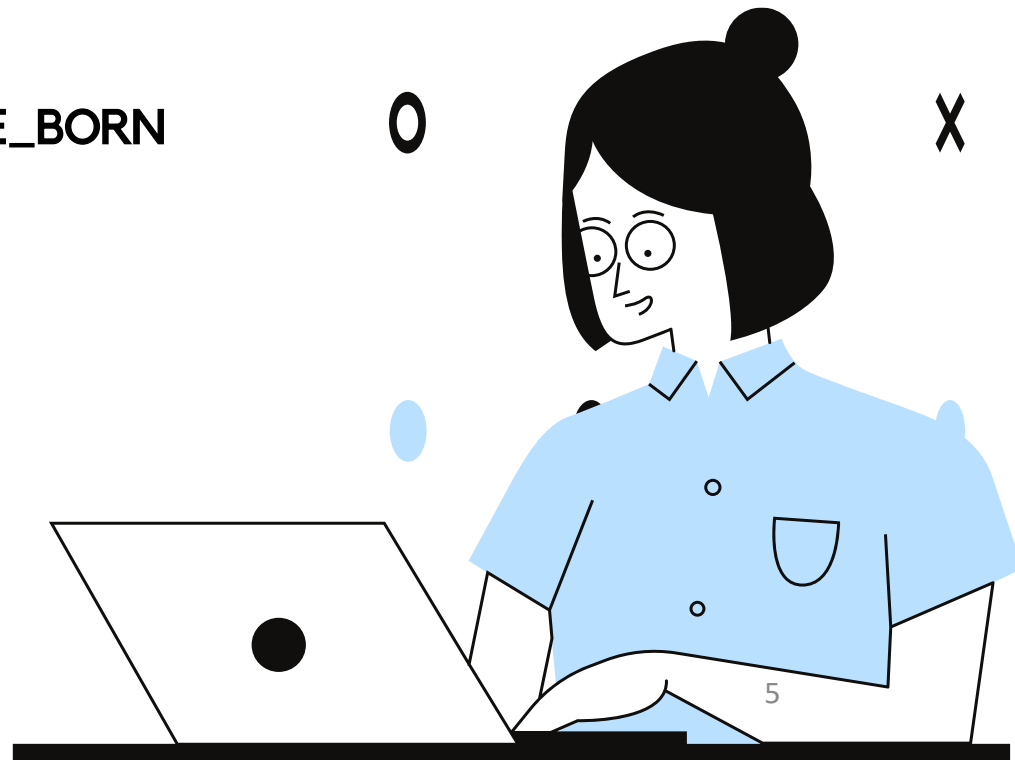
- E.g

**SELECT PRES\_NAME, PARTY, STATE\_BORN  
FROM PRESIDENT**

PRES_NAME	PARTY	STATE_BORN
Adams J	Federalist	Massachusetts
Adams J Q	Demo-Rep	Massachusetts
Arthur C A	Republican	Vermont
Buchanan J	Democratic	Pennsylvania
Carter J E	Democratic	Georgia
Cleveland G	Democratic	New Jersey

X 0 + 0

0 X



## Selecting Columns (2)

- Selecting all columns `SELECT * FROM table_name` e.g.  
`SELECT * FROM PRESIDENT`
- Changing Column Sequence  
`SELECT PRES_NAME, STATE_BORN, PARTY`  
`FROM PRESIDENT`

	PRES_NAME	STATE_BORN	PARTY
1	Adams J	Massachusetts	Federalist
2	Adams J Q	Massachusetts	Demo-Rep
3	Arthur C A	Vermont	Republican
4	Buchanan J	Pensylvania	Democratic
5	Carter J E	Georgia	Democratic
6	Cleveland G	New Jersey	Democratic

X 0 + 0

0 X



## Manipulating Column Names

- A User defined Column heading can replace the default column heading.
  - ❑ **SELECT** *Column\_name* **AS** '*Column\_alias*', [*Column\_name* **AS** *Column\_alias*]

**FROM** *table\_name*

- Where **Column\_alias** is the **User defined column heading** that is to be specified in place of the default Column heading.

