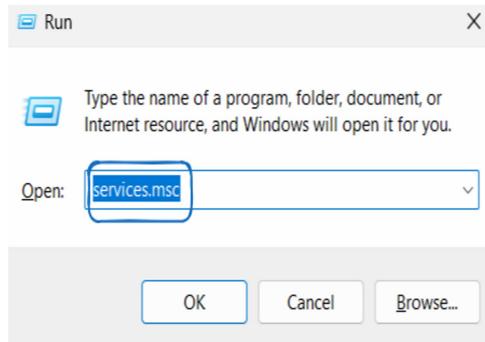


Basic Database Operations-III

- Understanding different data types that are used in SQL.
- How to run .sql file on Workbench / Command Line.
- Understand the WILDCARDS in the WHERE clause.
- Understand the DISTINCT clause.
- Understand the concepts of ORDER BY.
- Understand the concepts of LIMIT and OFFSET.
- Understand commenting for documentation in SQL.
[-- Single Line Comments / /* --- */ - multi line comment]
- Understanding the column alias.

- Use CHAR when the string length is always fixed.
 - Use VARCHAR for strings with varying lengths.
 - Use TEXT and BLOB for large text or binary data.
- Choose INT, BIGINT, FLOAT, DECIMAL depending on the size and precision needed.
- Handle dates and times with DATE, DATETIME, TIMESTAMP, and YEAR.



Char() Vs Varchar()

→ It's something which helps me to store content related to Text.

Data Types

Internally, Char is faster than varchar on a fixed length.

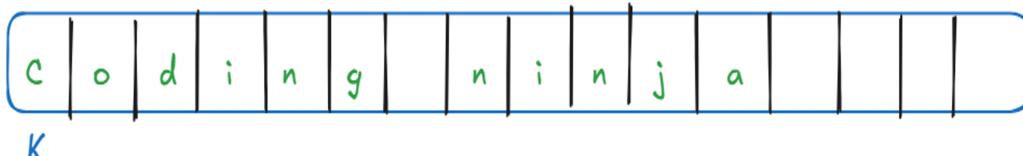
```
CREATE TABLE <Table Name>(  
    column_name data_type [Constraints],  
    column_name data_type [Constraints],  
    column_name data_type [Constraints]  
)
```

Name	Age	Gender
varchar(50)	int	char(1)

```
CREATE TABLE PersonalInfo(  
    name varchar(50),  
    age int,  
    Gender char(1)  
)
```

"Coding Ninja" - 12

Char(16) 1 cell - 1 byte



space = char [16 bytes]

varchar(16) 1 cell - 1 byte



space = 12 bytes

varchar(250) Vs Char(250)

When to use Char - Fixed Length.

Gender - M/F

Boolean - T/F

state abbreviation - "DL", "HR", "AP", "KL", "MH", etc.

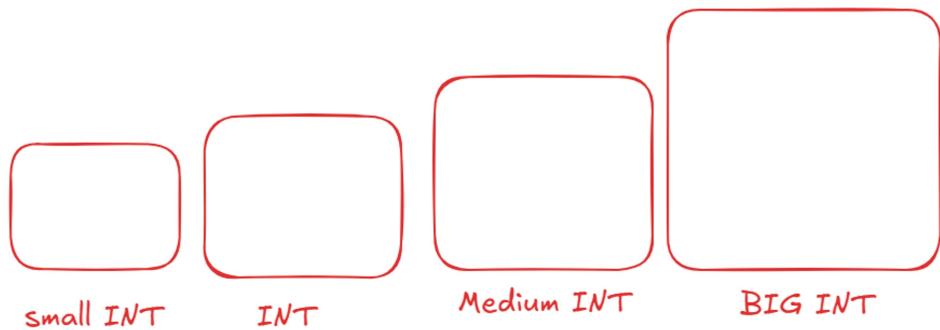
PAN NUMBER - "10 char [Fixed]".

