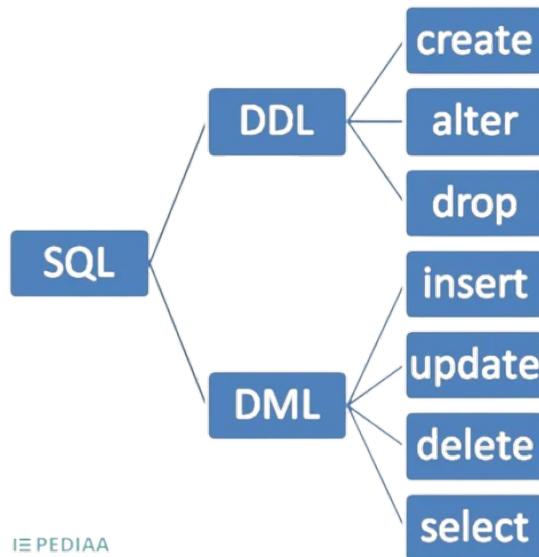


**NAME: Divyansh Kumar Singh
SAP ID: 590012175
BATCH: B1
DBMS LAB 1**

AIM: To implement DDL and DML commands.

Lab Objective: To understand the concept of designing issues related to the database with creating and populating the tables. Also familiarize students with different ways of manipulation in database.



Name: Divyansh Kumar Singh

SAPID: 590012175

Batch: B1

classmate

Date 21/8/25

Page

~~Lab 1: To implement DDL and DML~~

→ Dr. E. F. Codd

↳ Relational Database

Model

↳ 1970.

→ Lab Performance Questions:

- What is the difference between TRUNCATE and DELETE?

Feature	TRUNCATE	DELETE
Purpose	Remove all rows from a table quickly.	Removes one or more rows from a table based on a condition (or all rows if no condition is specified)
Command Syntax	TRUNCATE TABLE table-name;	DELETE FROM table-name; DELETE FROM table-name WHERE condition;
Speed	Generally faster.	Generally slower because it logs each deleted row.
Logging	Minimal Logging.	Fully logged.

2. What is the difference between TRUNCATE and DROP?

Feature	TRUNCATE	DROP
Purpose	Delete all rows, keep table structure.	Remove the entire table and definition.
Table structure remains?	Yes	No - structure is deleted.
Table data remains?	No	No.
Indexes remains?	Yes	No - all removed
Speed	Faster than DELETE, usually faster than DROP.	Instant removal.
Can reuse table?	Yes, after truncate	No, must recreate table.
Syntax	TRUNCATE TABLE table-name;	DROP TABLE table-name;

3. 5 tables.

4. Done (Added Bus-fare column to Bus).
5. Done (Changed char size to varchar from Ticket).
6. Done (From Bus changed Coach-Type to Coach-Type)
7. Done.

Working Procedure:

RDBMS is an acronym for **Relation Database Management System**. Dr. E. F. Codd first introduced the Relational Database Model in **1970**. The Relational model allows data to be represented in a simple row-column format. Each data field is considered as a **column**, and each record is considered as a **row**. A Relational Database is more or less similar to a Database Management System. In the relational model, there is a relation between their data elements. Data is stored in tables. Tables have columns, rows, and names. Tables can be related to each other if each has a column with a common type of information. The most famous RDBMS packages are Oracle, Sybase, and Informix. Simple example of the Relational model is as follows :

Degree of Relationship

- **One to One (1:1):** *Student Has Roll No.* One student has only one Roll no. For one occurrence of the first entity, there can be, at the most one related occurrence of the second entity, and vice-versa.
- **One to Many or Many to One (1:M / M: 1):** Course Contains Students. As per the Institutions Norm, One student can enroll in one course at a time however, in one course, there can be more than one student. For one occurrence of the first entity there can exist many related occurrences of the second entity and for every occurrence of the second entity there exists only one associated occurrence of the first.
- **Many to Many (M: M):** Students Appears Tests. The major disadvantage of the relational model is that a clear-cut interface cannot be determined. Reusability of a structure is not possible. The Relational Database now accepted model on which major database system are built.

The Degree of Relationship indicates the link between two entities for a specified occurrence of each.

E. F. Codd Rules

1. **The Information Rule:** All information must be store in table as data values.
2. **The Rule of Guaranteed Access:** Every item in a table must be logically addressable with the help of a table name.
3. **The Systematic Treatment of Null Values:** The RDBMS must be taken care of null values to represent missing or inapplicable information.

- 4. The Database Description Rule:** A description of database is maintained using the same logical structures with which data was defined by the RDBMS.
- 5. Comprehensive Data Sub Language:** According to the rule the system must support data definition, view definition, data manipulation, integrity constraints, authorization and transaction to represent missing or management operations.
- 6. The View Updating Rule:** All views that are theoretically updateable are also updateable by the system.
- 7. The Insert and Update Rule:** This rule indicates that all the data manipulation commands must be on sets of rows having a relation rather than on a single row.
- 8. The Physical Independence Rule:** Application programs must remain unimpaired when any changes are made in storage representation or access methods.
- 9. The Logical Data Independence Rule:** The changes that are made should not affect the user's ability to work with the data. The change can be splitting the table into many more tables.
- 10. The Integrity Independence Rule:** The integrity constraints should be stored in the system catalog or in the database.
- 11. The Distribution Rule:** The system must be access or manipulate the data that is distributed in other systems.
- 12. The Non-subversion Rule:** If an RDBMS supports a lower-level language, then it should not bypass any integrity constraints defined in the higher level.

Efficient And Effective Solutions

DBMS product that provides efficient and effective solutions for major database features.

This

includes:

1. Large databases and space management control
2. Many concurrent database users
3. High transaction processing performance
4. High availability
5. Controlled availability
6. Industry accepted standards
7. Manageable security
8. Database enforced integrity
9. Client/Server environment
10. Distributed database systems
11. Portability
12. Compatibility
13. Connectivity

Question:

Real World Scenario ROADWAY TRAVELS

“Roadway Travels” is in business since 1977 with several buses connecting different places in

India. Its main office is located in Dehradun. The company wants to computerize its operations

in the following areas:

- Reservations
- Ticketing
- Cancellations

Reservations: Reservations are handled directly by booking office. Reservations can be made

60 days in advance in either cash or credit. In case the ticket is not available, a waitlisted ticket

is issued to the customer. This ticket is confirmed against the cancellation.

Cancellation and Modification: Cancellations are also directly handed out at the booking

office. Cancellation charges will be charged. Wait listed tickets that do not get confirmed are
fully refunded.

AIM IS TO REPRESENT ALL ENTITIES IN A TABULAR FASHION

What is SQL?

Oracle was the first company to release a product that used the English-based Structured Query Language or SQL. This language allows end users to manipulate information of table(primary database object). To use SQL, you do not require any programming experience. SQL is a standard language common to all relational databases. SQL is database language used for storing and retrieving data from the database. Most Relational Database Management Systems provide extension to SQL to make it easier for application developers. A table is a primary object of database used to store data. It stores data in form of rows and columns. To communicate with Oracle, SQL supports the following categories of commands:

- 1. Data Definition Language(DDL):** Create, Alter, Drop and Truncate
- 2. Data Manipulation Language (DML):** Insert, Update, Delete and Select
- 3. Transaction Control Language (TCL):** Commit, Rollback and Save point
- 4. Data Control Language (DCL):** Grant and Revoke

DATA TYPE DESCRIPTION

1. **Char(Size):** It Stores fixed-length character data to store alphanumeric values, with a maximum size of 2000 bytes. Default and minimum size are 1 byte.
2. **Varchar2(Size):** It stores variable-length character data to store alphanumeric values, with maximum size of 4000 bytes.
3. **char(Size):** It stores fixed-length character data of length size characters or bytes, depending on the choice of national character set. Maximum size if determined by the number of bytes required storing each character with an upper limit of 2000 bytes. Default and minimum size is 1 character or 1 byte, depending on the character set.
4. **Nvarchar2(Size):** It stores variable-length character string having maximum length size characters or bytes, depending on the choice of national character set. Maximum size is determined by the number of bytes required to store each character, with an upper limit of 4000 bytes.
5. **Long:** It stores variable-length character data up to 2GB(Gigabytes). Its length would be restricted based on memory space available in the computer.
6. **Number [p, s]:** Number having precision p and scale s. The precision p indicates total number of digits varies from 1 to 38. The scale s indicates number of digits in fraction part varies from -84 to 127.
7. **Date:** It stores dates from January 1, 4712 B.C. to December 31, 4712 A.D. Oracle predefine format of Date data type is DD-MON-YYYY.
8. **Raw(Size):** Stores binary data of length size. Maximum size is 2000 bytes. One must have to specify size with RAW type data, because by default it does not specify any size.
9. **Long Raw:** It stores binary data of variable length up to 2GB(Gigabytes).
10. **LOBS – LARGE OBJECTS:** LOB is used to store unstructured information such as sound and video clips, pictures up to 4 GB size.
11. **CLOB:** A Character Large Object containing fixed-width multi-byte characters. Varying-width character sets are not supported. Maximum size is 4GB.
12. **NCLOB:** A National Character Large Object containing fixed-width multi-byte characters. Varying-width character sets are not supported. Maximum size is 4GB. Store national character set data.
13. **BLOB:** To store a Binary Large Object such a graphics, video clips and sound files. Maximum size is 4GB.
14. **BFILE:** Contains a locator to a large Binary File stored outside the database. Enables byte stream I/O access to external LOBs residing on the database server. Maximum size is 4GB.Apart from oracle internal data types, user can create their own data type, which is used in database and other database object. We will discuss it in the later part.

