

Alter Command & String Operations

 Common string functions: LENGTH, TRIM, CONCAT, UPPER, LOWER, LEFT, RIGHT, REVERSE, REPLACE, etc.

 Data Cleaning

 Data Manipulation

 Substring Extraction

```
CREATE TABLE Employees(
    EmployeeID INT auto_increment,
    FirstName VARCHAR(50) NOT NULL,
    LastName VARCHAR(50) NOT NULL,
    Email VARCHAR(100) NOT NULL,
    Salary DECIMAL(10,2),
    BirthDate DATE NOT NULL,
    Gender CHAR(1),
    PhoneNumber BIGINT,
    Active BOOLEAN DEFAULT TRUE,
    PRIMARY KEY(EmployeeID),
    UNIQUE>Email, PhoneNumber
):
```

Changing Existing Column Data Type

MODIFY

```
ALTER TABLE <tb_name>
MODIFY COLUMN 'ColumnName' <dt type>
```

```
mysql> ALTER TABLE Customers
-> MODIFY COLUMN EmailAddress VARCHAR(100);
Query OK, 2062 rows affected (0.14 sec)
Records: 2062  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+-----+-----+-----+-----+-----+-----+
| Field | Type   | Null | Key  | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CustomerKey | int      | NO   | PRI  | 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    |       |
| COUNTRY     | varchar(50) | YES  |       | NULL    |       |
| Gender      | text     | YES  |       | NULL    |       |
| EmailAddress | varchar(100) | 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    |       |
+-----+-----+-----+-----+-----+-----+
16 rows in set (0.00 sec)
```

```
-- RENAME Column
ALTER TABLE Customers|
RENAME COLUMN BirthDate TO DateOfBirth;
```

```
mysql> ALTER TABLE Customers
-> RENAME COLUMN BirthDate TO DateOfBirth;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> DESC Customers;
```

Field	Type	Null	Key	Default	Extra
CustomerKey	int	NO	PRI	NULL	
Prefix	text	YES		NULL	
FirstName	text	YES		NULL	
LastName	text	YES		NULL	
DateOfBirth	text	YES		NULL	
MyUnknownColumn	text	YES		NULL	
MaritalStatus	text	YES		NULL	
COUNTRY	varchar(50)	YES		NULL	
Gender	text	YES		NULL	
EmailAddress	varchar(100)	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 MyUnknownColumn FROM Customers;
+-----+
| MyUnknownColumn |
+-----+
|                   |
+-----+
1 row in set (0.01 sec)
```

```
-- DROP COLUMN
```

```
ALTER TABLE Customers
```

```
DROP COLUMN MyUnknownColumn;
```

```
mysql> ALTER TABLE Customers
-> DROP COLUMN MyUnknownColumn;
Query OK, 0 rows affected (0.02 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> DESC Customers;
```

Field	Type	Null	Key	Default	Extra
CustomerKey	int	NO	PRI	NULL	
Prefix	text	YES		NULL	
FirstName	text	YES		NULL	
LastName	text	YES		NULL	
DateOfBirth	text	YES		NULL	
MaritalStatus	text	YES		NULL	
COUNTRY	varchar(50)	YES		NULL	
Gender	text	YES		NULL	
EmailAddress	varchar(100)	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	

```
15 rows in set (0.00 sec)
```

STRING Operations

- LENGTH Function.

```
mysql> SELECT LENGTH("KrishnaMadan");
+-----+
| LENGTH("KrishnaMadan") |
+-----+
|          12           |
+-----+
1 row in set (0.00 sec)

mysql> SELECT LENGTH("KrishnaMadan") AS "NameLength";
+-----+
| NameLength |
+-----+
|        12    |
+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT
    ->   EmailAddress,
    ->   LENGTH(EmailAddress) AS Length_of_an_email
    -> FROM Customers LIMIT 10;
+-----+-----+
| EmailAddress          | Length_of_an_email |
+-----+-----+
| jon24@learnsector.com |              21 |
| eugene10@learnsector.com |             24 |
| ruben35@learnsector.com |             23 |
| christy12@learnsector.com |            25 |
| elizabeth5@learnsector.com |            26 |
| julio1@learnsector.com |             22 |
| marco14@learnsector.com |            23 |
| rob4@learnsector.com |             20 |
| shannon38@learnsector.com |            25 |
| jacquelyn20@learnsector.com |           27 |
+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> SELECT LENGTH("NULL");
+-----+
| LENGTH("NULL") |
+-----+
|          4       |
+-----+
1 row in set (0.00 sec)

mysql> SELECT LENGTH(NULL);
+-----+
| LENGTH(NULL) |
+-----+
|      NULL     |
+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT LENGTH("10,000");
+-----+
| LENGTH("10,000") |
+-----+
|          6       |
+-----+
1 row in set (0.00 sec)

mysql> SELECT LENGTH(10000);
+-----+
| LENGTH(10000) |
+-----+
|          5       |
+-----+
1 row in set (0.00 sec)
```

TRIM()

- Remove the Leading or trailing spaces from the text.