Country Abbreviation - "USA", "IND", "RUS",

'Product Detail'
'Product Detail'

TEXT [Data Type] > VARCHAR > CHAR

BIGINT [20 DIGITS] > INT [10 DIGITS]



```
SELECT
Prefix, FirstName , LastName, Gender , MaritalStatus , Occupation
FROM Customers
WHERE Prefix = "Mrs."
LIMIT 20;
```

Prefix	FirstName	LastName	Gender	MaritalStatus	Occupation
MRS.	ELIZABETH	JOHNSON	F	S	Professional
MRS.	ROBIN	VERHOFF	F	S	Professional
MRS.	LAUREN	WALKER	F	M	Management
MRS.	SYDNEY	BENNETT	F	S	Management
MRS.	SHANNON	WANG	F	S	Skilled Manual
MRS.	JILL	JIMENEZ	F	M	Clerical
MRS.	BETHANY	YUAN	F	M	Clerical
MRS.	THERESA	RAMOS	F	M	Skilled Manual
MRS.	DENISE	STONE	F	M	Skilled Manual
MRS.	EBONY	GONZALEZ	F	M	Skilled Manual
MRS.	DIANA	HERNANDEZ	F	M	Clerical
MRS.	CHRISTINE	YUAN	F	M	Skilled Manual
MRS.	JACLYN	LU	F	M	Skilled Manual
MRS.	HEIDI	LOPEZ	F	S	Clerical
MRS.	DEANNA	MUNOZ	F	M	Skilled Manual
MRS.	MICHELE	NATH	F	M	Skilled Manual
MRS.	ASHLEE	ANDERSEN	F	S	Skilled Manual
MRS.	TIFFANY	LIANG	F	S	Skilled Manual
MRS.	CAROLYN	NAVARRO	F	S	Skilled Manual
MRS.	LINDA	SERRANO	F	S	Skilled Manual

Read 11 - 20

```
mysql> SELECT
-> Prefix, FirstName , LastName, Gender , MaritalStatus , Occupation
-> FROM Customers
-> WHERE Prefix = "Mrs."
-> LIMIT 10 OFFSET 10;
+-----+-----+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender | MaritalStatus | Occupation |
+-----+-----+-----+-----+-----+-----+
| MRS. | DIANA | HERNANDEZ | F | M | Clerical |
| MRS. | CHRISTINE | YUAN | F | M | Skilled Manual |
| MRS. | JACLYN | LU | F | M | Skilled Manual |
| MRS. | HEIDI | LOPEZ | F | S | Clerical |
| MRS. | DEANNA | MUNOZ | F | M | Skilled Manual |
| MRS. | MICHELE | NATH | F | M | Skilled Manual |
| MRS. | ASHLEE | ANDERSEN | F | S | Skilled Manual |
| MRS. | TIFFANY | LIANG | F | S | Skilled Manual |
| MRS. | CAROLYN | NAVARRO | F | S | Skilled Manual |
| MRS. | LINDA | SERRANO | F | S | Skilled Manual |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Find 31 - 50: LIMIT 20 OFFSET 30

Query to find the customers whose education level is Bachelors and Occupation is Professional.

Hint: AND LOGIC > Where clause to apply the filter on Occupation Column.

```
mysql> SELECT DISTINCT Occupation, EducationLevel FROM Customers;
+-----+-----+
| Occupation | EducationLevel |
+-----+-----+
| Professional | Bachelors
| Management | Bachelors
| Skilled Manual | Partial College
| Skilled Manual | High School
| Clerical | Partial College
| Clerical | Partial High School
| Management | Graduate Degree
| Professional | Partial College
| Professional | High School
| Skilled Manual | Partial High School
| Manual | Graduate Degree
| Clerical | Graduate Degree
| Manual | Bachelors
| Manual | Partial College
| Clerical | Bachelors
| Manual | High School
| Management | Partial College
| Management | High School
| Professional | Partial High School
| Management | Partial High School
| Skilled Manual | Bachelors
| Manual | Partial High School
| Skilled Manual | Graduate Degree
| Clerical | High School
| Professional | Graduate Degree
+-----+-----+
```

