Chandigarh Engineering College Jhanjeri
Mohali-140307
Department of Artificial Intelligence (AI) and Data Sciences

Experiment-2

Experiment Name:
Data Definition & Manipulation (DDL & DML)

Objective:
To create tables using DDL commands and perform data insertion, updation, and deletion using DML commands

Prerequisites:
- Basic knowledge of SQL syntax.
- Understanding of database concepts (tables, rows, columns).

Key Terms: SQL Data types

System requirements:
- 4-8 GB RAM, 10-15 disk space, Windows OS
- MySQL Workbench 8.0 CE

Theory and Application:

SQL Database Data Types

DATA TYPES represents the type of data an object is holding. Data Types are defined for columns of a table, local/global variables, input/output arguments of procedures etc..

Each database system (MS SQL Server, MYSQL, DB2, Oracle etc.) have its own long list of data types but several data types are common in most of them. This article will list down common data types across various database systems.

Number Data Type

Few numeric data type has syntax of data_type(x). Here x is meant for precision value.

Date Time Data Type

- **datetime**: This data type stores both date and time values together. It supports dates ranging from **01/01/1753** to **12/31/9999** and requires **8 bytes** of storage. In some database systems, this data type is also referred to as a **timestamp**.
- **date**: This data type is used to store only the date component, without any time information.

- **time**: This data type stores only time-related information, without including the date.
- Some numeric data types follow the syntax **data_type(x)**, where **x** specifies the precision or size of the value.

String Data Type

- char(x): This data type stores fixed-length character data and is padded with spaces to match the specified length. Here, x defines the exact number of characters to be stored.
- varchar(x): Short for *variable characters*, this data type stores character data of variable length and does not add extra spaces. The value of x specifies the maximum number of characters allowed.
- text: This data type is used to store large or lengthy textual data.
- Some numeric data types use the syntax data_type(x), where x represents the precision of the value.

Other Data Type

- blob: Binary Large Object. This type is used to store large amount of binary date such as images or other type of files.
- money: In few databases also termed as currency. The type is used to storage money/currency information
- binary: The data type is used to store information in binary string format.

1. CREATE & USE DATABASE

Syntax:
CREATE DATABASE d2;
USE d2;

