SQL Tutorial

SQL

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Agenda

- Creating, Using, and Dropping a Database in SQL
- Data Types in SQL
- Constraints in SQL
- Create Table
- Select
- Select Distinct
- Where
- AND, OR & NOT Operator
- Like & Between Operator

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Creating a Database: Syntax


```
CREATE DATABASE databasename;
```

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Using a Database: Syntax


```
USE [DatabaseName];
```

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Dropping a Database: Syntax


```
DROP DATABASE  databasename;
```

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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

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Different Data Types in SQL

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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

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Character Data Types

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

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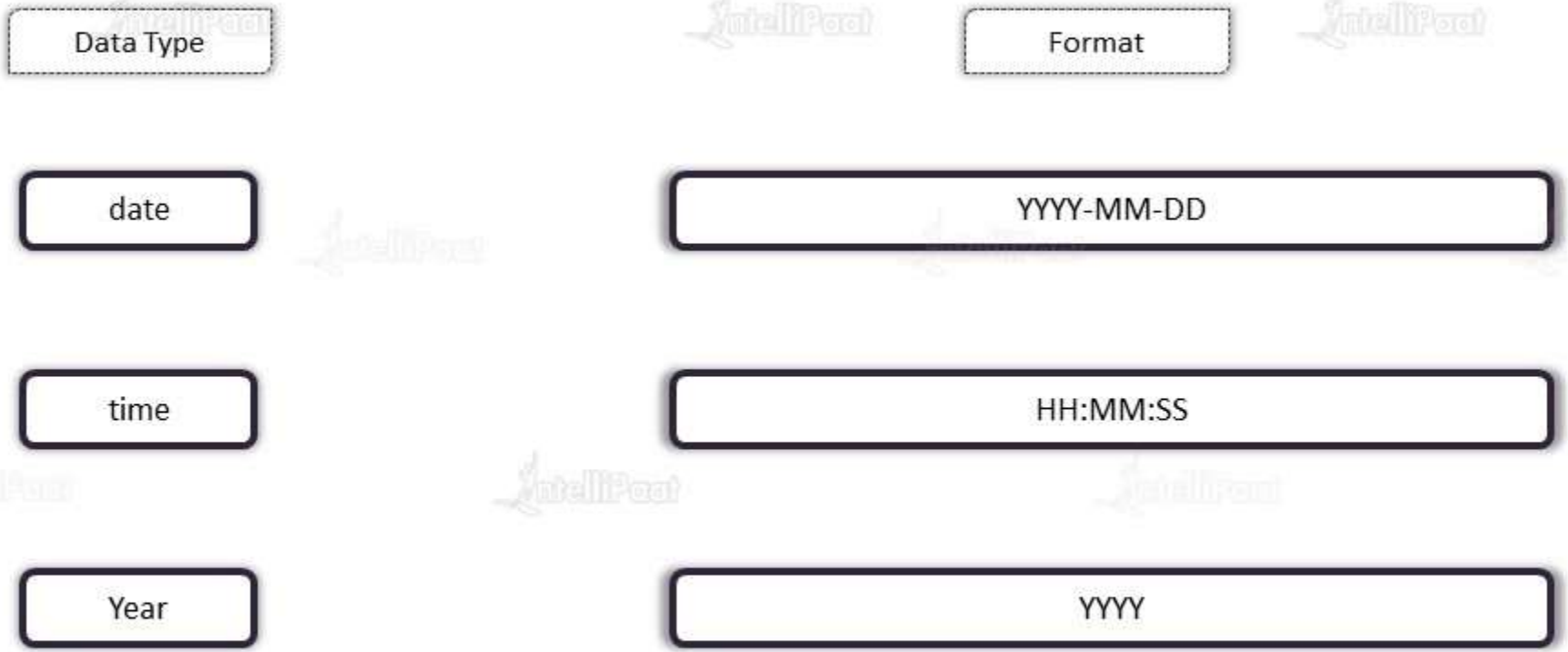
Date and Time Data Types