- Example

- ❑ **SELECT** PRES\_NAME **AS** 'PRESIDENT  
NAME',  
STATE\_BORN 'BORN IN', PARTY **FROM**  
PRESIDENT

	PRESIDENT NAME	BORN IN	PARTY
1	Adams J	Massachusetts	Federalist
2	Adams J Q	Massachusetts	Demo-Rep
3	Arthur C A	Vermont	Republican
4	Buchanan J	Pensylvania	Democratic
5	Carter J E	Georgia	Democratic
6	Cleveland G	New Jersey	Democratic



## Manipulating Column Names

- `SELECT PRES_NAME AS 'PRESIDENT NAME', 'Was Born On', BIRTH_YR AS 'BIRTH YEAR' FROM PRESIDENT`

	PRESIDENT NAME	(No column name)	BIRTH YEAR
1	Adams J	Was Born On	1735
2	Adams J Q	Was Born On	1767
3	Arthur C A	Was Born On	1830
4	Buchanan J	Was Born On	1791
5	Carter J E	Was Born On	1924
6	Cleveland G	Was Born On	1837

X      0      +      0

0      X

- How to display the Birthdate in another format?
  - Ex. '08 December 1948'
- What function you can use?



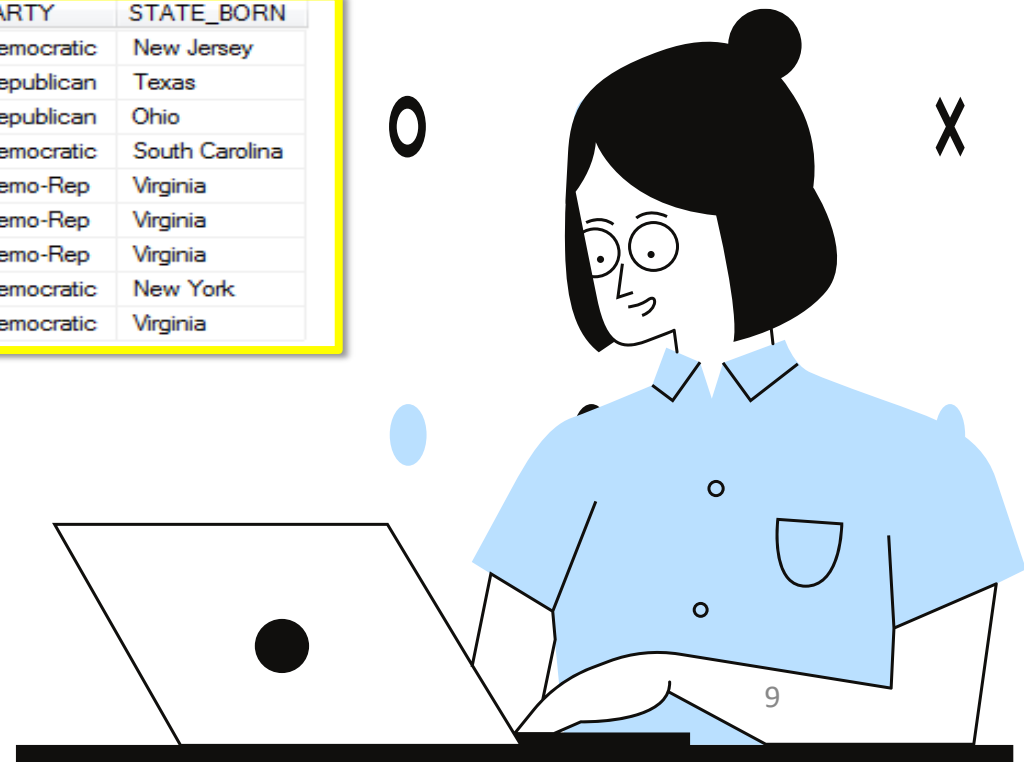


## Selecting rows

- `SELECT column_list FROM table_name WHERE search_condition`
- E.g

`SELECT * FROM PRESIDENT WHERE YRS_SERV > 7`      X      0      +      0

	PRES_NAME	BIRTH_YR	YRS_SERV	DEATH_AGE	PARTY	STATE_BORN
1	Cleveland G	1837	8	71	Democratic	New Jersey
2	Eisenhower D D	1890	8	79	Republican	Texas
3	Grant U S	1822	8	63	Republican	Ohio
4	Jackson A	1767	8	78	Democratic	South Carolina
5	Jefferson T	1743	8	83	Demo-Rep	Virginia
6	Madison J	1751	8	85	Demo-Rep	Virginia
7	Monroe J	1758	8	73	Demo-Rep	Virginia
8	Roosevelt F D	1882	12	63	Democratic	New York
9	Wilson W	1856	8	67	Democratic	Virginia



## Search conditions

- SQL server provides methods for searching the rows in the table as follows:

❑ Comparison operator: = ,<, >, <=, >=, !=, !>, !<

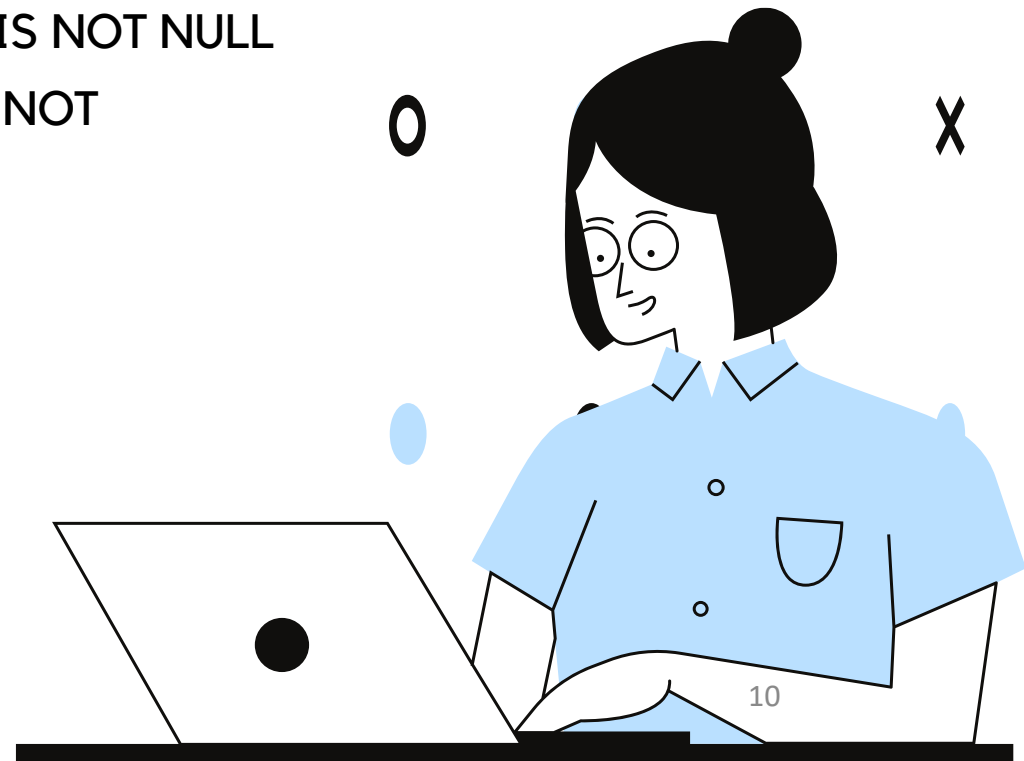
❑ Range operator: BETWEEN, NOT BETWEEN X 0 + 0