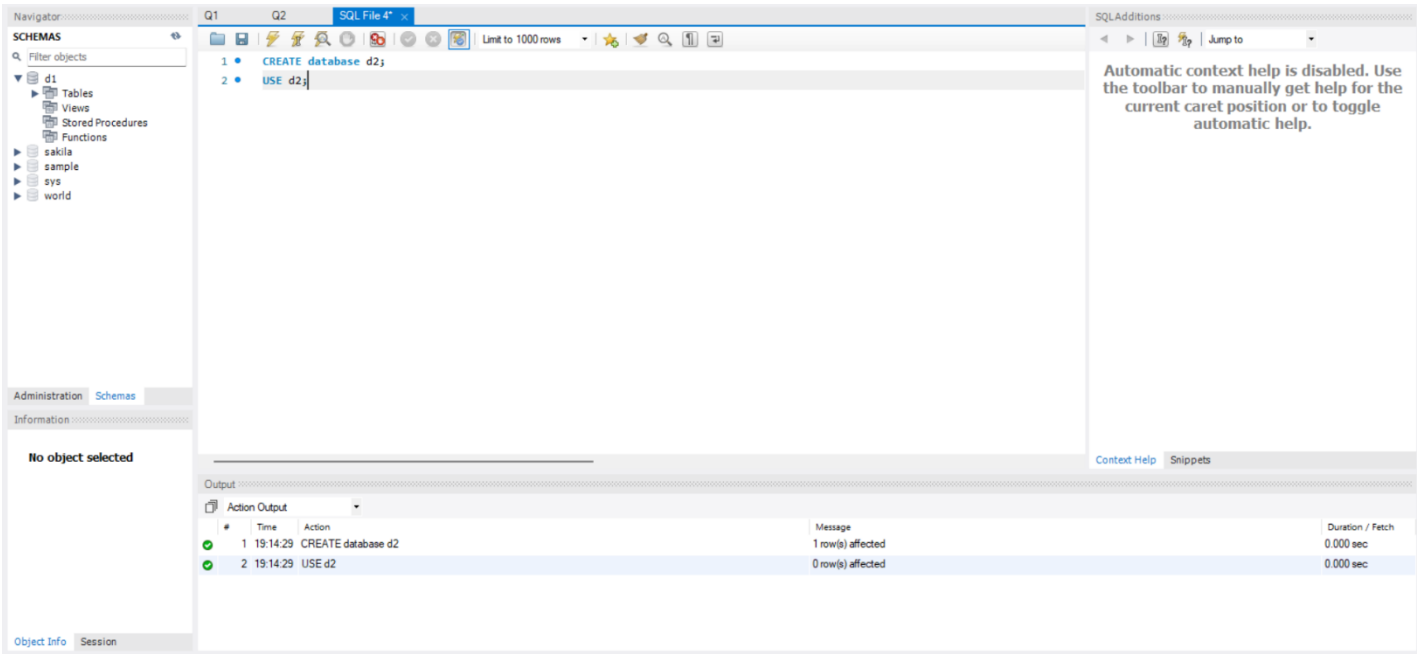


Figure 1: CREATE & USE Database

2. CREATE TABLE

Syntax:
CREATE TABLE Building (building_id INT AUTO_INCREMENT PRIMARY KEY, bname VARCHAR(20) NOT NULL UNIQUE, location VARCHAR(50) DEFAULT 'Unknown');

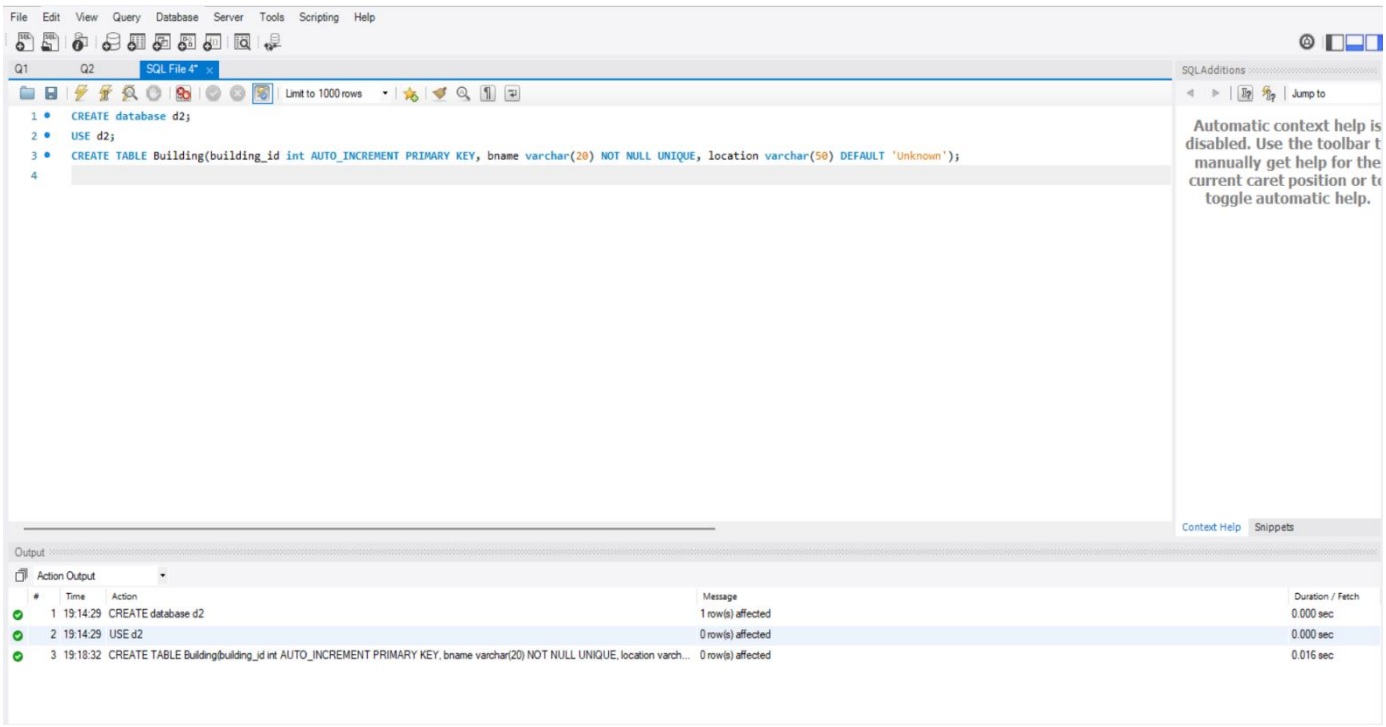


Figure 2: CREATE TABLE

Creates Building table with PRIMARY KEY, AUTO_INCREMENT, NOT NULL, UNIQUE, DEFAULT value.