```
mysql> SELECT
    -> Prefix, FirstName , LastName, Gender , EducationLevel, Occupation
    -> FROM Customers
    -> WHERE Occupation = "Professional"
    -> AND EducationLevel = "Bachelors"
    -> LIMIT 10 OFFSET 10;
+-----+-----+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender | EducationLevel | Occupation |
+-----+-----+-----+-----+-----+-----+
| MR. | CURTIS | LU | M | Bachelors | Professional |
| MRS. | CHERYL | DIAZ | F | Bachelors | Professional |
| MR. | ANDRÃ?S | ANAND | M | Bachelors | Professional |
| MR. | ADAM | ROSS | M | Bachelors | Professional |
| MS. | ABBY | SAI | F | Bachelors | Professional |
| MRS. | JULIA | NELSON | F | Bachelors | Professional |
| MS. | CASSIE | CHANDE | F | Bachelors | Professional |
| MR. | EDGAR | SARA | M | Bachelors | Professional |
| MS. | CANDACE | FERNANDEZ | F | Bachelors | Professional |
| MR. | JESSIE | LIU | M | Bachelors | Professional |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Query to find the customers who are married [and] do not have any kids.

```
mysql> DESC Customers;
+-----+-----+-----+-----+-----+-----+
| Field | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CustomerKey | int | YES | | NULL |
| Prefix | text | YES | | NULL |
| FirstName | text | YES | | NULL |
| LastName | text | YES | | NULL |
| BirthDate | text | YES | | NULL |
| MyUnknownColumn | text | YES | | NULL |
| MaritalStatus | text | YES | | NULL |
| Gender | text | YES | | NULL |
| EmailAddress | text | YES | | NULL |
| AnnualIncome | text | YES | | NULL |
| TotalChildren | int | YES | | NULL |
| EducationLevel | text | YES | | NULL |
| Occupation | text | YES | | NULL |
| HomeOwner | text | YES | | NULL |
| Phone_number | bigint | YES | | NULL |
+-----+-----+-----+-----+-----+-----+
```

```
mysql> SELECT DISTINCT MaritalStatus FROM Customers;
+-----+
| MaritalStatus |
+-----+
| M |
| S |
+-----+
```

```
mysql> SELECT
    --> Prefix, FirstName , LastName, Gender , MaritalStatus, TotalChildren
    --> FROM Customers
    --> WHERE MaritalStatus = "M"
    --> AND TotalChildren = 0
    --> LIMIT 10 OFFSET 10;
+-----+-----+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender | MaritalStatus | TotalChildren |
+-----+-----+-----+-----+-----+-----+
| MR. | NOAH | POWELL | M | M | 0 |
| MR. | CHASE | REED | M | M | 0 |
| MS. | JESSICA | HENDERSON | F | M | 0 |
| MS. | GRACE | BUTLER | F | M | 0 |
| MR. | DAMIEN | CHANDER | M | M | 0 |
| MS. | ALYSSA | COX | F | M | 0 |
| MS. | AIMEE | HE | F | M | 0 |
| MR. | EDGAR | SARA | M | M | 0 |
| MS. | JAN | EDWARDS | F | M | 0 |
| MS. | SAMANTHA | LONG | F | M | 0 |
+-----+-----+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

1 - Int.
"1" - String.
"abc" - Int [x]
"abc" - String.

Query to find the customers with 0 children and are homeowners.