```
mysql> SELECT TRIM("Coding Ninja");
+-----+
| Coding Ninja |
+-----+
1 row in set (0.00 sec)

mysql> SELECT TRIM(BOTH '$' FROM " $$Coding Ninja$$") as trimmed_data;
+-----+
| trimmed_data |
+-----+
| Coding Ninja |
+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT TRIM(BOTH '@' FROM "Krishnamadan77@gmail.com") as trimmed_data;
+-----+
| trimmed_data |
+-----+
| Krishnamadan77@gmail.com |
+-----+
1 row in set (0.00 sec)

mysql> SELECT TRIM(BOTH '@' FROM "@@@@Krishnamadan77@gmail.com") as trimmed_data;
+-----+
| trimmed_data |
+-----+
| Krishnamadan77@gmail.com |
+-----+
1 row in set (0.00 sec)

mysql> SELECT TRIM(BOTH '@' FROM "@@@@Krishnamadan77@gmail.com@@@@") as trimmed_data;
+-----+
| trimmed_data |
+-----+
| Krishnamadan77@gmail.com |
+-----+
1 row in set (0.00 sec)
```

```
mysql> SELECT LTRIM("Hello");
+-----+
| LTRIM("Hello") |
+-----+
| Hello |
+-----+
1 row in set (0.00 sec)

mysql> -- RTRIM()
mysql> SELECT RTRIM("Hello");
+-----+
| RTRIM("Hello") |
+-----+
| Hello |
+-----+
1 row in set (0.00 sec)
```

```
-- LTRIM()
SELECT LTRIM("Hello");
-- RTRIM()
SELECT RTRIM("Hello");
```

CONCAT()

It tries to join multiple string columns into one.

```
mysql> SELECT
->   CONCAT(Prefix , ' ', FirstName , ' ', LastName) AS FullName
->   FROM Customers
->   LIMIT 10;
+-----+
| FullName
+-----+
| MR. JON YANG
| MR. EUGENE HUANG
| MR. RUBEN TORRES
| MS. CHRISTY ZHU
| MRS. ELIZABETH JOHNSON
| MR. JULIO RUIZ
| MR. MARCO MEHTA
| MRS. ROBIN VERHOFF
| MR. SHANNON CARLSON
| MS. JACQUELYN SUAREZ
+-----+
```

CONCAT_WS()

WS - Word Separator.

```
mysql> SELECT
->   CONCAT_WS(' ', Prefix , FirstName , LastName) AS FullName
->   FROM Customers
->   LIMIT 10;
+-----+
| FullName
+-----+
| MR. JON YANG
| MR. EUGENE HUANG
| MR. RUBEN TORRES
| MS. CHRISTY ZHU
| MRS. ELIZABETH JOHNSON
| MR. JULIO RUIZ
| MR. MARCO MEHTA
| MRS. ROBIN VERHOFF
| MR. SHANNON CARLSON
| MS. JACQUELYN SUAREZ
+-----+
10 rows in set (0.01 sec)
```

```
mysql> SELECT
->   CONCAT_WS(' -> ', Prefix , FirstName , LastName) AS FullName
->   FROM Customers
->   LIMIT 10;
+-----+
| FullName
+-----+
| MR. -> JON -> YANG
| MR. -> EUGENE -> HUANG
| MR. -> RUBEN -> TORRES
| MS. -> CHRISTY -> ZHU
| MRS. -> ELIZABETH -> JOHNSON
| MR. -> JULIO -> RUIZ
| MR. -> MARCO -> MEHTA
| MRS. -> ROBIN -> VERHOFF
| MR. -> SHANNON -> CARLSON
| MS. -> JACQUELYN -> SUAREZ
+-----+
10 rows in set (0.00 sec)
```

USE Cases - Full Name, File Path, Username, Custom Message.

Task:

1. Create a new column in the existing customer Table - Full Name
2. Update Full Name with FirstName and LastName.
3. DROP column FirstName and LastName.