STRUCTURE OF TABLES

The following are tabular representation of the above entities and relationships:

Bus		
COLOUML NAME	DATA TYPE	CONSTRAINT
Bus No	varchar2(10)	Primary Key
Source	varchar2(20)	
Destination	varchar2(20)	
Couch Type	varchar2(20)	

Reservation		
COLOUML NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Journey date	Date	
No-of-seats	integer(8)	
Address	varchar2(50)	
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric
Bus_No	Varchar2(10)	Foreign key
Seat_No	Number	

Ticket		
COLOUML NAME	DATA TYPE	CONSTRAINT
Ticket_No	number(9)	Primary Key
Journey-date	Date	
Age	int(4)	
Sex	char(10)	
Source	Varchar2(10)	
Destination	Varchar2(10)	
Dep-Time	Varchar2(10)	
Bus_No	Number2(10)	

Passenger		
COLOUML NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Ticket_No	Number(9)	Foreign key
Name	Varchar2(15)	
Age	int(4)	
Sex	char(10)	(Male/Female)
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric

Cancellation		
COLOUMN NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Journey-date	Number(9)	Foreign key
Seat_No	Varchar2(15)	
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric

Practicing DDL Commands

Data Definition Language: The data definition language is used to create an object, alter the structure of an object and also drop already created object. The Data Definition Languages used for table definition can be classified into following:

Create table command

Create Table <table_name> (column1 datatype(size), column2 datatype(size), column(n) datatype(size));

Where, **table_name** is a name of the table and (column1, column2, ..., column n) is a name of the column available in table. Each column is separated by comma.

Desc command

Desc <table name>;

Describe command is external command of Oracle. The describe command is used to view the structure of a table.

Alter table command

Once Simple Table is created, if there is a need to change the structure of a table at that time alter command is used. It is used when a user wants to add a new column or change the width of datatype or datatype itself or to add or drop integrity constraints or column.

Alter table <table_name> add(column1 datatype, column2 datatype);

Add option is used with alter table_ when you want to add a new column in existing table. If you want to Add more than one column then just write column name, data type and size in brackets. As usual Comma sign separates each column. For Example, suppose you want to add column comm in emp_master, then you have to perform the following command.

ALTER TABLE Persons ALTER COLUMN DateOfBirth year;

Truncate table command

TRUNCATE TABLE command is used to empty a table. This command is a sequence of DROP TABLE and CREATE TABLE statements and requires the DROP privilege.

TRUNCATE TABLE table_name;

Drop table command

DROP TABLE statement is a Data Definition Language (DDL) command that is used to remove a table's definition, and its data, indexes, triggers, constraints and permission specifications (if any).

DROP TABLE table_name;

Data Manipulation Commands

Insert

INSERT INTO Statement is used to add new rows of data into a table in the database. Almost all the RDBMS provide this SQL query to add the records in database tables.

INSERT INTO TABLE_NAME (column1, column2...columnN) VALUES (value1, value2...valueN);

INSERT INTO CUSTOMERS (ID,NAME,AGE,ADDRESS,SALARY) VALUES (1, 'Ramesh', 32, 'Ahmedabad', 2000.00);

Update

UPDATE statement makes use of locks on each row while modifying them in a table, and once the row is modified, the lock is released. Therefore, it can either make changes to a single row or multiple rows with a single query.

***UPDATE table_name
SET column1 = value1, column2 = value2,..., columnN = valueN
WHERE [condition];***

***UPDATE table_name
SET column_name1 = new_value, column_name2 = new_value...
WHERE condition(s)***

Delete

DELETE TABLE statement is used to delete the existing records from a table in a database. If you wish to delete only the specific number of rows from the table, you can use the WHERE clause with the DELETE statement. If you omit the WHERE clause, all rows in the table will be deleted. The SQL DELETE statement operates on a single table at a time.

Command

DELETE FROM table_name;
DELETE FROM table_name WHERE condition;

Example

DELETE FROM CUSTOMERS WHERE NAME='Hardik';

Select

SELECT Statement is used to fetch the data from a database table which returns this data in the form of a table. These tables are called result-sets.

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

Lab Performance Questions:

- 1 What is the difference between TRUNCATE and DELETE?
- 2 What is the difference between TRUNCATE and DROP?
- 3 Create all the given table.
- 4 Add a new column to the existing relation.
- 5 Change the datatype of the table from char to varchar2.
- 6 Change the name of column/field.
- 7 Modify the column width of all the table

Lab Performance Questions Solutions:

Name: Divyansh Kumar Singh	classmate	
SAPID: 590012175	Date 12/8/25	
Batch: B1	Page	
Lab 1: To implement DDL and DML	Dr. E. F. Codd ↳ Relational Database Model ↳ 1970	
Not Allowed		
<p>→ <u>Lab Performance Questions:</u></p>		
1. What is the difference between TRUNCATE and DELETE?		
Feature	TRUNCATE	DELETE
Purpose	Remove all rows from a table quickly.	Removes one or more rows from a table based on a condition (or all rows if no condition is specified)
Command Syntax	TRUNCATE TABLE table-name;	DELETE FROM table-name; DELETE FROM table-name WHERE condition;
Speed	Generally faster.	Generally slower because it logs each deleted row.
Logging	Minimal Logging.	Fully logged.

2. What is the difference between TRUNCATE and DROP?

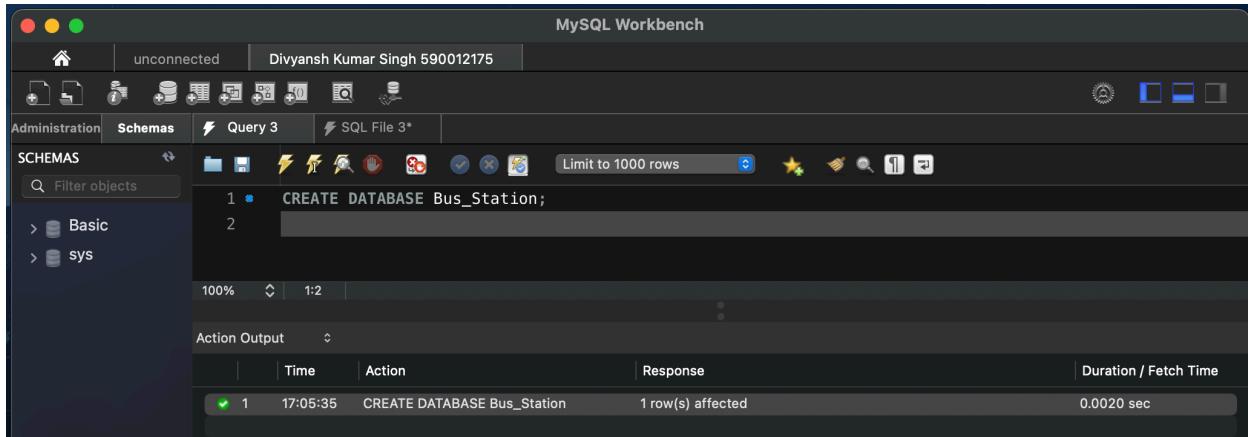
Feature	TRUNCATE	DROP
Purpose	Delete all rows, keep table structure.	Remove the entire table and definition.
Table structure remains?	Yes	No - structure is deleted.
Table data remains?	No	No.
Indexes remains?	Yes	No - all removed
Speed	Faster than DELETE, usually faster than DROP.	Instant removal.
Can reuse table?	Yes, after truncate	No, must recreate table
Syntax	TRUNCATE TABLE table-name;	DROP TABLE table-name;

3. 5 tables.

- 4. Done (Added Bus-fare column to Bus).
- 5. Done (Changed char size to varchar from Ticket).
- 6. Done (From Bus changed Coach-Type to Coach-Type)
- 7. Done.

3.

Step 1: Create a new database name “**Bus_Station**”.



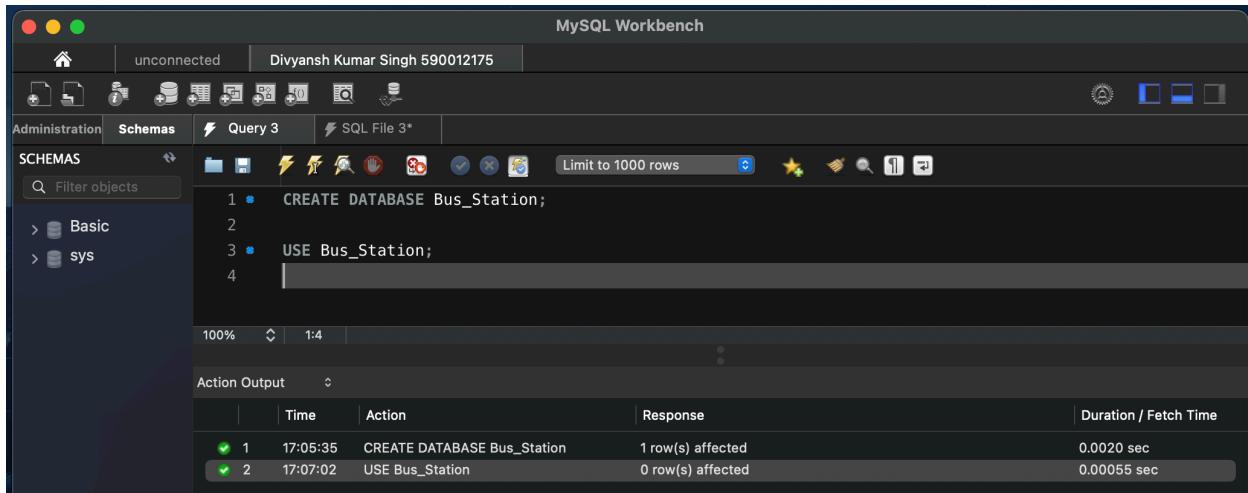
The screenshot shows the MySQL Workbench interface. In the top navigation bar, it says "unconnected" and "Divyansh Kumar Singh 590012175". The "Schemas" tab is selected. In the main query editor, the following SQL command is written:

```
CREATE DATABASE Bus_Station;
```

In the "Action Output" pane, the results of the execution are shown:

Action	Response	Duration / Fetch Time
CREATE DATABASE Bus_Station	1 row(s) affected	0.0020 sec

Step 2: Use the created database such that the commands that we write and execute gets saved and used only under “**Bus_Station**”.