CREATE TABLE room1 (room_no INT AUTO_INCREMENT PRIMARY KEY, Chair INT NOT NULL, Bench INT NOT NULL, building_id INT, FOREIGN KEY (building_id) REFERENCES Building(building_id));

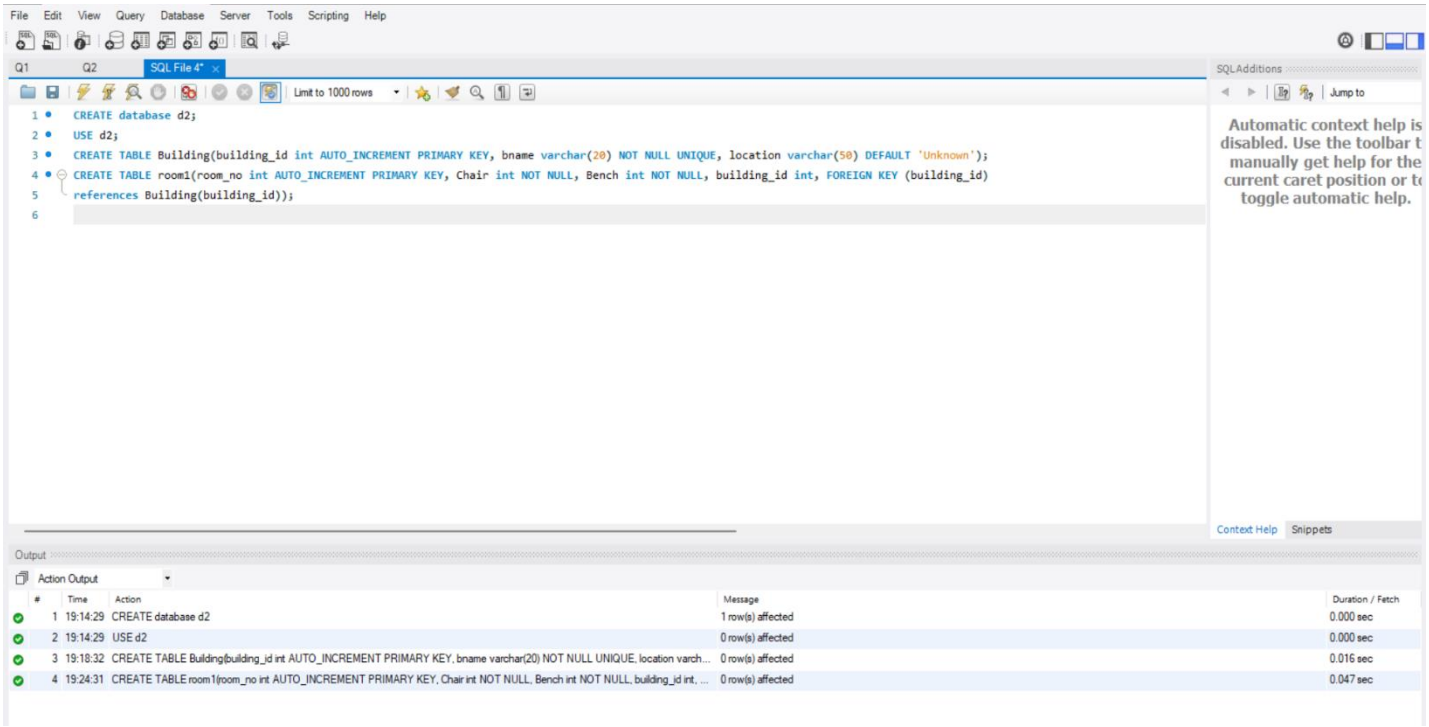


Figure 3: CREATE room1 TABLE

Creates room1 with NOT NULL, DEFAULT and a FOREIGN KEY referencing building.

3. INSERT

Syntax
INSERT INTO Building (name, location) VALUES (‘Block 1', 'Campus A'), ('Block 2', 'Campus B');
INSERT INTO room1 (Chair, Bench, building_id) VALUES(20, 10, 1),
(25, 16, 2);