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Constraints in SQL

Constraints are used to specify rules for data in a table

- Not Null
- Default
- Unique
- Primary Key

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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

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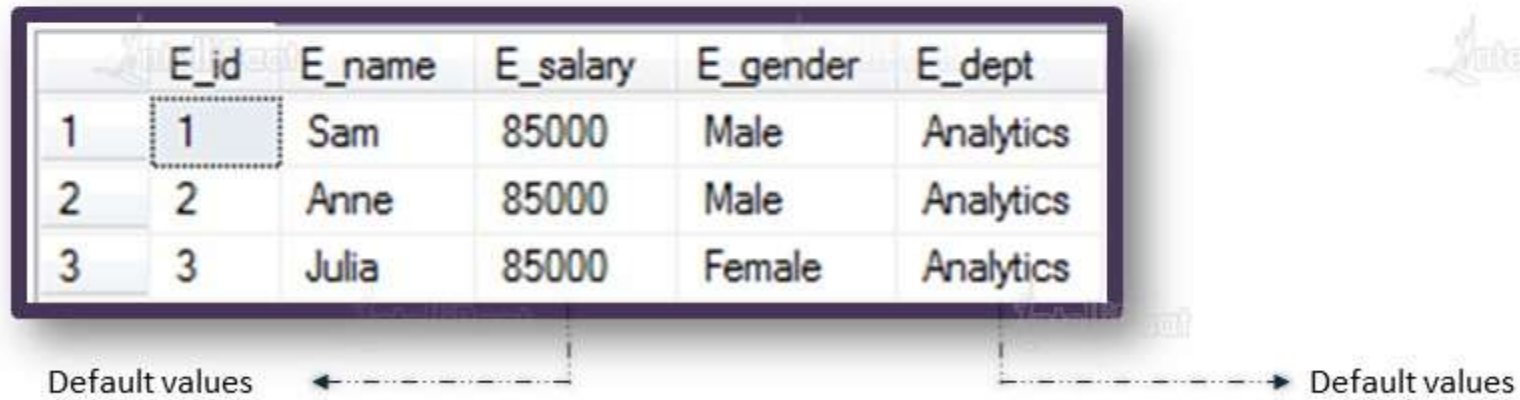
Default Constraint

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



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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

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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

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Foreign Key Constraint

- The FOREIGN KEY constraint is used to prevent actions that would destroy links between tables.
- The FOREIGN KEY constraint also prevents invalid data from being inserted into the foreign key column, because it has to be one of the values contained in the table it points to.

P_Id	LastName	FirstName	Address	City
1	Hansen	Ola	Timoteivn 10	Sandnes
2	Svendson	Tove	Borgvn 23	Sandnes
3	Pettersen	Kari	Storgt 20	Stavanger

O_Id	Order No	P_Id
1	77895	3
2	44678	3
3	22456	2
4	24562	1

```
CREATE TABLE Orders ( O_Id int NOT NULL PRIMARY KEY, OrderNo int
NOT NULL, P_Id int FOREIGN KEY REFERENCES Persons(P_Id) )
```

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Create Table

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Create Table Statement: Syntax


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

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Select Statement: Syntax


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

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Select Distinct: Syntax


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

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Where Clause

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

Age>60

Occupation="Doctor"

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Where Clause: Syntax


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

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AND Operator

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

Age>60

AND

Occupation="Doctor"

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AND Operator: Syntax


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

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OR Operator

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

Occupation="Software Engineer"

OR

Occupation="Doctor"

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OR Operator: Syntax


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

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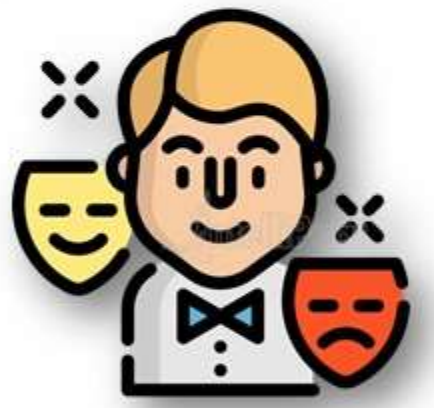
NOT Operator