The screenshot shows the MySQL Workbench interface. In the top navigation bar, it says "unconnected" and "Divyansh Kumar Singh 590012175". The "Schemas" tab is selected. In the main query editor, the following SQL commands are written:

```
CREATE DATABASE Bus_Station;
USE Bus_Station;
```

In the "Action Output" pane, the results of the execution are shown:

Action	Response	Duration / Fetch Time
CREATE DATABASE Bus_Station	1 row(s) affected	0.0020 sec
USE Bus_Station	0 row(s) affected	0.00055 sec

Step 3: Create the first table named “**Bus**” with the following fields and display its structure using **DESC BUS**.

Bus		
COLOUML NAME	DATA TYPE	CONSTRAINT
Bus No	varchar2(10)	Primary Key
Source	varchar2(20)	
Destination	varchar2(20)	
Couch Type	varchar2(20)	

The screenshot shows the MySQL Workbench interface. In the top navigation bar, it says "unconnected" and "Divyansh Kumar Singh 590012175". Below the toolbar, the "Schemas" tab is selected, showing the "Basic" schema and the "Bus_Station" schema which contains "Tables", "Views", "Stored Procs", and "Functions". The main pane displays the following SQL code:

```

1 • CREATE DATABASE Bus_Station;
2
3 • USE Bus_Station;
4
5 -- 3.
6 -- Bus Table
7 • CREATE TABLE Bus (
8     Bus_No VARCHAR(10) PRIMARY KEY,
9     Source VARCHAR(20),
10    Destination VARCHAR(20),
11    Couch_Type VARCHAR(20)
12 );
13
14 • DESC Bus;
15

```

Below the code, the "Result Grid" shows the structure of the "Bus" table:

Field	Type	Null	Key	Default	Extra
Bus_No	varchar(10)	NO	PRI	HULL	
Source	varchar(20)	YES		HULL	
Destination	varchar(20)	YES		HULL	
Couch_Type	varchar(20)	YES		HULL	

The "Action Output" section shows the execution history:

Action	Time	Response	Duration / Fetch Time
CREATE DATABASE Bus_Station	17:05:35	1 row(s) affected	0.0002 sec
USE Bus_Station	17:07:02	0 row(s) affected	0.00055 sec
CREATE TABLE Bus (Bus_No VARCHAR...	17:09:07	0 row(s) affected	0.0055 sec
DESC Bus	17:10:30	4 row(s) returned	0.0024 sec / 0.00001...

Step 4: Similarly, make other tables as per the following details and display their structure.

Reservation		
COLOUMN NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Journey date	Date	
No-of-seats	integer(8)	
Address	varchar2(50)	
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric
Bus_No	Varchar2(10)	Foreign key
Seat_No	Number	

Ticket		
COLOUML NAME	DATA TYPE	CONSTRAINT
Ticket_No	number(9)	Primary Key
Journey-date	Date	
Age	int(4)	
Sex	char(10)	
Source	Varchar2(10)	
Destination	Varchar2(10)	
Dep-Time	Varchar2(10)	
Bus_No	Number2(10)	

Passenger		
COLOUML NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Ticket_No	Number(9)	Foreign key
Name	Varchar2(15)	
Age	int(4)	
Sex	char(10)	(Male/Female)
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric

Cancellation		
COLOUML NAME	DATA TYPE	CONSTRAINT
PNR_No	number(9)	Primary Key
Journey-date	Number(9)	Foreign key
Seat_No	Varchar2(15)	
Contact_No	Number(9)	Should be equal to 10 numbers and not allow other than numeric

Reservation Table

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Toolbar:** Administration, Schemas, Query 3, SQL File 3*, various icons for database management.
- Schemas Panel:** Basic, Bus_Station (selected), Tables, Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains the following SQL code:

```
14 • DESC Bus;
15
16
17 -- Reservation Table
18 • CREATE TABLE Reservation (
19     PNR_No INT PRIMARY KEY,
20     Journey_date DATE,
21     No_of_seats INT,
22     Address VARCHAR(50),
23     Contact_No BIGINT CHECK (LENGTH(Contact_No) = 10),
24     Bus_No VARCHAR(10),
25     Seat_No INT,
26     FOREIGN KEY (Bus_No) REFERENCES Bus(Bus_No)
27 );
28
29 • DESC Reservation;
30
```
- Result Grid:** Shows the structure of the Reservation table with columns: Field, Type, Null, Key, Default, Extra. The columns are: PNR_No (int, NO, PRI, NULL), Journey_date (date, YES, NULL), No_of_seats (int, YES, NULL), Address (varchar(50), YES, NULL), Contact_No (bigint, YES, NULL), Bus_No (varchar(10), YES, MUL, NULL), and Seat_No (int, YES, NULL).
- Action Output:** Displays the history of database actions with columns: Action, Time, Response, Duration / Fetch Time. The actions are:

Action	Time	Response	Duration / Fetch Time
CREATE DATABASE Bus_Station	17:05:35	1 row(s) affected	0.0020 sec
USE Bus_Station	17:07:02	0 row(s) affected	0.00055 sec
CREATE TABLE Bus (Bus_No VARCHAR(10) PRIMARY KEY, Source VARCHA...	17:09:07	0 row(s) affected	0.0055 sec
DESC Bus	17:10:30	4 row(s) returned	0.0024 sec / 0.0001...
CREATE TABLE Reservation (PNR_No INT PRIMARY KEY, Journey_date DAT...	17:27:20	0 row(s) affected	0.011 sec
DESC Reservation	17:27:31	7 row(s) returned	0.0023 sec / 0.0002...

Ticket Table

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Schemas Tab:** Basic, Bus_Station (selected), Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains the SQL code for creating the Ticket table and its description.

```
28
29 • DESC Reservation;
30
31 -- Ticket Table
32 • CREATE TABLE Ticket (
33     Ticket_No INT PRIMARY KEY,
34     Journey_date DATE,
35     Age INT,
36     Sex CHAR(10),
37     Source VARCHAR(10),
38     Destination VARCHAR(10),
39     Dep_Time VARCHAR(10),
40     Bus_No INT
41 );
42
43 • DESC Ticket;
44
45
```
- Result Grid:** Shows the structure of the Ticket table with columns: Field, Type, Null, Key, Default, Extra. The columns are: Ticket_No, int, NO, PRI, NULL, ;; Journey_date, date, YES, , NULL, ;; Age, int, YES, , NULL, ;; Sex, char(10), YES, , NULL, ;; Source, varchar(10), YES, , NULL, ;; Destination, varchar(10), YES, , NULL, ;; Dep_Time, varchar(10), YES, , NULL, ;; Bus_No, int, YES, , NULL, ;;
- Action Output:** Shows the history of database actions with columns: Action, Time, Response, Duration / Fetch Time. The actions are:

Action	Time	Response	Duration / Fetch Time
CREATE DATABASE Bus_Station	17:05:35	1 row(s) affected	0.0020 sec
USE Bus_Station	17:07:02	0 row(s) affected	0.00055 sec
CREATE TABLE Bus (Bus_No VARCHAR(10) PRIMARY KEY, Source VARCHA...	17:09:07	0 row(s) affected	0.0055 sec
DESC Bus	17:10:30	4 row(s) returned	0.0024 sec / 0.00001...
CREATE TABLE Reservation (PNR_No INT PRIMARY KEY, Journey_date DAT...	17:27:20	0 row(s) affected	0.011 sec
DESC Reservation	17:27:31	7 row(s) returned	0.0023 sec / 0.00002...
CREATE TABLE Ticket (Ticket_No INT PRIMARY KEY, Journey_date DATE,...	17:33:44	0 row(s) affected	0.0069 sec
DESC Ticket	17:33:47	8 row(s) returned	0.0024 sec / 0.00001...

Passenger Table

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Schemas Tab:** Basic, Bus_Station (selected), Tables, Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains the following SQL code:

```
41    );
42
43 • DESC Ticket;
44
45 -- Passenger Table
46 • CREATE TABLE Passenger (
47     PNR_No INT PRIMARY KEY,
48     Ticket_No INT,
49     Name VARCHAR(15),
50     Age INT,
51     Sex ENUM('Male', 'Female'),
52     Contact_No BIGINT CHECK (LENGTH(Contact_No) = 10),
53     FOREIGN KEY (Ticket_No) REFERENCES Ticket(Ticket_No)
54 );
55
56 • DESC Passenger;
```
- Result Grid:** Shows the structure of the Passenger table with columns: Field, Type, Null, Key, Default, Extra. The columns are: PNR_No (int, NO, PRI, NULL), Ticket_No (int, YES, MUL, NULL), Name (varchar(15)), Age (int), Sex (enum('Male','Female')), and Contact_No (bigint, YES, NULL).
- Action Output:** Displays the history of database actions with columns: Action, Time, Response, Duration / Fetch Time. The log includes 10 entries from 17:05:35 to 17:36:39, detailing the creation of the database, tables, and descriptions for each.