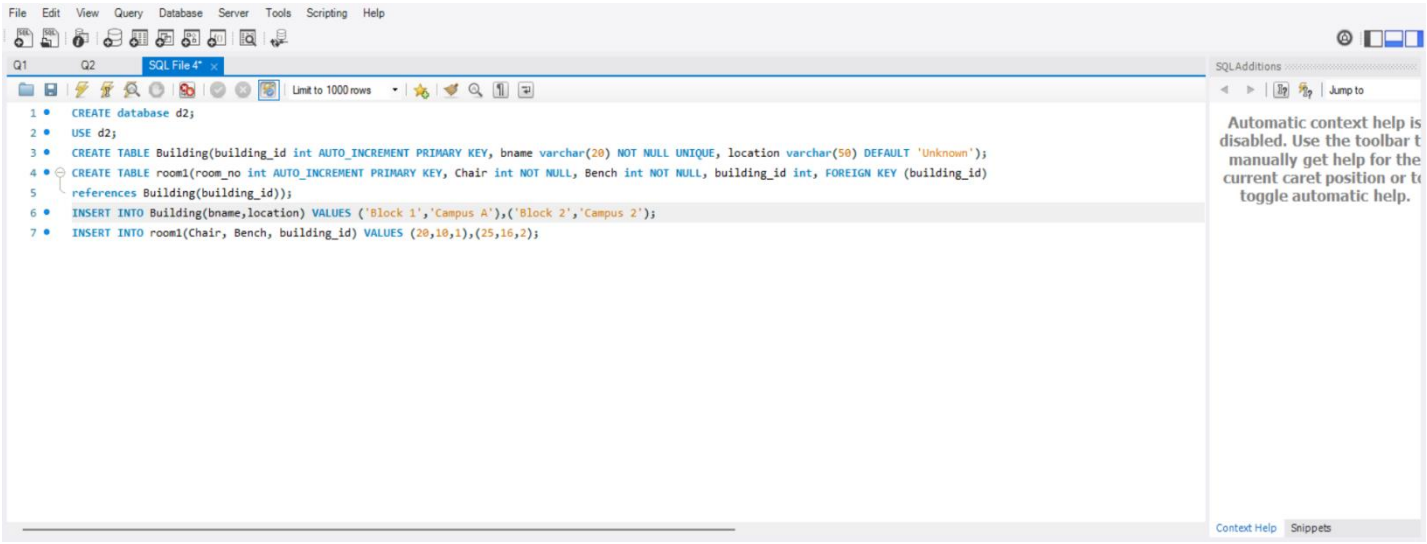


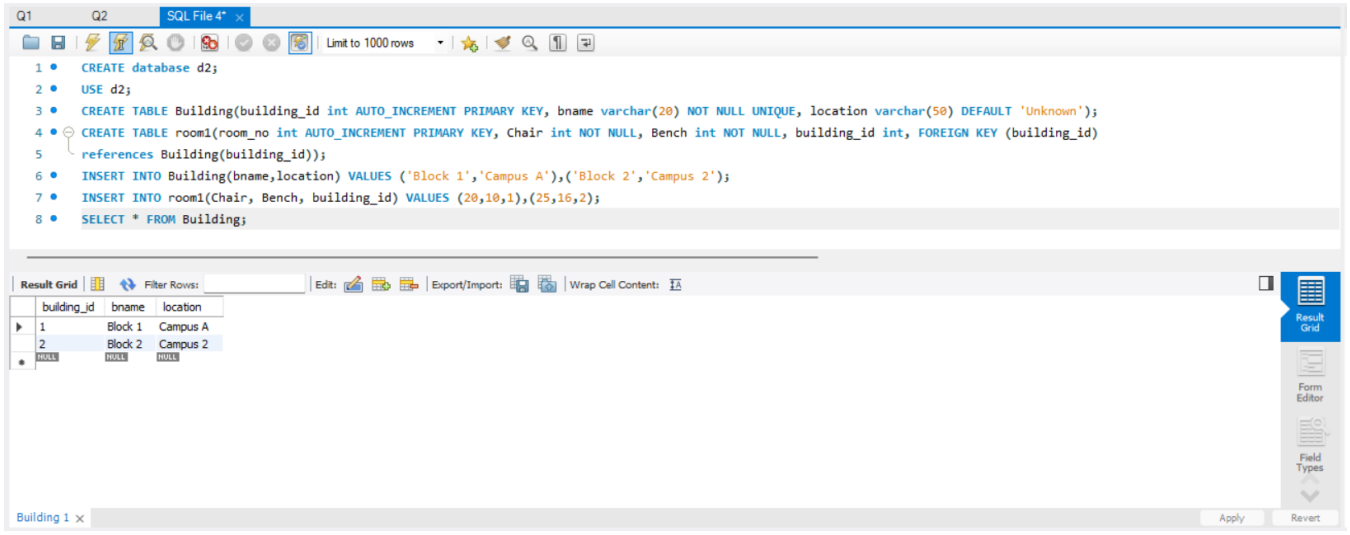
Figure 4: INSERT

4. SELECT

Syntax:

SELECT * FROM Building;

SELECT * FROM room1;



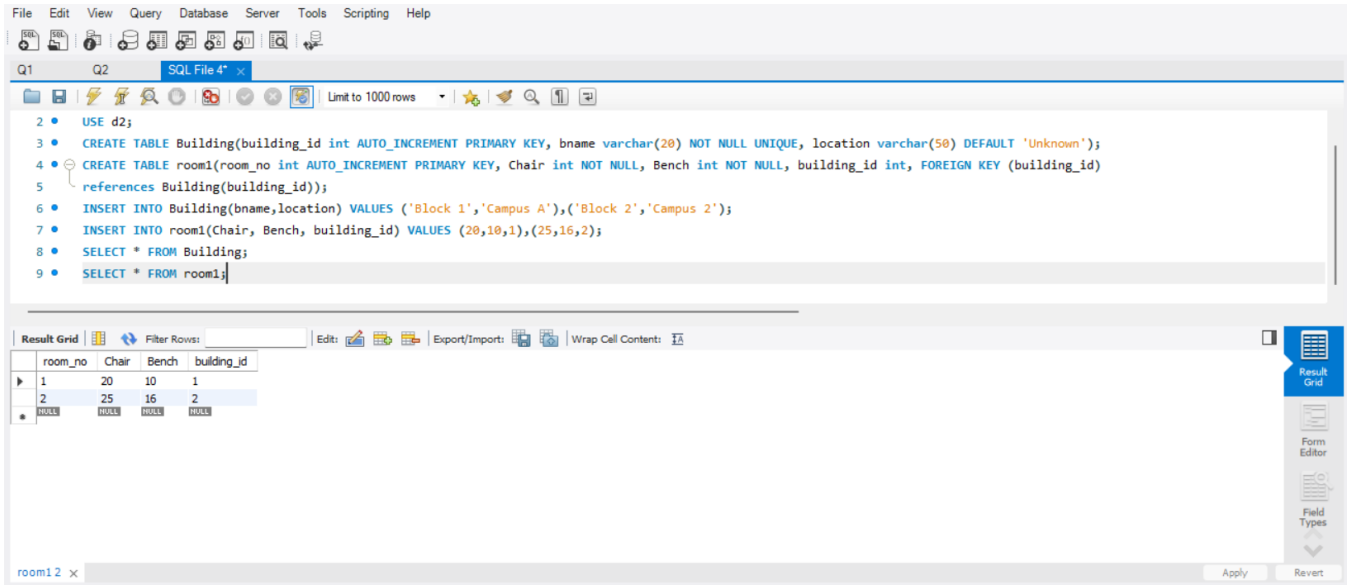


Figure 5: SELECT

5. UPDATE

Syntax:

UPDATE room1 SET chair = 22 WHERE room_id = 1;