```
mysql> SELECT DISTINCT HomeOwner FROM Customers;
+-----+
| HomeOwner |
+-----+
| Y |
| N |
+-----+
2 rows in set (0.00 sec)
```

```
mysql> SELECT
    -> Prefix, FirstName , LastName, Gender , HomeOwner, TotalChildren
    -> FROM Customers
    -> WHERE HomeOwner = 'Y'
    -> AND TotalChildren = 0
    -> LIMIT 10 OFFSET 10;
```

Prefix	FirstName	LastName	Gender	HomeOwner	TotalChildren
MS.	CAROL	RAI	F	Y	0
MR.	NOAH	POWELL	M	Y	0
MS.	ANGELA	MURPHY	F	Y	0
MR.	CHASE	REED	M	Y	0
MS.	GRACE	BUTLER	F	Y	0
MR.	CALEB	CARTER	M	Y	0
MR.	DONALD	GONZALEZ	M	Y	0
MR.	DAMIEN	CHANDER	M	Y	0
MS.	ALYSSA	COX	F	Y	0
MS.	AIMEE	HE	F	Y	0

10 rows in set (0.00 sec)

' ' - char

" " - multi char [String/Text]

12 - Int [Numeric]

Query to find all the customer who are not a HomeOwner.

Hint: NOT LOGIC > Where clause to apply the filter on HomeOwner Column.

```
mysql> SELECT
    -> Prefix, FirstName , LastName, Gender , HomeOwner, TotalChildren
    -> FROM Customers
    -> WHERE HomeOwner != 'Y'
    -> LIMIT 10;
```

Prefix	FirstName	LastName	Gender	HomeOwner	TotalChildren
MR.	EUGENE	HUANG	M	N	3
MS.	CHRISTY	ZHU	F	N	0
MR.	SHANNON	CARLSON	M	N	0
MS.	JACQUELYN	SUAREZ	F	N	0
MRS.	SYDNEY	BENNETT	F	N	3
MS.	CHLOE	YOUNG	F	N	0
MR.	LUKE	LAL	M	N	0
MR.	JORDAN	KING	M	N	0
MS.	DESTINY	WILSON	F	N	0
MR.	HAROLD	SAI	M	N	2

10 rows in set (0.00 sec)

```
mysql> SELECT
    -> Prefix, FirstName , LastName, Gender , HomeOwner, TotalChildren
    -> FROM Customers
    -> WHERE HomeOwner = 'N'
    -> LIMIT 10;
```

Prefix	FirstName	LastName	Gender	HomeOwner	TotalChildren
MR.	EUGENE	HUANG	M	N	3
MS.	CHRISTY	ZHU	F	N	0
MR.	SHANNON	CARLSON	M	N	0
MS.	JACQUELYN	SUAREZ	F	N	0
MRS.	SYDNEY	BENNETT	F	N	3
MS.	CHLOE	YOUNG	F	N	0
MR.	LUKE	LAL	M	N	0
MR.	JORDAN	KING	M	N	0
MS.	DESTINY	WILSON	F	N	0
MR.	HAROLD	SAI	M	N	2

10 rows in set (0.00 sec)

```

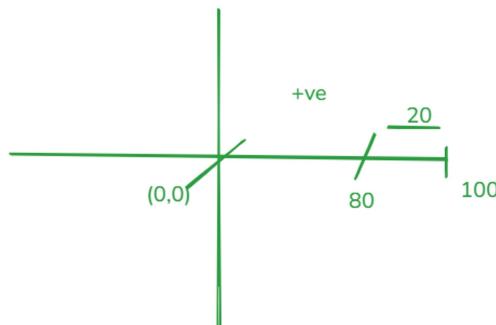
mysql> SELECT
-> Prefix, FirstName , LastName, Gender , HomeOwner, TotalChildren
-> FROM Customers
-> WHERE NOT HomeOwner = 'Y'
-> LIMIT 10;
+-----+-----+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender | HomeOwner | TotalChildren |
+-----+-----+-----+-----+-----+-----+
| MR.    | EUGENE   | HUANG    | M      | N        | 3           |
| MS.    | CHRISTY  | ZHU       | F      | N        | 0           |
| MR.    | SHANNON  | CARLSON  | M      | N        | 0           |
| MS.    | JACQUELYN | SUAREZ   | F      | N        | 0           |
| MRS.   | SYDNEY   | BENNETT  | F      | N        | 3           |
| MS.    | CHLOE    | YOUNG    | F      | N        | 0           |
| MR.    | LUKE     | LAL      | M      | N        | 0           |
| MR.    | JORDAN   | KING     | M      | N        | 0           |
| MS.    | DESTINY  | WILSON   | F      | N        | 0           |
| MR.    | HAROLD   | SAI      | M      | N        | 2           |
+-----+-----+-----+-----+-----+-----+
16 rows in set (0.00 sec)

```

LIKE / NOT LIKE

LIKE "% chocolate %" [20 records] out of 100.

NOT LIKE "% chocolate %" [80 records] out of 100.



Query to find the customers whose names start with 'S'

- Hint "S%"