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

NOT

Occupation="Software Engineer"

Occupation="Doctor"



Occupation="Actor"

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NOT Operator: Syntax


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

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LIKE Operator

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

John

Johnathon

Johny

Marcus

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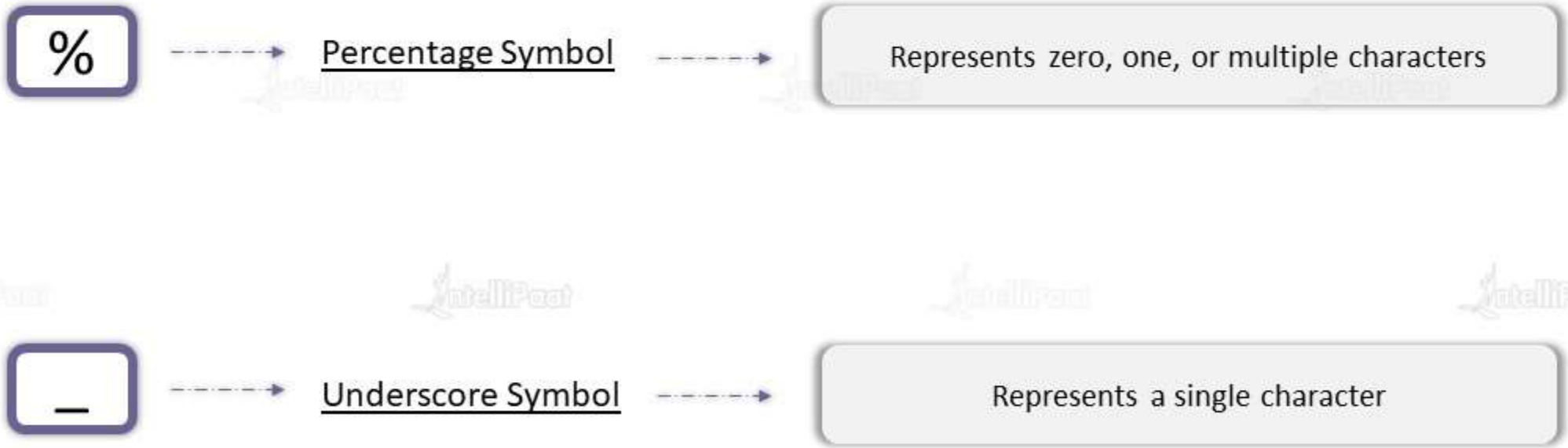
Wild Card Characters



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LIKE Operator: Syntax


```
SELECT col_list FROM table_name
WHERE column_N LIKE '_XXXX%';
```