Cancellation Table

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Schemas Tab:** Basic, Bus_Station (selected), Tables, Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains the SQL code for creating the Cancellation table and its constraints.
- Result Grid:** Shows the structure of the Cancellation table with columns PNR_No, Journey_date, Seat_No, and Contact_No.
- Action Output:** Displays the execution log with 12 entries, each detailing a step in the schema creation process.

```
51     Sex ENUM('Male', 'Female'),  
52     Contact_No BIGINT CHECK (LENGTH(Contact_No) = 10),  
53     FOREIGN KEY (Ticket_No) REFERENCES Ticket(Ticket_No)  
54 );  
55  
56 • DESC Passenger;  
57  
58 -- Cancellation Table  
59 • CREATE TABLE Cancellation (  
60     PNR_No INT PRIMARY KEY,  
61     Journey_date INT,  
62     Seat_No VARCHAR(15),  
63     Contact_No BIGINT CHECK (LENGTH(Contact_No) = 10)  
64 );  
65  
66 • DESC Cancellation;  
67 |
```

Field	Type	Null	Key	Default	Extra
PNR_No	int	NO	PRI	NULL	
Journey_date	int	YES		NULL	
Seat_No	varchar(15)	YES		NULL	
Contact_No	bigint	YES		NULL	

Action Output

Time	Action	Response	Duration / Fetch Time
17:05:35	CREATE DATABASE Bus_Station	1 row(s) affected	0.0020 sec
17:07:02	USE Bus_Station	0 row(s) affected	0.00055 sec
17:09:07	CREATE TABLE Bus (Bus_No VARCHAR(10) PRIMARY KEY, Source VARCHAR...	0 row(s) affected	0.0055 sec
17:10:30	DESC Bus	4 row(s) returned	0.0024 sec / 0.00001...
17:27:20	CREATE TABLE Reservation (PNR_No INT PRIMARY KEY, Journey_date DAT...	0 row(s) affected	0.01 sec
17:27:31	DESC Reservation	7 row(s) returned	0.0023 sec / 0.00002...
17:33:44	CREATE TABLE Ticket (Ticket_No INT PRIMARY KEY, Journey_date DATE,...	0 row(s) affected	0.0069 sec
17:33:47	DESC Ticket	8 row(s) returned	0.0024 sec / 0.00001...
17:36:35	CREATE TABLE Passenger (PNR_No INT PRIMARY KEY, Ticket_No INT, N...	0 row(s) affected	0.012 sec
17:36:39	DESC Passenger	6 row(s) returned	0.0016 sec / 0.00001...
17:37:32	CREATE TABLE Cancellation (PNR_No INT PRIMARY KEY, Journey_date INT...	0 row(s) affected	0.0072 sec
17:37:32	DESC Cancellation	4 row(s) returned	0.0021 sec / 0.00000...

Step 5: Now add data to all tables using **INSERT INTO table_name**.

MySQL Workbench

Administration Schemas Query 3 SQL File 3*

SCHEMAS

Basic Bus_Station

Tables Bus Cancell... Passen... Reserv... Ticket Views Stored Pr... Functions

sys

```

63     Contact_No BIGINT CHECK (LENGTH(Contact_No) = 10)
64 );
65
66 • DESC Cancellation;
67
68 • INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type)
VALUES
('B001', 'Delhi', 'Jaipur', 'AC'),
('B002', 'Mumbai', 'Pune', 'Sleeper'),
('B003', 'Chennai', 'Bangalore', 'Semi-Deluxe');
69
70
71
72
73
74 • INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Contact_No, Bus_No, Seat_No)
VALUES
(1001, '2025-08-20', 2, '123 MG Road, Delhi', 9876543210, 'B001', 12),
(1002, '2025-08-21', 1, '45 Andheri East, Mumbai', 9123456780, 'B002', 5),
(1003, '2025-08-22', 3, '78 T Nagar, Chennai', 9988776655, 'B003', 8);
75
76
77
78
79
80 • INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, Bus_No)
VALUES
(5001, '2025-08-20', 30, 'Male', 'Delhi', 'Jaipur', '08:00', 1),
(5002, '2025-08-21', 25, 'Female', 'Mumbai', 'Pune', '10:30', 2),
(5003, '2025-08-22', 40, 'Male', 'Chennai', 'Bangalore', '07:45', 3);
81
82
83
84
85
86
87 • INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No)
VALUES
(1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210),
(1002, 5002, 'Anita Sharma', 25, 'Female', 9123456780),
(1003, 5003, 'Suresh Reddy', 40, 'Male', 9988776655);
88
89
90
91
92
93 • INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No)
VALUES
(1003, 20250822, '8', 9988776655);
94
95
96
97

```

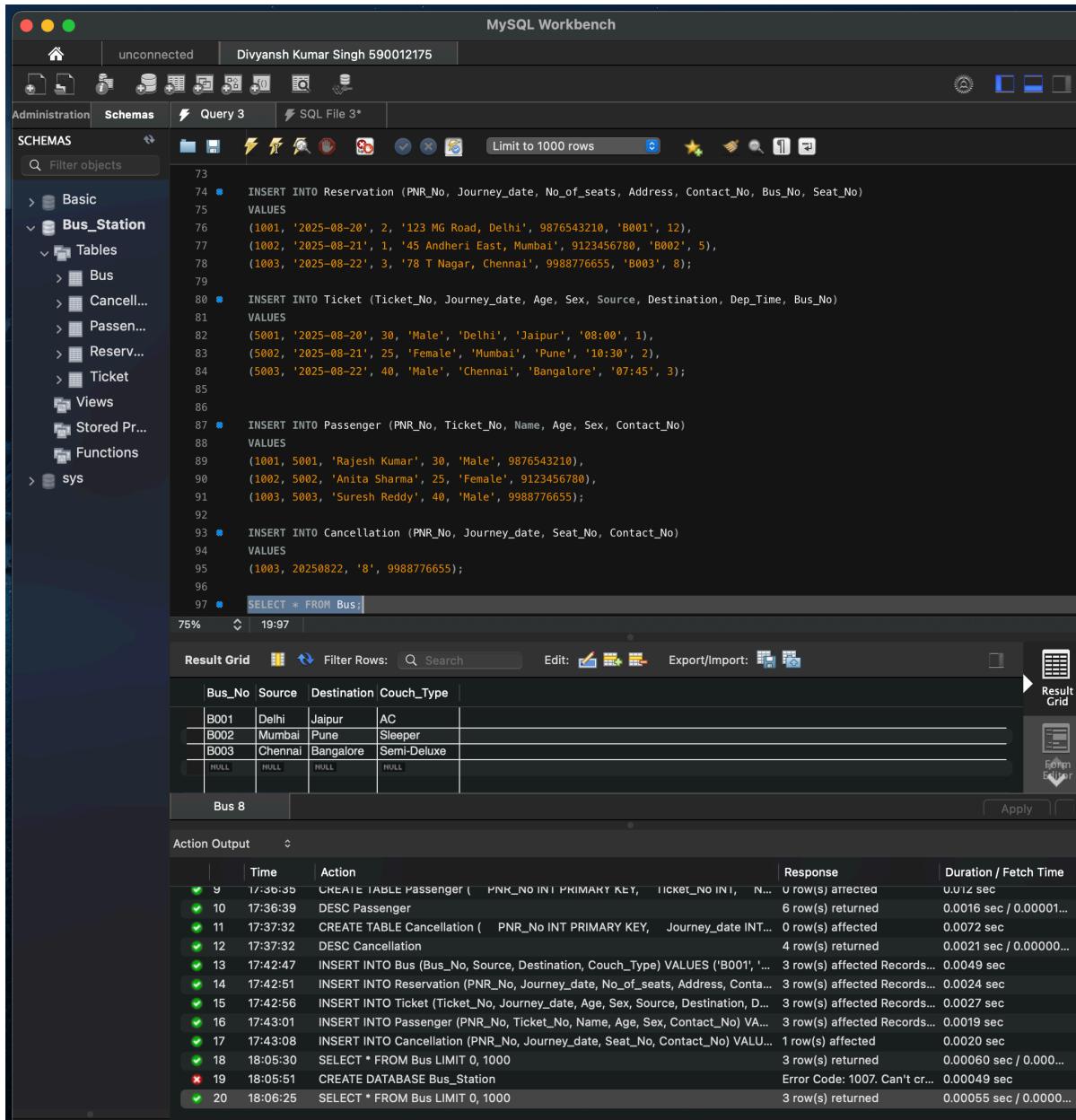
Action Output

	Time	Action	Response	Duration / Fetch Time
✓ 6	17:27:31	DESC Reservation	/ row(s) returned	0.0023 sec / 0.00002...
✓ 7	17:33:44	CREATE TABLE Ticket (Ticket_No INT PRIMARY KEY, Journey_date DATE,...	0 row(s) affected	0.0069 sec
✓ 8	17:33:47	DESC Ticket	8 row(s) returned	0.0024 sec / 0.00001...
✓ 9	17:36:35	CREATE TABLE Passenger (PNR_No INT PRIMARY KEY, Ticket_No INT, N...	0 row(s) affected	0.012 sec
✓ 10	17:36:39	DESC Passenger	6 row(s) returned	0.0016 sec / 0.00001...
✓ 11	17:37:32	CREATE TABLE Cancellation (PNR_No INT PRIMARY KEY, Journey_date INT...	0 row(s) affected	0.0072 sec
✓ 12	17:37:32	DESC Cancellation	4 row(s) returned	0.0021 sec / 0.0000...
✓ 13	17:42:47	INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type) VALUES ('B001', '...	3 row(s) affected Records...	0.0049 sec
✓ 14	17:42:51	INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Conta...	3 row(s) affected Records...	0.0024 sec
✓ 15	17:42:56	INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, D...	3 row(s) affected Records...	0.0027 sec
✓ 16	17:43:01	INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VA...	3 row(s) affected Records...	0.0019 sec
✓ 17	17:43:08	INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALU...	1 row(s) affected	0.0020 sec

Query Completed

Step 6: Display the data of each table using **SELECT * FROM table_name**.