❑ List operator: IN, NOT IN

❑ String operator: LIKE, NOT LIKE

❑ Unknown values: IS NULL, IS NOT NULL

❑ Logical operator: AND, OR, NOT 0 X

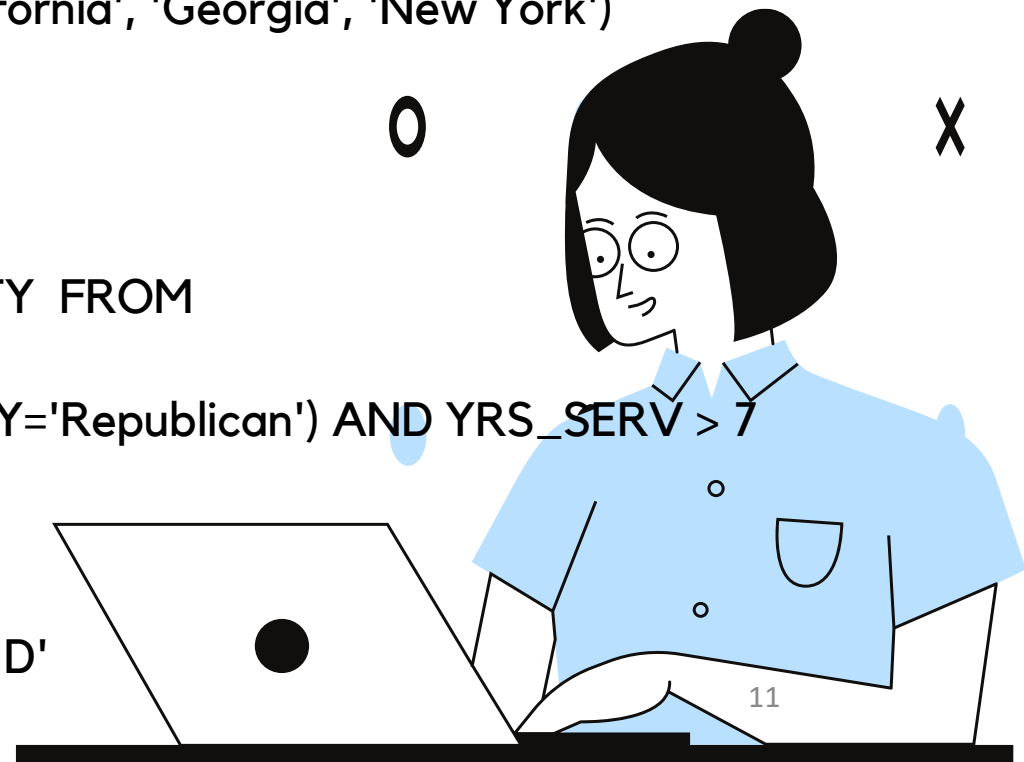


## Search conditions (examples)

- `SELECT PRES_NAME, PARTY, YRS_SERV  
FROM PRESIDENT  
WHERE YRS_SERV BETWEEN 5 AND 7`
- `SELECT PRES_NAME, BIRTH_YR, STATE_BORN  
FROM PRESIDENT  
WHERE STATE_BORN IN ('Texas', 'California', 'Georgia', 'New York')`
- `SELECT * FROM STATE  
WHERE ADMIN_ENTERED IS NULL`
- `SELECT PRES_NAME, YRS_SERV, PARTY FROM  
PRESIDENT  
WHERE (PARTY='Democratic' OR PARTY='Republican') AND YRS_SERV > 7`
- `SELECT PRES_NAME  
FROM PRESIDENT  
WHERE PRES_NAME LIKE 'Roosevelt F D'`

X 0 + 0

0 X

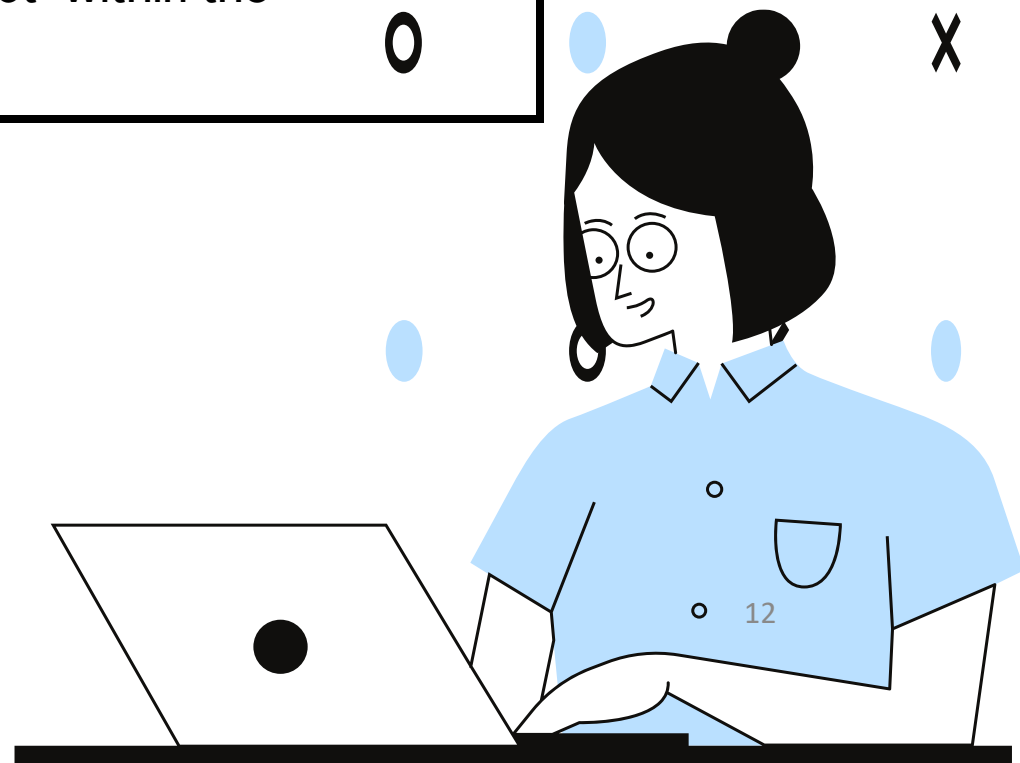


## String operator: Wild Card

Wildcard	Description
%	Represent any string
	Represent a single character X
[]	Represent any single character in the specified range
[^] or [!]	Represent any single character not within the specified range 0

0 + 0

0 X



## String operator: Wild Card (2)

- Select PRES\_NAME From PRESIDENT  
Where PRES\_NAME LIKE 'Roosevelt%'
- Select PRES\_NAME From PRESIDENT  
Where PRES\_NAME LIKE 'Adams J\_'
- Select PRES\_NAME From ADMINISTRATION  
Where YEAR\_INAUGURATED LIKE '182[15]'
- Select PRES\_NAME From ADMINISTRATION  
Where YEAR\_INAUGURATED LIKE '182[^5]'