```

mysql> SELECT
-> Prefix, FirstName , LastName, Gender
-> FROM Customers
-> WHERE FirstName LIKE "S%"
-> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.    | SHANNON  | CARLSON | M      |
| MRS.   | SYDNEY   | BENNETT | F      |
| MRS.   | SHANNON  | WANG    | F      |
| MR.    | SETH      | EDWARDS | M      |
| MRS.   | SAVANNAH | BAKER   | F      |
| MR.    | SHAUN    | CARSON  | M      |
| MS.    | SAMANTHA | LONG    | F      |
| MS.    | SARAH    | THOMAS  | F      |
| MRS.   | STEPHANIE | TORRES | F      |
| MRS.   | SARAH    | PRICE   | F      |
+-----+-----+-----+-----+
10 rows in set (0.01 sec)

```

Query to find the customers whose names won't start with 'S'

```
mysql> SELECT
-> Prefix, FirstName , LastName, Gender
-> FROM Customers
-> WHERE FirstName NOT LIKE "S%"
-> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.    | JON       | YANG     | M      |
| MR.    | EUGENE    | HUANG    | M      |
| MR.    | RUBEN     | TORRES   | M      |
| MS.    | CHRISTY   | ZHU      | F      |
| MRS.   | ELIZABETH | JOHNSON  | F      |
| MR.    | JULIO     | RUIZ     | M      |
| MR.    | MARCO     | MEHTA    | M      |
| MRS.   | ROBIN     | VERHOFF  | F      |
| MS.    | JACQUELYN | SUAREZ   | F      |
| MR.    | CURTIS    | LU       | M      |
+-----+-----+-----+-----+
10 rows in set (0.01 sec)
```

% [0 or more character replaced]

_ [Only one character can be replaced]

[abc] [pick any one character from the options]

Query to find the customers whose name starts with 'C' and ends with 'S'.

```
mysql> SELECT
-> Prefix, FirstName , LastName, Gender
-> FROM Customers
-> WHERE FirstName LIKE "C%S"
-> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.    | CURTIS   | LU       | M      |
| MR.    | CURTIS   | YANG     | M      |
| MR.    | CHARLES  | MILLER   | M      |
| MR.    | CHARLES  | COOK     | M      |
| MR.    | CHARLES  | JACKSON  | M      |
| MR.    | CHARLES  | TORRES   | M      |
| MR.    | CHARLES  | WALKER   | M      |
| MR.    | CARLOS   | GRAY     | M      |
| MR.    | CHARLES  | RICHARDSON | M      |
| MR.    | CHARLES  | PHILLIPS | M      |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

#Query to find the customers whose name consists of an 'A' in between their names. "%A%"

```
mysql> SELECT
-> Prefix, FirstName , LastName, Gender
-> FROM Customers
-> WHERE FirstName LIKE "%A%"
-> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MRS.   | ELIZABETH | JOHNSON | F
| MR.    | MARCO     | MEHTA   | M
| MR.    | SHANNON   | CARLSON | M
| MS.    | JACQUELYN | SUAREZ  | F
| MRS.   | LAUREN    | WALKER  | F
| MR.    | IAN        | JENKINS | M
| MR.    | WYATT      | HILL    | M
| MRS.   | SHANNON   | WANG    | F
| MR.    | CLARENCE  | RAI     | M
| MR.    | JORDAN    | KING    | M
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

"[aeiou]%" - person Name Starts with vowel.

Query to find the customers whose last name starts with 0 or multiple characters, have an 'A' in between followed by a single character, and end with 'G'.

- "%A_G"