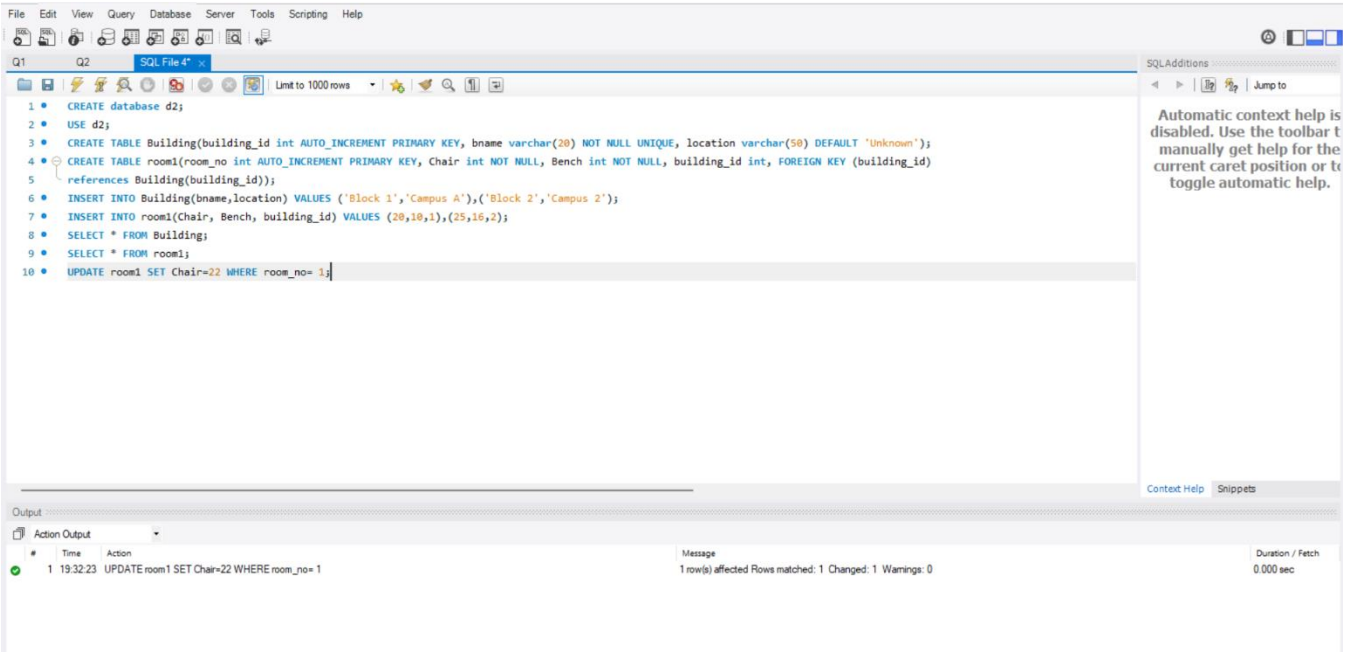


Figure 6: UPDATE

6. DELETE

Syntax:

DELETE FROM room1 WHERE room_id = 2;

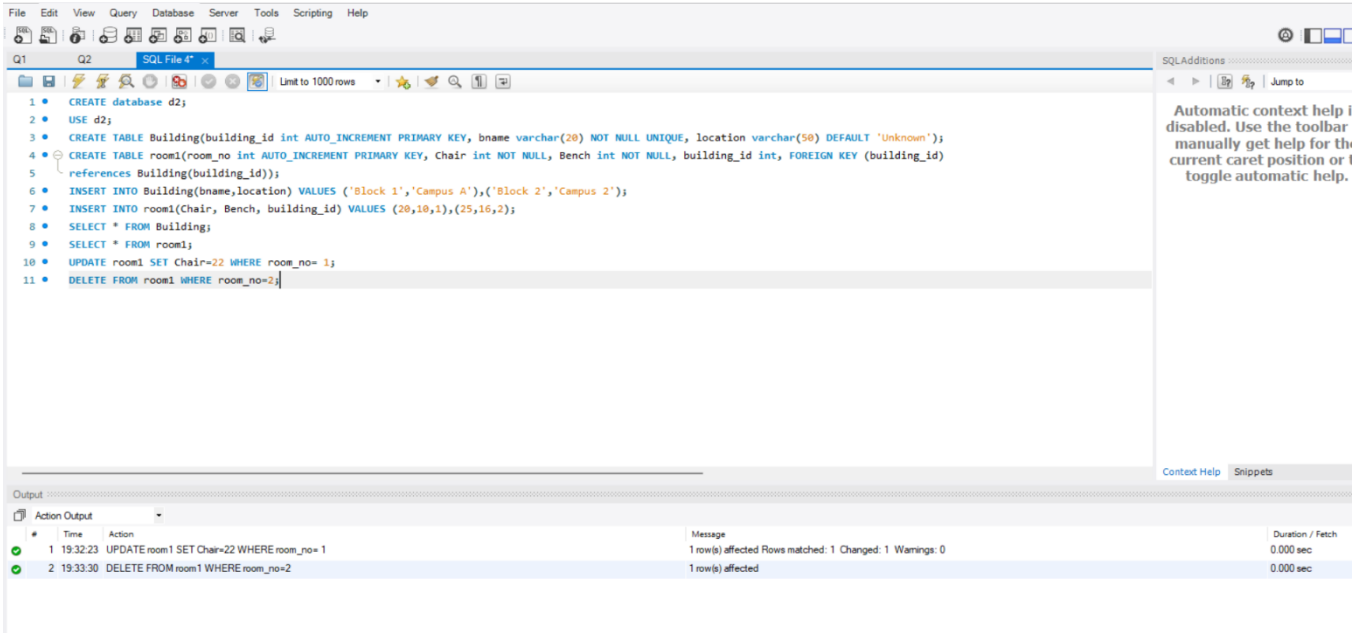


Figure 7: DELETE

7. ALTER

Syntax:

ALTER TABLE room1 ADD COLUMN projector BOOLEAN DEFAULT FALSE;