```
mysql> ALTER TABLE Customers
-> ADD Column FullName Varchar(100)
-> AFTER LastName;
Query OK, 0 rows affected (0.10 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+-----+-----+-----+-----+-----+-----+
| Field      | Type       | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CustomerKey | int        | NO   | PRI | NULL    |       |
| Prefix      | text       | YES  |     | NULL    |       |
| FirstName   | text       | YES  |     | NULL    |       |
| LastName    | text       | YES  |     | NULL    |       |
| FullName    | varchar(100) | YES  |     | NULL    |       |
| DateOfBirth | text       | YES  |     | NULL    |       |
| MaritalStatus | text      | YES  |     | NULL    |       |
| COUNTRY     | varchar(50) | YES  |     | NULL    |       |
| Gender      | text       | YES  |     | NULL    |       |
| EmailAddress | varchar(100) | 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    |       |
+-----+-----+-----+-----+-----+-----+
16 rows in set (0.00 sec)
```

```
-- Creating a New column Name FullName;
ALTER TABLE Customers
ADD Column FullName Varchar(100)
AFTER LastName;
```

```
-- MODIFY/Updating the existing data
UPDATE Customers
SET FullName = CONCAT(FirstName , ' ', LastName);
```

```
mysql> UPDATE Customers
-> SET FullName = CONCAT(FirstName , ' ', LastName);
Query OK, 2062 rows affected (0.14 sec)
Rows matched: 2062  Changed: 2062  Warnings: 0
```

```
mysql> SELECT FirstName , LastName , FullName FROM Customers LIMIT 10;
+-----+-----+-----+
| FirstName | LastName | FullName |
+-----+-----+-----+
| JON       | YANG    | JON YANG  |
| EUGENE   | HUANG   | EUGENE HUANG |
| RUBEN    | TORRES  | RUBEN TORRES |
| CHRISTY  | ZHU     | CHRISTY ZHU  |
| ELIZABETH| JOHNSON | ELIZABETH JOHNSON |
| JULIO    | RUIZ    | JULIO RUIZ  |
| MARCO   | MEHTA   | MARCO MEHTA  |
| ROBIN   | VERHOFF | ROBIN VERHOFF |
| SHANNON  | CARLSON | SHANNON CARLSON |
| JACQUELYN| SUAREZ  | JACQUELYN SUAREZ |
+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> ALTER TABLE Customers
-> DROP Column FirstName,
-> DROP Column LastName;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0

mysql> DESC Customers;
+-----+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| CustomerKey | int       | NO   | PRI | NULL    |       |
| Prefix      | text      | YES  |     | NULL    |       |
| FullName    | varchar(100) | YES  |     | NULL    |       |
| DateOfBirth | text      | YES  |     | NULL    |       |
| MaritalStatus | text      | YES  |     | NULL    |       |
| COUNTRY     | varchar(50) | YES  |     | NULL    |       |
| Gender      | text      | YES  |     | NULL    |       |
| EmailAddress | varchar(100) | 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    |       |
+-----+-----+-----+-----+-----+-----+
14 rows in set (0.01 sec)
```

Substring_index()

```
-- SUBSTRING INDEX (string, delimiter , count)
-- Count > 0 , LEFT
-- Count < 0 , RIGHT
-- FULL NAME = 1(FIRSTNAME) (LASTNAME)-1
```

Krishna Madan

FirstName = Substring_index("Krishna Madan", " ", 1) [Krishna].
LastName = Substring_index("Krishna Madan", " ", -1) [Madan].

```
-- ADD Column FirstName , LastName;
ALTER TABLE Customers
ADD COLUMN FirstName Varchar(50)
AFTER Prefix;
```

```
ALTER TABLE Customers
ADD COLUMN LastName Varchar(50)
AFTER FirstName;
```

```
mysql> ALTER TABLE Customers
-> ADD COLUMN FirstName Varchar(50)
-> AFTER Prefix;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> DESC Customers;
+-----+-----+-----+-----+-----+
| Field      | Type       | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| CustomerKey | int        | NO   | PRI | NULL    |          |
| Prefix      | text       | YES  |     | NULL    |          |
| FirstName   | varchar(50) | YES  |     | NULL    |          |
| FullName    | varchar(100) | YES  |     | NULL    |          |
| DateOfBirth | text       | YES  |     | NULL    |          |
| MaritalStatus | text      | YES  |     | NULL    |          |
| COUNTRY     | varchar(50) | YES  |     | NULL    |          |
| Gender      | text       | YES  |     | NULL    |          |
| EmailAddress | varchar(100) | 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    |          |
+-----+-----+-----+-----+-----+
15 rows in set (0.01 sec)
```

```
mysql> ALTER TABLE Customers
-> ADD COLUMN LastName Varchar(50)
-> AFTER FirstName;
Query OK, 0 rows affected (0.03 sec)
Records: 0  Duplicates: 0  Warnings: 0
```