X      0      +      0

0      ●      X



## Limiting result sets (1)

- DISTINCT keyword

```
SELECT [ALL|DISTINCT] column_names  
FROM table_name
```

```
WHERE search_condition
```

- TOP and PERCENT SELECT TOP n[PERCENT]

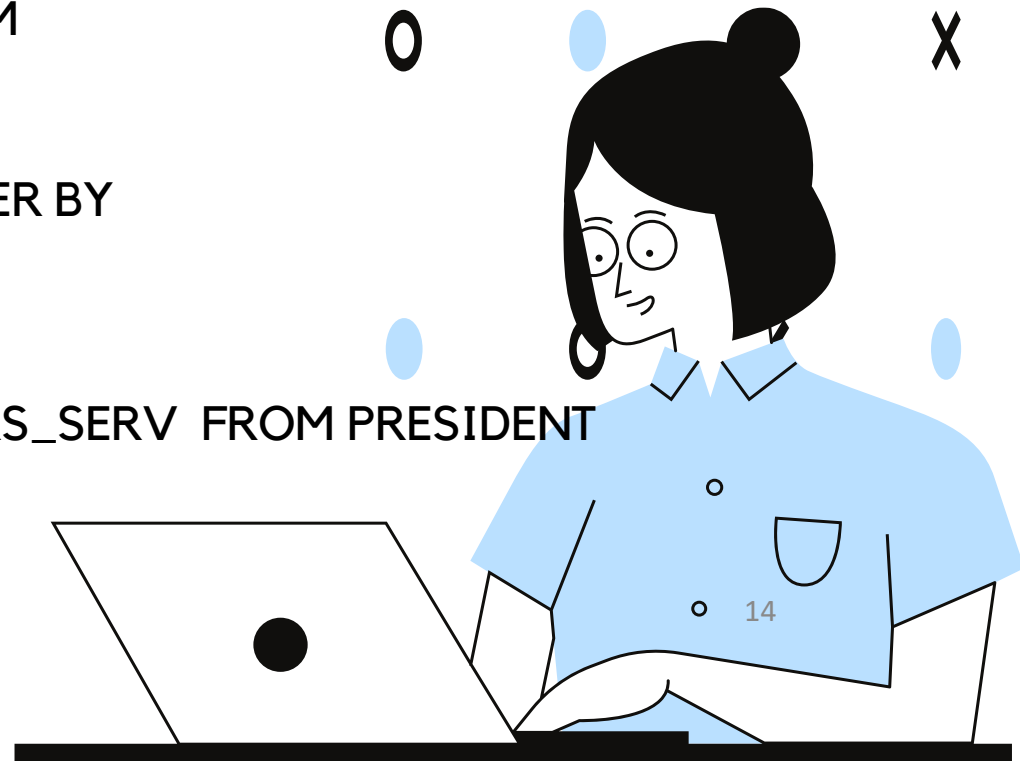
X 0 + 0

- SELECT DISTINCT STATE\_BORN FROM  
PRESIDENT

0 0 X

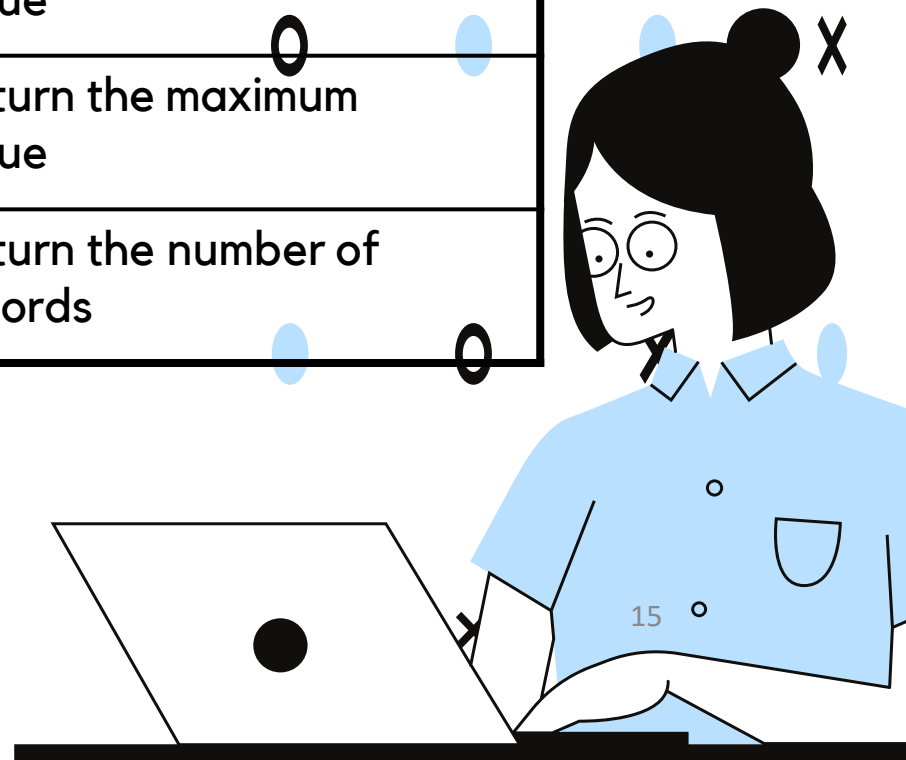
```
WHERE STATE_BORN LIKE 'M%' ORDER BY  
STATE_BORN;
```