ALTER TABLE room1 MODIFY COLUMN bench INT NOT NULL;

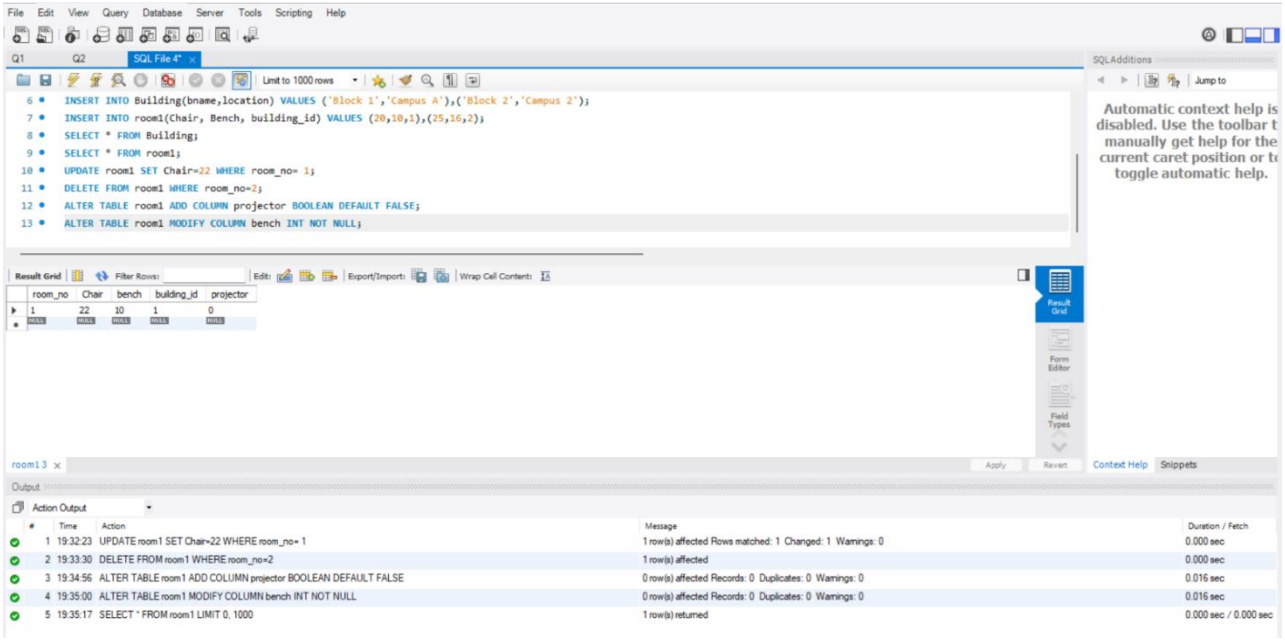


Figure 8: ALTER

8. RENAME

Syntax:

RENAME TABLE room1 TO classroom1;