```
mysql> DESC Customers;
+-----+-----+-----+-----+-----+
| Field      | Type       | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+
| CustomerKey | int        | NO   | PRI | NULL    |          |
| Prefix      | text       | YES  |     | NULL    |          |
| FirstName   | varchar(50) | YES  |     | NULL    |          |
| LastName    | varchar(50) | YES  |     | NULL    |          |
| FullName    | varchar(100) | YES  |     | NULL    |          |
| DateOfBirth | text       | YES  |     | NULL    |          |
| MaritalStatus | text      | YES  |     | NULL    |          |
| COUNTRY     | varchar(50) | YES  |     | NULL    |          |
| Gender      | text       | YES  |     | NULL    |          |
| EmailAddress | varchar(100) | 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 FirstName, LastName, FullName FROM Customers LIMIT 10;
+-----+-----+-----+
| FirstName | LastName | FullName
+-----+-----+-----+
| NULL     | NULL    | JON YANG
| NULL     | NULL    | EUGENE HUANG
| NULL     | NULL    | RUBEN TORRES
| NULL     | NULL    | CHRISTY ZHU
| NULL     | NULL    | ELIZABETH JOHNSON
| NULL     | NULL    | JULIO RUIZ
| NULL     | NULL    | MARCO MEHTA
| NULL     | NULL    | ROBIN VERHOFF
| NULL     | NULL    | SHANNON CARLSON
| NULL     | NULL    | JACQUELYN SUAREZ
+-----+-----+-----+
10 rows in set (0.03 sec)
```

```
mysql> UPDATE Customers
-> SET FirstName = SUBSTRING_INDEX(FullName, ' ', 1);
Query OK, 2062 rows affected (0.11 sec)
Rows matched: 2062  Changed: 2062  Warnings: 0
```

```
mysql> SELECT FirstName, LastName, FullName FROM Customers LIMIT 10;
+-----+-----+-----+
| FirstName | LastName | FullName
+-----+-----+-----+
| JON      | NULL    | JON YANG
| EUGENE   | NULL    | EUGENE HUANG
| RUBEN    | NULL    | RUBEN TORRES
| CHRISTY  | NULL    | CHRISTY ZHU
| ELIZABETH| NULL    | ELIZABETH JOHNSON
| JULIO    | NULL    | JULIO RUIZ
| MARCO   | NULL    | MARCO MEHTA
| ROBIN   | NULL    | ROBIN VERHOFF
| SHANNON | NULL    | SHANNON CARLSON
| JACQUELYN| NULL    | JACQUELYN SUAREZ
+-----+-----+-----+
10 rows in set (0.00 sec)
```

```
mysql> UPDATE Customers
-> SET LastName = SUBSTRING_INDEX(FullName, ' ', -1);
Query OK, 2062 rows affected (0.11 sec)
Rows matched: 2062  Changed: 2062  Warnings: 0
```

```
mysql> SELECT FirstName, LastName, FullName FROM Customers LIMIT 10;
+-----+-----+-----+
| FirstName | LastName | FullName
+-----+-----+-----+
| JON      | YANG    | JON YANG
| EUGENE   | HUANG   | EUGENE HUANG
| RUBEN    | TORRES  | RUBEN TORRES
| CHRISTY  | ZHU     | CHRISTY ZHU
| ELIZABETH| JOHNSON | ELIZABETH JOHNSON
| JULIO    | RUIZ    | JULIO RUIZ
| MARCO   | MEHTA   | MARCO MEHTA
| ROBIN   | VERHOFF | ROBIN VERHOFF
| SHANNON | CARLSON | SHANNON CARLSON
| JACQUELYN| SUAREZ  | JACQUELYN SUAREZ
+-----+-----+-----+
10 rows in set (0.00 sec)
```

`SET SQL_SAFE_UPDATES = 0;`

-- SPLIT THE FULLNAME INTO FIRSTNAME & LASTNAME.
`UPDATE Customers
SET FirstName = SUBSTRING_INDEX(FullName, ' ', 1);`

`UPDATE Customers`

`SET LastName = SUBSTRING_INDEX(FullName, ' ', -1);`

Country Name = Australia, Austria, Canada, France, Germany

substring_index(`Country Name`, ",", 1) -> Australia

Counter = 2

sub_idx(substring_index(`Country Name`, ",", 2), -1) -> [Australia, **Austria**] -> [Austria]

sub_idx(substring_index(`Country Name`, ",", 3), -1) -> [Australia, Austria, **Canada**] -> [Canada].

Sub_idx(substring_index(`Country Name`, ",", 4), -1) -> [Australia, Austria, Canada, **France**]

sub_idx(substring_index(`Country Name`, ",", 5), -1) -> [Australia, Austria, Canada, France, **Germany**]

substring_index(`Country Name`, ",", -1) -> [Germany]

["Cricket", "Badminton", "Football", "VolleyBall", "BasketBall", "Golf"]

["BasketBall"] --> s_idx(s_idx(List, ", ", -2), 1).
["BasketBall", "Golf"] = ["BasketBall"]

["Volleyball", "BasketBall"] --> s_idx(s_idx(List, ", ", -3), 2)
["VolleyBall", "BasketBall", "Golf"]
= ["VolleyBall", "BasketBall"].