Bus Table



The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** Basic, Bus_Station (selected), Cancell..., Passen..., Reserv..., Ticket, Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains SQL code for inserting data into Reservation, Ticket, Passenger, and Cancellation tables, followed by a SELECT * FROM Bus query.
- Result Grid:** Displays the data for the Bus table with columns: Bus_No, Source, Destination, Couch_Type. The data is:

Bus_No	Source	Destination	Couch_Type
B001	Delhi	Jaipur	AC
B002	Mumbai	Pune	Sleeper
B003	Chennai	Bangalore	Semi-Deluxe
NULL	NULL	NULL	NULL
- Action Output:** Shows the history of database actions with columns: Time, Action, Response, Duration / Fetch Time. The log includes:

Action	Time	Response	Duration / Fetch Time
CREATE TABLE Passenger (PNR_No INT PRIMARY KEY, TICKET_No INT, Name VARCHAR(50), Age INT, Sex CHAR(1), Contact_No BIGINT)	17:36:35	0 row(s) affected	0.012 sec
DESC Passenger	17:36:39	6 row(s) returned	0.0016 sec / 0.00001...
CREATE TABLE Cancellation (PNR_No INT PRIMARY KEY, Journey_date INT, Seat_No INT, Contact_No BIGINT)	17:37:32	0 row(s) affected	0.0072 sec
DESC Cancellation	17:37:32	4 row(s) returned	0.0021 sec / 0.00000...
INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type) VALUES ('B001', 'Delhi', 'Jaipur', 'AC')	17:42:47	3 row(s) affected Records...	0.0049 sec
INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Contact_No, Bus_No, Seat_No)	17:42:51	3 row(s) affected Records...	0.0024 sec
INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, Bus_No)	17:42:56	3 row(s) affected Records...	0.0027 sec
INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VALUES ('P001', 'Rajesh Kumar', 30, 'Male', 9876543210)	17:43:01	3 row(s) affected Records...	0.0019 sec
INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALUES ('C001', '2025-08-20', 1, 9876543210)	17:43:08	1 row(s) affected	0.0020 sec
SELECT * FROM Bus LIMIT 0, 1000	18:05:30	3 row(s) returned	0.00060 sec / 0.000...
CREATE DATABASE Bus_Station	18:05:51	Error Code: 1007. Can't cr...	0.00049 sec
SELECT * FROM Bus LIMIT 0, 1000	18:06:25	3 row(s) returned	0.00055 sec / 0.000...

Reservation Table

MySQL Workbench

unconnected | Diyanish Kumar Singh 590012175

Administration Schemas Query 3 SQL File 3*

Limit to 1000 rows

SCHEMAS Filter objects

> Basic
v Bus_Station
 Tables
 Bus
 Cancel...
 Passen...
 Reserv...
 Ticket
 Views
 Stored Pr...
 Functions
> sys

```
79
80 • INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, Bus_No)
VALUES
81   (5001, '2025-08-20', 30, 'Male', 'Delhi', 'Jaipur', '08:00', 1),
82   (5002, '2025-08-21', 25, 'Female', 'Mumbai', 'Pune', '10:30', 2),
83   (5003, '2025-08-22', 40, 'Male', 'Chennai', 'Bangalore', '07:45', 3);
84
85
86
87 • INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No)
VALUES
88   (1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210),
89   (1002, 5002, 'Anita Sharma', 25, 'Female', 9123456780),
90   (1003, 5003, 'Suresh Reddy', 40, 'Male', 9988776655);
91
92
93 • INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No)
VALUES
94   (1003, '2025-08-22', 8, 9988776655);
95
96
97 • SELECT * FROM Bus;
98 • SELECT * FROM Reservation;
99 • SELECT * FROM Ticket;
100 • SELECT * FROM Passenger;
101 • SELECT * FROM Cancellation;
```

Result Grid Filter Rows: Search Edit: Export/Import: Result Grid

PNR_No	Journey_date	No_of_seats	Address	Contact_No	Bus_No	Seat_No
1001	2025-08-20	2	123 MG Road, Delhi	9876543210	B001	12
1002	2025-08-21	1	45 Andheri East, Mumbai	9123456780	B002	5
1003	2025-08-22	3	78 T Nagar, Chennai	9988776655	B003	8
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Reservation 9

Action Output

Time	Action	Response	Duration / Fetch Time
10 17:36:39	DESC Passenger	0 row(s) returned	0.00016 sec / 0.00001...
11 17:37:32	CREATE TABLE Cancellation (PNR_No INT PRIMARY KEY, Journey_date INT...	0 row(s) affected	0.0072 sec
12 17:37:32	DESC Cancellation	4 row(s) returned	0.0021 sec / 0.00000...
13 17:42:47	INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type) VALUES ('B001', '...	3 row(s) affected Records...	0.0049 sec
14 17:42:51	INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Conta...	3 row(s) affected Records...	0.0024 sec
15 17:42:56	INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, D...	3 row(s) affected Records...	0.0027 sec
16 17:43:01	INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VA...	3 row(s) affected Records...	0.0019 sec
17 17:43:08	INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALU...	1 row(s) affected	0.0020 sec
18 18:05:30	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00060 sec / 0.000...
19 18:05:51	CREATE DATABASE Bus_Station	Error Code: 1007. Can't cr...	0.00049 sec
20 18:06:25	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00055 sec / 0.000...
21 18:06:57	SELECT * FROM Reservation LIMIT 0, 1000	3 row(s) returned	0.00068 sec / 0.000...

Query Completed

Ticket Table

MySQL Workbench

Administration Schemas Query 3 SQL File 3*

Filter objects Limit to 1000 rows

```

75    VALUES
76    (1001, '2025-08-20', 2, '123 MG Road, Delhi', 9876543210, 'B001', 12),
77    (1002, '2025-08-21', 1, '45 Andheri East, Mumbai', 9123456780, 'B002', 5),
78    (1003, '2025-08-22', 3, '78 T Nagar, Chennai', 9988776655, 'B003', 8);
79
80 • INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, Bus_No)
81    VALUES
82    (5001, '2025-08-20', 30, 'Male', 'Delhi', 'Jaipur', '08:00', 1),
83    (5002, '2025-08-21', 25, 'Female', 'Mumbai', 'Pune', '10:30', 2),
84    (5003, '2025-08-22', 40, 'Male', 'Chennai', 'Bangalore', '07:45', 3);
85
86
87 • INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No)
88    VALUES
89    (1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210),
90    (1002, 5002, 'Anita Sharma', 25, 'Female', 9123456780),
91    (1003, 5003, 'Suresh Reddy', 40, 'Male', 9988776655);
92
93 • INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No)
94    VALUES
95    (1003, 20250822, '8', 9988776655);
96
97 • SELECT * FROM Bus;
98 • SELECT * FROM Reservation;
99 • SELECT * FROM Ticket;

```

Result Grid Filter Rows: Search Edit: Export/Import: Result Grid

Ticket_No	Journey_date	Age	Sex	Source	Destination	Dep_Time	Bus_No
5001	2025-08-20	30	Male	Delhi	Jaipur	08:00	1
5002	2025-08-21	25	Female	Mumbai	Pune	10:30	2
5003	2025-08-22	40	Male	Chennai	Bangalore	07:45	3
NULL	NULL	NULL	NULL	NULL	NULL	NULL	NULL

Action Output

Time	Action	Response	Duration / Fetch Time
11 17:37:32	CREATE TABLE Cancellation (PNR_No INT PRIMARY KEY, Journey_date INT)	0 row(s) affected	0.000 sec
12 17:37:32	DESC Cancellation	4 row(s) returned	0.0021 sec / 0.00000 sec
13 17:42:47	INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type)	3 row(s) affected	0.0049 sec
14 17:42:51	VALUES ('B001', 'Delhi', 'Jaipur', 'Economy')	3 row(s) affected	0.0024 sec
15 17:42:56	INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Contact_No)	3 row(s) affected	0.0027 sec
16 17:43:01	VALUES (1001, '2025-08-20', 2, '123 MG Road, Delhi', 9876543210)	3 row(s) affected	0.0019 sec
17 17:43:08	INSERT INTO Cancellation (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VALUES (1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210)	1 row(s) affected	0.00020 sec
18 18:05:30	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00060 sec / 0.00000 sec
19 18:05:51	CREATE DATABASE Bus_Station	Error Code: 1007. Can't create database: 'Bus_Station'@'localhost'	0.00049 sec
20 18:06:25	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00055 sec / 0.00000 sec
21 18:06:57	SELECT * FROM Reservation LIMIT 0, 1000	3 row(s) returned	0.00068 sec / 0.00000 sec
22 18:08:28	SELECT * FROM Ticket LIMIT 0, 1000	3 row(s) returned	0.00075 sec / 0.00000 sec

Query Completed

Passenger Table

The screenshot shows the MySQL Workbench interface with the following details:

- MySQL Workbench Title Bar:** Divyansh Kumar Singh 590012175
- Schemas Tab:** Basic, Bus_Station (selected), Tables, Views, Stored Pr..., Functions, sys
- Query Editor:** Contains SQL code for inserting data into Ticket, Passenger, and Cancellation tables.
- Result Grid:** Displays the data inserted into the Passenger table.
- Action Output:** Shows the execution history of the queries.