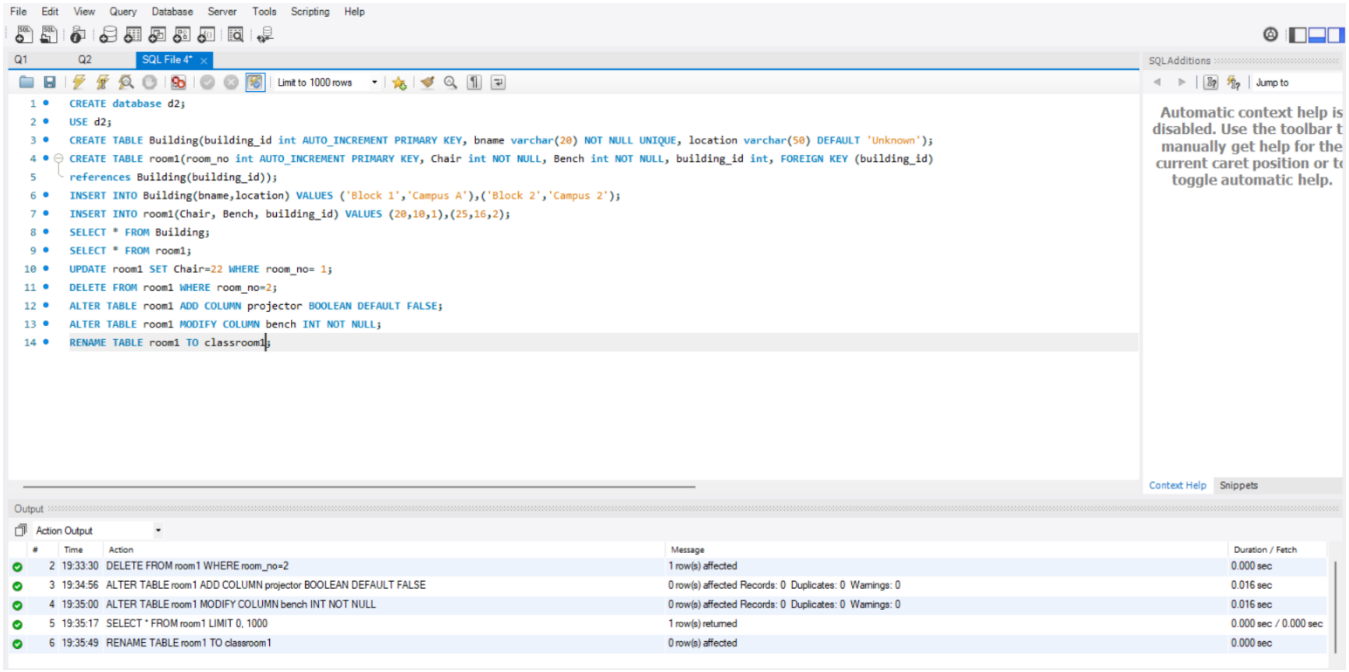


Figure 9: RENAME

9. TRUNCATE

Syntax:

TRUNCATE TABLE classroom1;

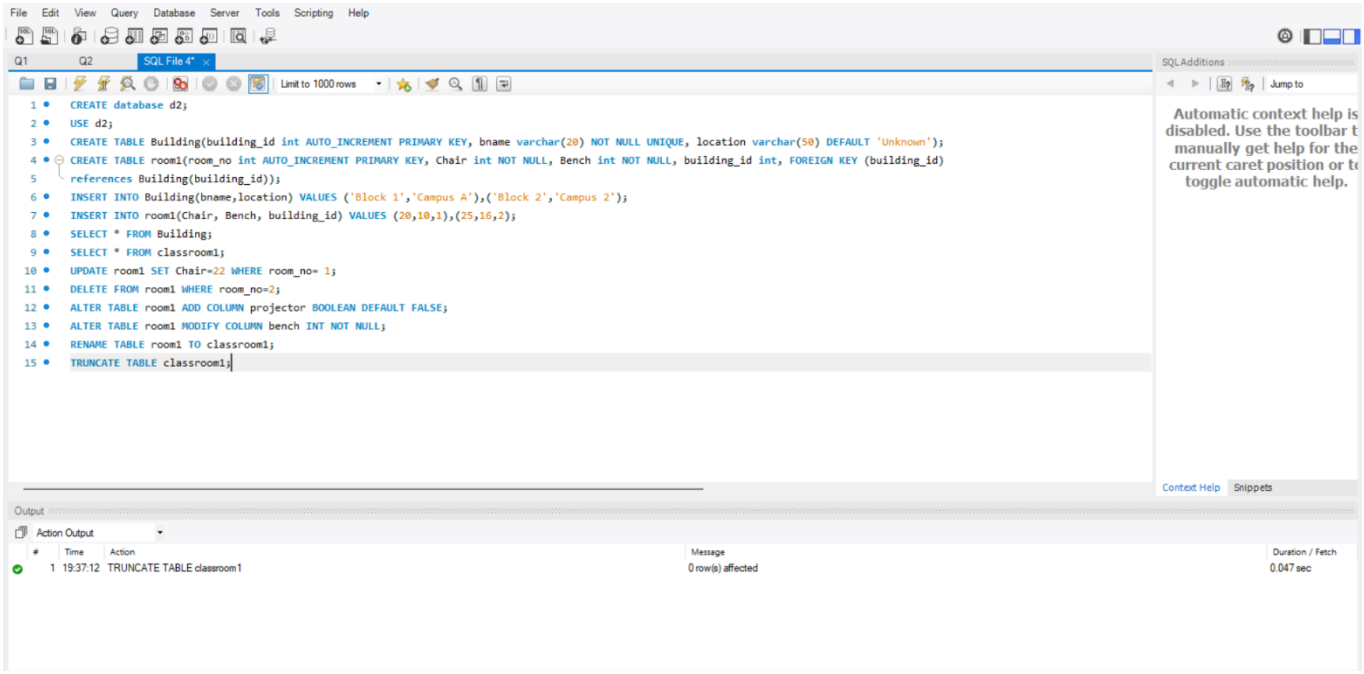


Figure 10: TRUNCATE