- SELECT TOP 3 PRES\_NAME,PARTY, YRS\_SERV FROM PRESIDENT  
ORDER BY YRS\_SERV DESC



## Aggregate functions

Function	Parameter	Description
AVG	([ALL DISTINCT] column_name)	Return the average
SUM	([ALL DISTINCT] column_name)	Return the summation of values
MIN	(column_name)	Return the minimum value
MAX	(column_name)	Return the maximum value
COUNT	([ALL DISTINCT] column_name)	Return the number of records

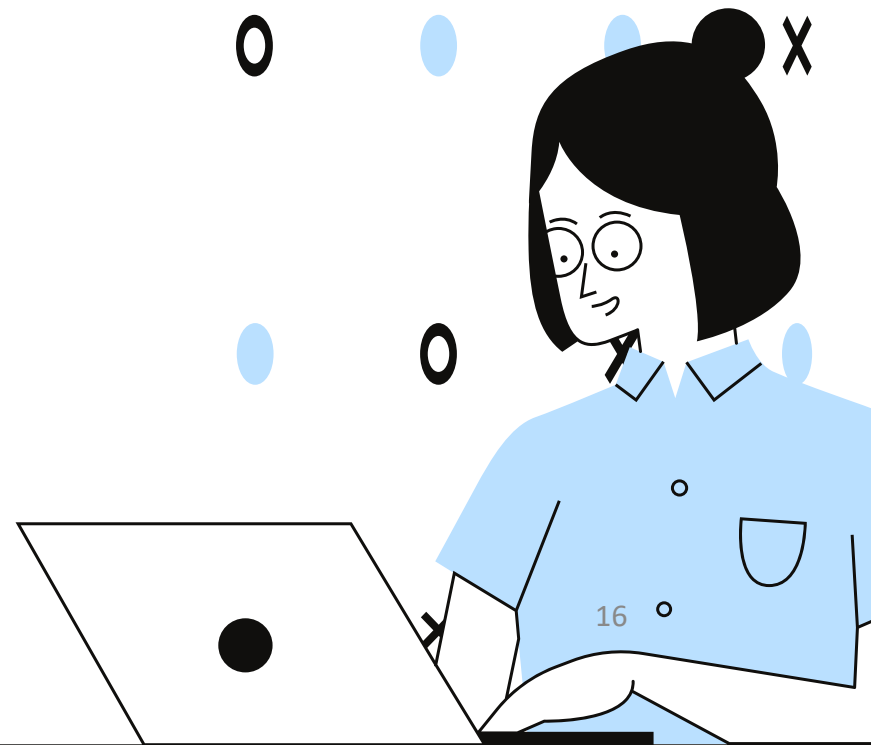


## Aggregate functions (2)

- `SELECT AVG(YRS_SERV) FROM PRESIDENT`
- `SELECT SUM(YRS_SERV)`  
`FROM PRESIDENT`
- `SELECT MIN(YRS_SERV) FROM PRESIDENT`
- `SELECT MAX(YRS_SERV) FROM PRESIDENT`
- `SELECT 'ROW COUNT'=COUNT(PRES_NAME)`  
`FROM PRESIDENT`

X      0      +      0

0      0      0      X





## Grouping result sets (I)

- SQL Server provides method for grouping the result set by using GROUP BY clause. The GROUP BY clause summarizes the result sets into the groups defined in the query using **aggregate functions**.

- ```
SELECT column_list
FROM table_name
WHERE condition
```

```
[GROUP BY [ALL] expression [, expression] [HAVING search_condition]
```

- ```
SELECT PARTY, MAX(YRS_SERV) FROM
PRESIDENT
GROUP BY PARTY
```

- ```
SELECT PARTY, MAX(YRS_SERV) FROM
PRESIDENT
GROUP BY PARTY
HAVING MAX(YRS_SERV) >8
```