Result Grid Data:

PNR_No	Ticket_No	Name	Age	Sex	Contact_No
1001	5001	Rajesh Kumar	30	Male	9876543210
1002	5002	Anita Sharma	25	Female	9123456780
1003	5003	Suresh Reddy	40	Male	9988776655
NULL	NULL	NULL	NULL	NULL	NULL

Action Output:

Time	Action	Response	Duration / Fetch Time
17:37:32	DESC Cancellation	4 row(s) returned	0.0021 sec / 0.0000...
17:42:47	INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type) VALUES ('B001', 'Delhi', 'Jaipur', '08:00', 1)	3 row(s) affected Records...	0.0049 sec
17:42:51	INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Conta...	3 row(s) affected Records...	0.0024 sec
17:42:56	INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, D...	3 row(s) affected Records...	0.0027 sec
17:43:01	INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VA...	3 row(s) affected Records...	0.0019 sec
17:43:08	INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALU...	1 row(s) affected	0.0020 sec
18:05:30	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00060 sec / 0.000...
18:05:51	CREATE DATABASE Bus_Station	Error Code: 1007. Can't cr...	0.00049 sec
18:06:25	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00055 sec / 0.000...
18:06:57	SELECT * FROM Reservation LIMIT 0, 1000	3 row(s) returned	0.00068 sec / 0.000...
18:08:28	SELECT * FROM Ticket LIMIT 0, 1000	3 row(s) returned	0.00075 sec / 0.0000...
18:09:07	SELECT * FROM Passenger LIMIT 0, 1000	3 row(s) returned	0.00071 sec / 0.0000...

Cancellation Table

MySQL Workbench

unconnected | Divyansh Kumar Singh 590012175

Administration Schemas Query 3 SQL File 3*

SCHEMAS

Filter objects

Basic Bus_Station

- Tables
 - Bus
 - Cancell...
 - Passen...
 - Reserv...
 - Ticket
- Views
- Stored Pr...
- Functions

sys

```

79
80 • INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, Bus_No)
VALUES
81
82 (5001, '2025-08-20', 30, 'Male', 'Delhi', 'Jaipur', '08:00', 1),
83 (5002, '2025-08-21', 25, 'Female', 'Mumbai', 'Pune', '10:30', 2),
84 (5003, '2025-08-22', 40, 'Male', 'Chennai', 'Bangalore', '07:45', 3);
85
86
87 • INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No)
VALUES
88
89 (1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210),
90 (1002, 5002, 'Anita Sharma', 25, 'Female', 9123456780),
91 (1003, 5003, 'Suresh Reddy', 40, 'Male', 998877655);
92
93 • INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No)
VALUES
94
95 (1003, 20250822, '8', 9988776655);
96
97 • SELECT * FROM Bus;
98 • SELECT * FROM Reservation;
99 • SELECT * FROM Ticket;
100 • SELECT * FROM Passenger;
101 • SELECT * FROM Cancellation;
102
103
    
```

75% 28:101

Result Grid Filter Rows: Search Edit: Export/Import: Result Grid

PNR_No	Journey_date	Seat_No	Contact_No
1003	20250822	8	9988776655
NULL	NULL	NULL	NULL

Cancellation 12

Action Output

Time	Action	Response	Duration / Fetch Time
17:42:47	INSERT INTO Bus (Bus_No, Source, Destination, Couch_Type) VALUES ('B001', 'Delhi', 'Jaipur', 'Economy')	3 row(s) affected Records... 0.0049 sec	
17:42:51	INSERT INTO Reservation (PNR_No, Journey_date, No_of_seats, Address, Conta...	3 row(s) affected Records... 0.0024 sec	
17:42:56	INSERT INTO Ticket (Ticket_No, Journey_date, Age, Sex, Source, Destination, D...	3 row(s) affected Records... 0.0027 sec	
17:43:01	INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VA...	3 row(s) affected Records... 0.0019 sec	
17:43:08	INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALU...	1 row(s) affected 0.0020 sec	
18:05:30	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned 0.00060 sec / 0.000...	
18:05:51	CREATE DATABASE Bus_Station	Error Code: 1007. Can't cr... 0.00049 sec	
18:06:25	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned 0.00055 sec / 0.000...	
18:06:57	SELECT * FROM Reservation LIMIT 0, 1000	3 row(s) returned 0.00068 sec / 0.000...	
18:08:28	SELECT * FROM Ticket LIMIT 0, 1000	3 row(s) returned 0.00075 sec / 0.000...	
18:09:07	SELECT * FROM Passenger LIMIT 0, 1000	3 row(s) returned 0.00071 sec / 0.000...	
18:10:06	SELECT * FROM Cancellation LIMIT 0, 1000	1 row(s) returned 0.00069 sec / 0.000...	

Query Completed

4.

Step 1 : Add a column ***Bus_Fare*** to the table ***Bus*** using

***ALTER TABLE table_name
ADD Column_Name DATA_TYPE;***

Step 2: Display the new structure of the altered table ***Bus*** using ***DESC table_name;***

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** Basic, Bus_Station, sys
- Tables:** Bus, Cancellation, Passenger, Reservation, Ticket
- Queries:** A list of SQL statements including:
 - INSERT INTO Passenger (PNR_No, Ticket_No, Name, Age, Sex, Contact_No) VALUES (1001, 5001, 'Rajesh Kumar', 30, 'Male', 9876543210), (1002, 5002, 'Anita Sharma', 25, 'Female', 9123456780), (1003, 5003, 'Suresh Reddy', 40, 'Male', 9988776655);
 - INSERT INTO Cancellation (PNR_No, Journey_date, Seat_No, Contact_No) VALUES (1003, 20250822, '8', 9988776655);
 - SELECT * FROM Bus;
 - SELECT * FROM Reservation;
 - SELECT * FROM Ticket;
 - SELECT * FROM Passenger;
 - SELECT * FROM Cancellation;
 - 4.
 - ALTER TABLE Bus ADD Bus_Fare DECIMAL(8,2);
 - DESC Bus;
- Result Grid:** Shows the structure of the Bus table with columns: Field, Type, Null, Key, Default, Extra. The columns listed are Bus_No, Source, Destination, Couch_Type, and Bus_Fare.
- Action Output:** A table showing the execution history of the queries, including Time, Action, Response, and Duration / Fetch Time.

Added ***Bus_Fare*** column to table ***Bus***.

5.

Step 1: Display the structure of the table ***Ticket*** such that we can notice the data type of the column ***Sex*** from table.

The screenshot shows the MySQL Workbench interface. In the left sidebar under 'Schemas', the 'Bus_Station' schema is selected, and within it, the 'Tables' folder contains the 'Ticket' table. The main pane displays the SQL code for creating the 'Ticket' table and inserting data into the 'Cancellation' table. Below the code, the 'Result Grid' shows the structure of the 'Ticket' table with columns: Ticket_No, Journey_date, Age, Sex, Source, Destination, Dep_Time, and Bus_No. The 'Action Output' pane at the bottom lists the execution history of the statements, including the creation of the 'Ticket' table and the insertion of data into the 'Cancellation' table.

Field	Type	Null	Key	Default	Extra
Ticket_No	int	NO	PRI	HULL	
Journey_date	date	YES		HULL	
Age	int	YES		HULL	
Sex	char(10)	YES		HULL	
Source	varchar(10)	YES		HULL	
Destination	varchar(10)	YES		HULL	
Dep_Time	varchar(10)	YES		HULL	
Bus_No	int	YES		HULL	

Step 2: Change the data type of the column ***Sex*** using

***ALTER TABLE table_name
MODIFY column_name new_data_type;***

Step 3: Display the new structure of the altered table ***Ticket*** using ***DESC table_name;***

MySQL Workbench

unconnected | Divyansh Kumar Singh 590012175

Administration Schemas | Query 3 | SQL File 3*

SCHEMAS | Filter objects

```

96
97 •   SELECT * FROM Bus;
98 •   SELECT * FROM Reservation;
99 •   SELECT * FROM Ticket;
100 •  SELECT * FROM Passenger;
101 •  SELECT * FROM Cancellation;
102
103    -- 4.
104 •  ALTER TABLE Bus
105     ADD Bus_Fare DECIMAL(8,2);
106
107 •  DESC Bus;
108
109    -- 5.
110 •  DESC Ticket;
111
112 •  ALTER TABLE Ticket
113     MODIFY Sex VARCHAR(10);
114
115 •  DESC Ticket;|
116
117

```

Result Grid | Filter Rows: Search Export:

Field	Type	Null	Key	Default	Extra
Ticket_No	int	NO	PRI	NULL	
Journey_date	date	YES		NULL	
Age	int	YES		NULL	
Sex	varchar(10)	YES		NULL	
Source	varchar(10)	YES		NULL	
Destination	varchar(10)	YES		NULL	
Dep_Time	varchar(10)	YES		NULL	
Bus_No	int	YES		NULL	