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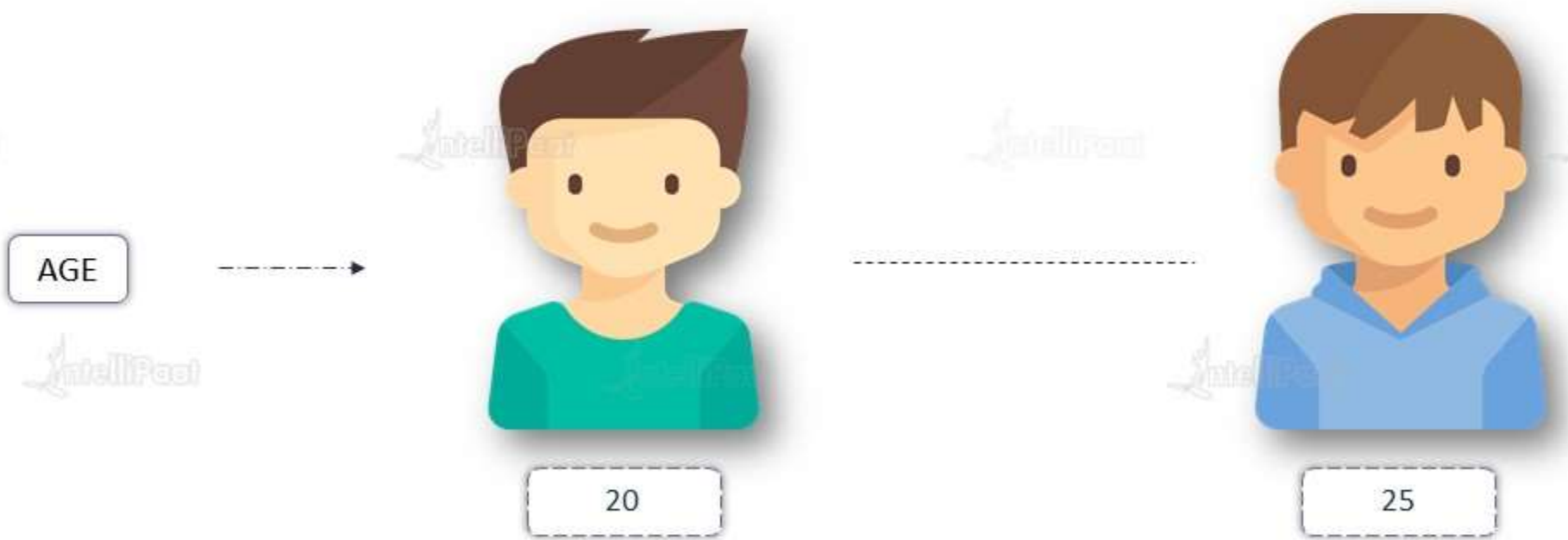
BETWEEN Operator

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



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BETWEEN Operator: Syntax


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

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Quiz

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Quiz

Which of these is the syntax to create a database with the name ‘Sparta’

A	Create Sparta
B	Create Database Sparta
C	Build Sparta
D	Build Database Sparta

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Solution

Which of these is the syntax to create a database with the name ‘Sparta’

A	Create Sparta
B	Create Database Sparta
C	Build Sparta
D	Build Database Sparta

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Quiz

What is the range of ‘smallint’

A	0 <-> 255
B	−2147483648 <-> 2147483647
C	−32768 <-> -32767
D	0 <-> 32767

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Solution

What is the range of ‘smallint’

A	0 <-> 255
B	−2147483648 <-> 2147483647
C	−32768 <-> -32767
D	0 <-> 32767

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Quiz

What is the purpose of 'WHERE' clause in Mysql?

A	Filtering out unwanted rows from result set
B	Filtering out unwanted columns from result set
C	Filtering out unwanted rows and columns from result set
D	None of the mentioned

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Solution

What is the purpose of 'WHERE' clause in Mysql?

A	Filtering out unwanted rows from result set
B	Filtering out unwanted columns from result set
C	Filtering out unwanted rows and columns from result set
D	None of the mentioned

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Quiz

Which of these is the syntax to select all customers whose name starts with 'Sa%'

A

```
SELECT * FROM Customers
WHERE name IN 'Sa%';
```

B

```
SELECT * FROM Customers
WHERE name LIKE 'Sa%';
```

C

```
SELECT FROM Customers
WHERE name IS 'Sa%';
```

D

```
SELECT * FROM Customers
WHERE name IS IN 'Sa%';
```

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Solution

Which of these is the syntax to select all customers whose name starts with 'Sa%'

A	SELECT * FROM Customers WHERE name IN 'Sa%';
B	SELECT * FROM Customers WHERE name LIKE 'Sa%';
C	SELECT FROM Customers WHERE name IS 'Sa%';
D	SELECT * FROM Customers WHERE name IS IN 'Sa%';

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Thank You

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