X 0 + 0

0 0 X

0



How about this??

```
SELECT PARTY, SUM(YRS_SERV) FROM PRESIDENT  
WHERE SUM(YRS_SERV)>10 GROUP BY PARTY
```

X 0 + 0

0 0 0 X

0 0

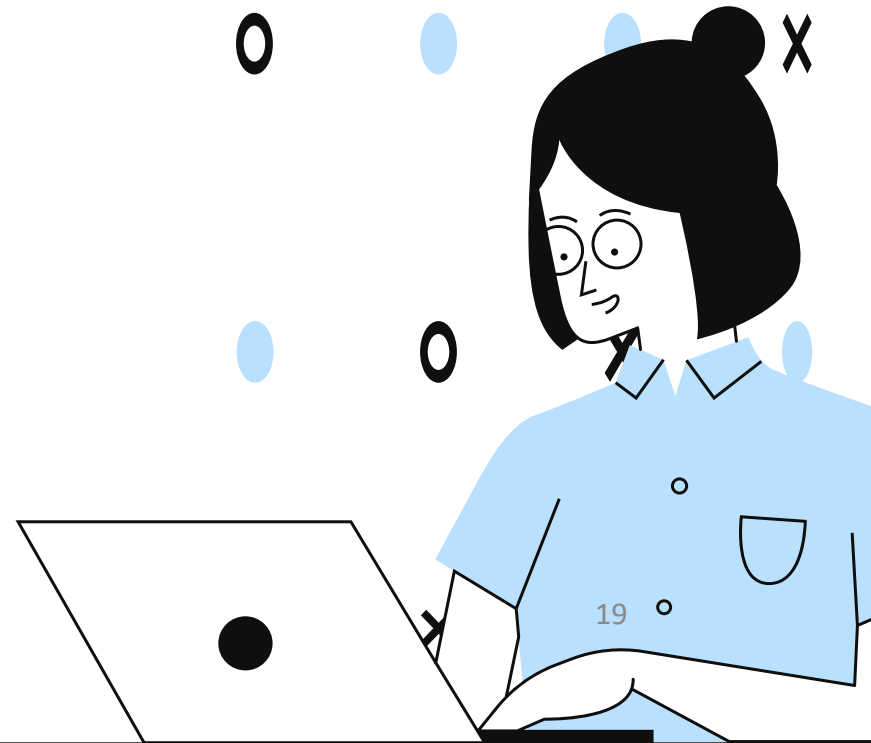


## Sql HAVING Clause

- Specifies a search condition for a group or an aggregate
- Can be used only with the SELECT statement. HAVING is typically used in a GROUP BY clause
- restrict both rows and group result

X      0      +      0

0      0      0      X



## COMPUTE and COMPUTE BY (1)

- SQL server provides COMPUTE clause to produce the summary of rows using aggregate function.

COMPUTE BY further summarize the result sets grouped with column.

- Syntax:

```
SELECT column_list  
FROM table_name ORDER BY column_name  
COMPUTE aggregate_function(column_name...)  
[BY column_name...]
```

- `SELECT PRES_NAME,PARTY FROM PRESIDENT`

```
ORDER BY PARTY COMPUTE COUNT(PARTY)
```

```
BY PARTY
```

X 0 + 0

0 0 X

0



## COMPUTE and COMPUTE BY (2)

|     | PRES_NAME    | PARTY      |
|-----|--------------|------------|
| 1   | Adams J Q    | Demo-Rep   |
| 2   | Jefferson T  | Demo-Rep   |
| cnt |              |            |
| 1   | 4            |            |
|     | PRES_NAME    | PARTY      |
| 1   | Pierce F     | Democratic |
| 2   | Polk J K     | Democratic |
| cnt |              |            |
| 1   | 13           |            |
|     | PRES_NAME    | PARTY      |
| 1   | Washington G | Federalist |
| cnt |              |            |
| 1   | 2            |            |
|     | PRES_NAME    | PARTY      |
| 1   | McKinley W   | Republican |
| 2   | Reagan R     | Republican |
| cnt |              |            |
| 1   | 16           |            |