Result 15 | Read Only

Action Output |

Time	Action	Response	Duration / Fetch Time
18:05:30	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00000 sec / 0.000...
18:05:51	CREATE DATABASE Bus_Station	Error Code: 1007. Can't cr...	0.00049 sec
18:06:25	SELECT * FROM Bus LIMIT 0, 1000	3 row(s) returned	0.00055 sec / 0.000...
18:06:57	SELECT * FROM Reservation LIMIT 0, 1000	3 row(s) returned	0.00068 sec / 0.000...
18:08:28	SELECT * FROM Ticket LIMIT 0, 1000	3 row(s) returned	0.00075 sec / 0.000...
18:09:07	SELECT * FROM Passenger LIMIT 0, 1000	3 row(s) returned	0.00071 sec / 0.000...
18:10:06	SELECT * FROM Cancellation LIMIT 0, 1000	1 row(s) returned	0.00069 sec / 0.000...
18:12:27	ALTER TABLE Bus ADD Bus_Fare DECIMAL(8,2)	0 row(s) affected Record...	0.0097 sec
18:12:32	DESC Bus	5 row(s) returned	0.0020 sec / 0.00006...
18:25:19	DESC Ticket	8 row(s) returned	0.0020 sec / 0.00001...
18:28:54	ALTER TABLE Ticket MODIFY Sex VARCHAR(10)	3 row(s) affected Records...	0.021 sec
18:28:54	DESC Ticket	8 row(s) returned	0.00097 sec / 0.000...

Query Completed

6.

Step 1: Change the name of the column **Couch_Type** to **Coach_Type** of the table **Bus** using

ALTER TABLE table_name

CHANGE column_old_name column_new_name data_type;

Step 2: Display the new structure of the altered table **Bus** using **DESC table_name;**

The screenshot shows the MySQL Workbench interface with the following details:

- Query Editor:** Displays the following SQL code:

```
103    -- 4.
104  ALTER TABLE Bus
105    ADD Bus_Fare DECIMAL(8,2);
106
107  DESC Bus;
108
109  -- 5.
110  DESC Ticket;
111
112  ALTER TABLE Ticket
113    MODIFY Sex VARCHAR(10);
114
115  DESC Ticket;
116
117
118  -- 6.
119  ALTER TABLE Bus
120    CHANGE Couch_Type Coach_Type VARCHAR(20);
121
122  DESC Bus;
123
124
```
- Result Grid:** Shows the structure of the 'Bus' table with the following columns:

Field	Type	Null	Key	Default	Extra
Bus_No	varchar(10)	NO	PRI	NULL	
Source	varchar(20)	YES		NULL	
Destination	varchar(20)	YES		NULL	
Coach_Type	varchar(20)	YES		NULL	
Bus_Fare	decimal(8,2)	YES		NULL	
- Action Output:** Displays the history of database actions with their time, query, response, duration, and fetch time.
- Status Bar:** Shows "Query Completed".

7.

Changed the width of the table **Bus** and displayed its new structure.

The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** Basic, Bus_Station (selected), Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains SQL code for altering the Bus table.

```
DESC Ticket;
ALTER TABLE Ticket
MODIFY Sex VARCHAR(10);

DESC Ticket;

-- 6.

ALTER TABLE Bus
CHANGE Couch_Type Coach_Type VARCHAR(20);

DESC Bus;

-- 7.

ALTER TABLE Bus
MODIFY Bus_No VARCHAR(15),
MODIFY Source VARCHAR(50),
MODIFY Destination VARCHAR(50),
MODIFY Coach_Type VARCHAR(30);

DESC Bus;
```
- Result Grid:** Shows the structure of the Bus table with the following columns:

Field	Type	Null	Key	Default	Extra
Bus_No	varchar(15)	NO	PRI	NULL	
Source	varchar(50)	YES		NULL	
Destination	varchar(50)	YES		NULL	
Coach_Type	varchar(30)	YES		NULL	
Bus_Fare	decimal(8,2)	YES		NULL	

Result 17 | Read Only
- Action Output:** Displays the execution history of the queries.

Time	Action	Response	Duration / Fetch Time
18:08:28	SELECT * FROM TICKET LIMIT 0, 1000	3 row(s) returned	0.00005 sec / 0.0000...
18:09:07	SELECT * FROM Passenger LIMIT 0, 1000	3 row(s) returned	0.00071 sec / 0.0000...
18:10:06	SELECT * FROM Cancellation LIMIT 0, 1000	1 row(s) returned	0.00069 sec / 0.000...
18:12:27	ALTER TABLE Bus ADD Bus_Fare DECIMAL(8,2)	0 row(s) affected Record...	0.0097 sec
18:12:32	DESC Bus	5 row(s) returned	0.0020 sec / 0.00006...
18:25:19	DESC Ticket	8 row(s) returned	0.0020 sec / 0.00001...
18:28:54	ALTER TABLE Ticket MODIFY Sex VARCHAR(10)	3 row(s) affected Records...	0.021 sec
18:28:54	DESC Ticket	8 row(s) returned	0.00097 sec / 0.0000...
18:39:33	ALTER TABLE Bus CHANGE Couch_Type Coach_Type VARCHAR(20)	0 row(s) affected Record...	0.010 sec
18:39:33	DESC Bus	5 row(s) returned	0.0016 sec / 0.00001...
18:46:49	ALTER TABLE Bus MODIFY Bus_No VARCHAR(15), MODIFY Source VARCHAR(50)...	0 row(s) affected Record...	0.0093 sec
18:47:39	DESC Bus	5 row(s) returned	0.0020 sec / 0.00001...
- Status:** Query Completed

Changed the width of the table ***Reservation*** and displayed its new structure.

The screenshot shows the MySQL Workbench interface with the following details:

- Connection:** unconnected, Divyansh Kumar Singh 590012175
- Schemas:** Basic, Bus_Station (selected), Views, Stored Pr..., Functions, sys
- Tables:** Bus, Cancell..., Passen..., Reserv..., Ticket
- SQL Editor:** Contains a series of SQL statements for modifying the 'Bus' and 'Reservation' tables. The relevant part for the 'Reservation' table is:

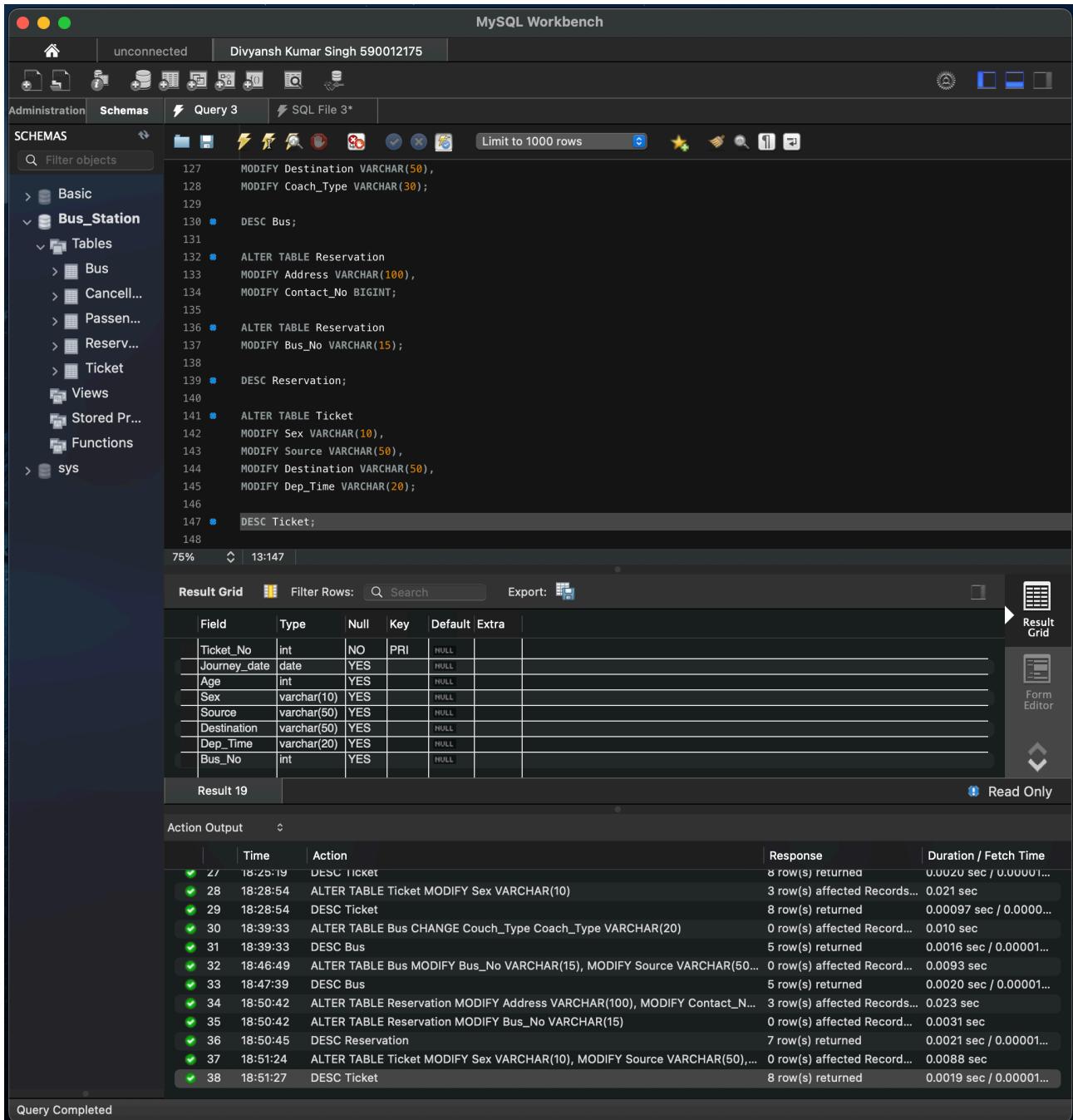

```

119  CHANGE Couch_Type Coach_Type VARCHAR(20);
120
121  • DESC Bus;
122
123  -- 7.
124  • ALTER TABLE Bus
125    MODIFY Bus_No VARCHAR(15),
126    MODIFY Source VARCHAR(50),
127    MODIFY Destination VARCHAR(50),
128    MODIFY Coach_Type VARCHAR(30);
129
130  • DESC Bus;
131
132  • ALTER TABLE Reservation
133    MODIFY Address VARCHAR(100),
134    MODIFY Contact_No BIGINT;
135
136  • ALTER TABLE Reservation
137    MODIFY Bus_No VARCHAR(15);
138
139  • DESC Reservation;
140
      
```
- Result Grid:** Shows the structure of the 'Reservation' table with the following columns:

Field	Type	Null	Key	Default	Extra
PNR_No	int	NO	PRI	NULL	
Journey_date	date	YES		NULL	
No_of_seats	int	YES		NULL	
Address	varchar(100)	YES		NULL	
Contact_No	bigint	YES		NULL	
Bus_No	varchar(15)	YES	MUL	NULL	
Seat_No	int	YES		NULL	
- Action Output:** Displays the history of database actions with the following log entries:

Time	Action	Response	Duration / Fetch Time
25 18:12:27	ALTER TABLE BUS ADD BUS_Fare DECIMAL(8,2)	0 row(s) affected Record...	0.0009 sec
26 18:12:32	DESC Bus	5 row(s) returned	0.0020 sec / 0.00006...
27 18:25:19	DESC Ticket	8 row(s) returned	0.0020 sec / 0.00001...
28 18:28:54	ALTER TABLE Ticket MODIFY Sex VARCHAR(10)	3 row(s) affected Records...	0.021 sec
29 18:28:54	DESC Ticket	8 row(s) returned	0.00097 sec / 0.0000...
30 18:39:33	ALTER TABLE Bus CHANGE Couch_Type Coach_Type VARCHAR(20)	0 row(s) affected Record...	0.010 sec
31 18:39:33	DESC Bus	5 row(s) returned	0.0016 sec / 0.00001...
32 18:46:49	ALTER TABLE Bus MODIFY Bus_No VARCHAR(15), MODIFY Source VARCHAR(50...)	0 row(s) affected Record...	0.0093 sec
33 18:47:39	DESC Bus	5 row(s) returned	0.0020 sec / 0.00001...
34 18:50:42	ALTER TABLE Reservation MODIFY Address VARCHAR(100), MODIFY Contact_N...	3 row(s) affected Records...	0.023 sec
35 18:50:42	ALTER TABLE Reservation MODIFY Bus_No VARCHAR(15)	0 row(s) affected Record...	0.0031 sec
36 18:50:45	DESC Reservation	7 row(s) returned	0.0021 sec / 0.00001...
- Status:** Query Completed

Changed the width of the table **Ticket** and displayed its new structure.



The screenshot shows the MySQL Workbench interface with the following details:

- Schemas:** The current schema is "unconnected".
- Tables:** Under the "Bus_Station" schema, the "Ticket" table is selected.
- Structure:** The "Result Grid" pane displays the structure of the "Ticket" table with the following columns:

Field	Type	Null	Key	Default	Extra
Ticket_No	int	NO	PRI	HULL	
Journey_date	date	YES		HULL	
Age	int	YES		HULL	
Sex	varchar(10)	YES		HULL	
Source	varchar(50)	YES		HULL	
Destination	varchar(50)	YES		HULL	
Dep_Time	varchar(20)	YES		HULL	
Bus_No	int	YES		HULL	
- Action Output:** The log shows the following actions:

Time	Action	Response	Duration / Fetch Time
18:25:19	DESC Ticket	8 row(s) returned	0.0020 sec / 0.00001...
18:28:54	ALTER TABLE Ticket MODIFY Sex VARCHAR(10)	3 row(s) affected Record...	0.021 sec
18:28:54	DESC Ticket	8 row(s) returned	0.00097 sec / 0.0000...
18:39:33	ALTER TABLE Bus CHANGE Couch_Type Coach_Type VARCHAR(20)	0 row(s) affected Record...	0.010 sec
18:39:33	DESC Bus	5 row(s) returned	0.0016 sec / 0.00001...
18:46:49	ALTER TABLE Bus MODIFY Bus_No VARCHAR(15), MODIFY Source VARCHAR(50),...	0 row(s) affected Record...	0.0093 sec
18:47:39	DESC Bus	5 row(s) returned	0.0020 sec / 0.00001...
18:50:42	ALTER TABLE Reservation MODIFY Address VARCHAR(100), MODIFY Contact_N...	3 row(s) affected Record...	0.023 sec
18:50:42	ALTER TABLE Reservation MODIFY Bus_No VARCHAR(15)	0 row(s) affected Record...	0.0031 sec
18:50:45	DESC Reservation	7 row(s) returned	0.0021 sec / 0.00001...
18:51:24	ALTER TABLE Ticket MODIFY Sex VARCHAR(10), MODIFY Source VARCHAR(50),...	0 row(s) affected Record...	0.0088 sec
18:51:27	DESC Ticket	8 row(s) returned	0.0019 sec / 0.00001...
- Status:** The status bar at the bottom left indicates "Query Completed".

Changed the width of the table **Passenger** and displayed its new structure.

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Schemas Tab:** Bus_Station selected. The tree view shows tables: Bus, Cancell..., Passen..., Reserv..., Ticket, Views, Stored Pr..., Functions, and sys.
- SQL Editor:** Contains the following SQL code:

```
133
134 MODIFY Contact_No BIGINT;
135
136 • ALTER TABLE Reservation
137     MODIFY Bus_No VARCHAR(15);
138
139 • DESC Reservation;
140
141 • ALTER TABLE Ticket
142     MODIFY Sex VARCHAR(10),
143     MODIFY Source VARCHAR(50),
144     MODIFY Destination VARCHAR(50),
145     MODIFY Dep_Time VARCHAR(20);
146
147 • DESC Ticket;
148
149
150 • ALTER TABLE Passenger
151     MODIFY Name VARCHAR(30),
152     MODIFY Sex VARCHAR(10);
153
154 • DESC Passenger;
155
```
- Result Grid:** Displays the structure of the Passenger table with the following columns:

Field	Type	Null	Key	Default	Extra
PNR_No	int	NO	PRI	NULL	
Ticket_No	int	YES	MUL	NULL	
Name	varchar(30)	YES		NULL	
Age	int	YES		NULL	
Sex	varchar(10)	YES		NULL	
Contact_No	bigint	YES		NULL	
- Action Output:** Shows the history of actions taken on the table, including DESC operations and ALTER TABLE changes.
- Status:** Query Completed.

Changed the width of the table **Cancellation** and displayed its new structure.

The screenshot shows the MySQL Workbench interface with the following details:

- Top Bar:** MySQL Workbench, unconnected, Divyansh Kumar Singh 590012175.
- Schemas Tab:** Basic, Bus_Station (selected), Tables, Passen..., Reserv..., Ticket, Views, Stored Pr..., Functions, sys.
- Query Editor:** Contains the following SQL code:

```
139 • DESC Reservation;
140
141 • ALTER TABLE Ticket
142     MODIFY Sex VARCHAR(10),
143     MODIFY Source VARCHAR(50),
144     MODIFY Destination VARCHAR(50),
145     MODIFY Dep_Time VARCHAR(20);
146
147 • DESC Ticket;
148
149
150 • ALTER TABLE Passenger
151     MODIFY Name VARCHAR(30),
152     MODIFY Sex VARCHAR(10);
153
154 • DESC Passenger;
155
156
157 • ALTER TABLE Cancellation
158     MODIFY Seat_No VARCHAR(20);
159
160 • DESC Cancellation;
```
- Result Grid:** Shows the structure of the Cancellation table with the following columns:

Field	Type	Null	Key	Default	Extra
PNR_No	int	NO	PRI	NULL	
Journey_date	int	YES		NULL	
Seat_No	varchar(20)	YES		NULL	
Contact_No	bigint	YES		NULL	

Result 21 | Read Only
- Action Output:** Displays the log of actions taken during the session, including queries and their execution times and results.
- Status Bar:** Query Completed.

Conclusion

While performing this lab, various **DDL (Data Definition Language)** and **DML (Data Manipulation Language)** commands were implemented to design, create, and manage a relational database for the *Roadway Travels* scenario. Multiple tables, such as **Bus**, **Reservation**, **Ticket**, **Passenger**, and **Cancellation**, were created with appropriate constraints, keys, and relationships to reflect real-world operations. Alterations like adding new columns, modifying data types, and changing column names were successfully demonstrated. Data insertion, retrieval, and deletion processes further showcased the use of SQL for managing records.

Overall, the lab provided hands-on experience in **database design, schema modification, and data manipulation**, reinforcing fundamental SQL concepts and their practical applications.

GITHUB DBMS REPOSITORY LINK:

<https://github.com/JavaPyWizard/DBMS-LAB>