```
mysql> SELECT
-> Prefix, FirstName , LastName, Gender
-> FROM Customers
-> WHERE LastName LIKE "%A_G"
-> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.    | JON       | YANG    | M
| MR.    | EUGENE   | HUANG   | M
| MRS.   | SHANNON  | WANG    | F
| MR.    | ETHAN    | ZHANG   | M
| MRS.   | TIFFANY  | LIANG   | F
| MRS.   | TAMARA   | LIANG   | F
| MR.    | CURTIS   | YANG    | M
| MRS.   | CRYSTAL  | WANG    | F
| MR.    | MAURICE  | TANG    | M
| MR.    | GABRIEL  | WANG    | M
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

Query to find customers whose names start and end with a vowel.

[aeiou] %[aeiou]

```
mysql> SELECT
    -> Prefix, FirstName , LastName, Gender
    -> FROM Customers
    -> WHERE LEFT(FirstName,1) IN ('a','e','i','o','u') AND
    -> RIGHT(FirstName,1) IN ('a','e','i','o','u')
    -> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.   | EUGENE   | HUANG   | M      |
|       | ALEJANDRO | BECK    | NA     |
| MS.   | AMANDA   | CARTER  | F      |
| MS.   | ANA       | PRICE   | F      |
| MRS.  | ASHLEE   | ANDERSEN| F      |
| MS.   | ANGELA   | MURPHY  | F      |
|       | ANGELA   | BUTLER  | NA     |
| MS.   | ALYSSA   | COX     | F      |
| MS.   | AIMEE    | HE      | F      |
| MR.   | ORLANDO  | SUAREZ | M      |
+-----+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
SELECT
  Prefix, FirstName, LastName, Gender
FROM Customers
WHERE
(
  LOWER(LEFT(FirstName, 1)) LIKE 'a' OR
  LOWER(LEFT(FirstName, 1)) LIKE 'e' OR
  LOWER(LEFT(FirstName, 1)) LIKE 'i' OR
  LOWER(LEFT(FirstName, 1)) LIKE 'o' OR
  LOWER(LEFT(FirstName, 1)) LIKE 'u'
)
AND
(
  LOWER(RIGHT(FirstName, 1)) LIKE 'a' OR
  LOWER(RIGHT(FirstName, 1)) LIKE 'e' OR
  LOWER(RIGHT(FirstName, 1)) LIKE 'i' OR
  LOWER(RIGHT(FirstName, 1)) LIKE 'o' OR
  LOWER(RIGHT(FirstName, 1)) LIKE 'u'
)
LIMIT 10;
```

```
mysql> SELECT
    -> Prefix, FirstName, LastName, Gender
    -> FROM Customers
    -> WHERE
    -> FirstName REGEXP '^([aeiou]).*[aeiou]$'
    -> LIMIT 10;
+-----+-----+-----+-----+
| Prefix | FirstName | LastName | Gender |
+-----+-----+-----+-----+
| MR.   | EUGENE   | HUANG   | M      |
|       | ALEJANDRO | BECK    | NA     |
| MS.   | AMANDA   | CARTER  | F      |
| MS.   | ANA       | PRICE   | F      |
| MRS.  | ASHLEE   | ANDERSEN| F      |
| MS.   | ANGELA   | MURPHY  | F      |
|       | ANGELA   | BUTLER  | NA     |
| MS.   | ALYSSA   | COX     | F      |
| MS.   | AIMEE    | HE      | F      |
| MR.   | ORLANDO  | SUAREZ | M      |
+-----+-----+-----+-----+
10 rows in set (0.02 sec)
```