X 0 + 0

0 0 X

0



## Other information

### ■ SQL Server Metadata (Metadata of metadata)

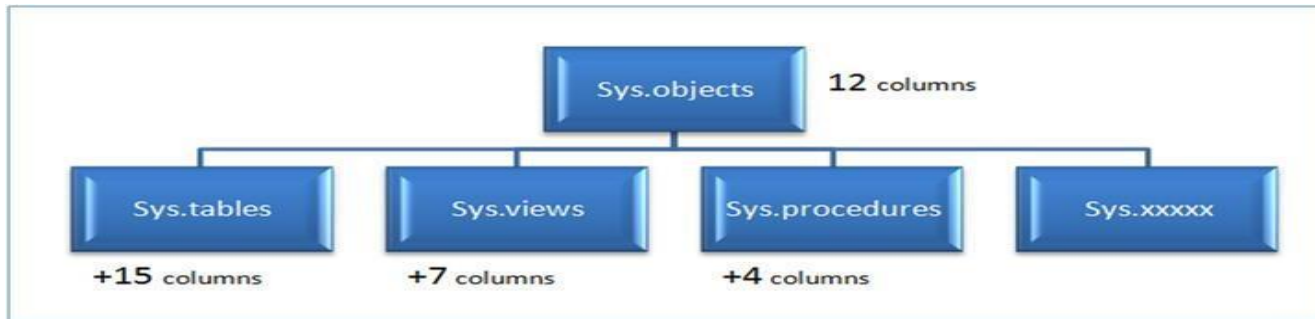
- ❑ INFORMATION\_SCHEMA.TABLES
- ❑ INFORMATION\_SCHEMA.COLUMNS
- ❑ INFORMATION\_SCHEMA.TABLE\_CONSTRAINTS
- ❑ INFORMATION\_SCHEMA.REFERENTIAL\_CONSTRAINTS
- ❑ INFORMATION\_SCHEMA.CHECK\_CONSTRAINTS
- ❑ INFORMATION\_SCHEMA.DOMAINS
- ❑ .....

X 0 + 0

0 0 X



## Other information



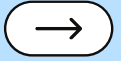
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# Referensi



1. Ditulis ulang dari slide IE321315 - Database System,  
[https://cis.del.ac.id/prkl/perkuliahahan/materi-view?q=q1Si7MMCgZH4\\_FX3v53Zb7QtZF5YS0G4zxcQT4\\_hLP2in2ZFQ2f43G8cir-5V-tB8yfPcJW3dNh0-v8E3DIaqw](https://cis.del.ac.id/prkl/perkuliahahan/materi-view?q=q1Si7MMCgZH4_FX3v53Zb7QtZF5YS0G4zxcQT4_hLP2in2ZFQ2f43G8cir-5V-tB8yfPcJW3dNh0-v8E3DIaqw)

X 0 + 0

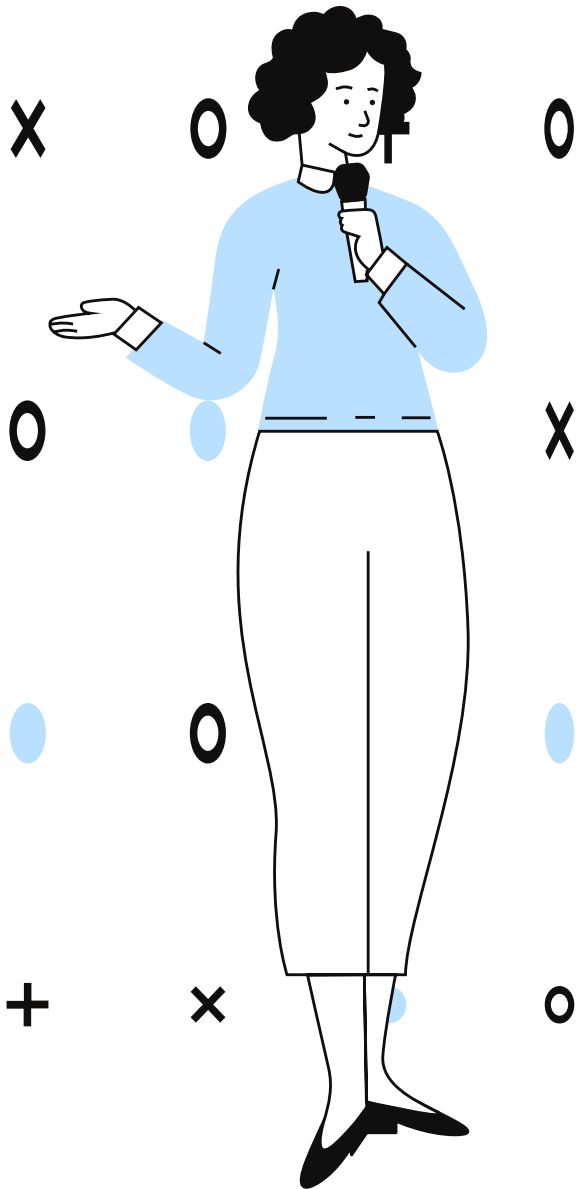
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