PRACTICAL – 8

AIM - To apply the concept of integrity/data constraints while creating or altering tables in a database for managing sales-related data.

1) Create Table Salespeople where Snum number(4) P.K, Sname varchar2(20) NOT NULL, City varchar2(15), Comm number(5,2).

Constraints

1. Primary Key Constraint: Ensure Snum uniquely identifies each record.

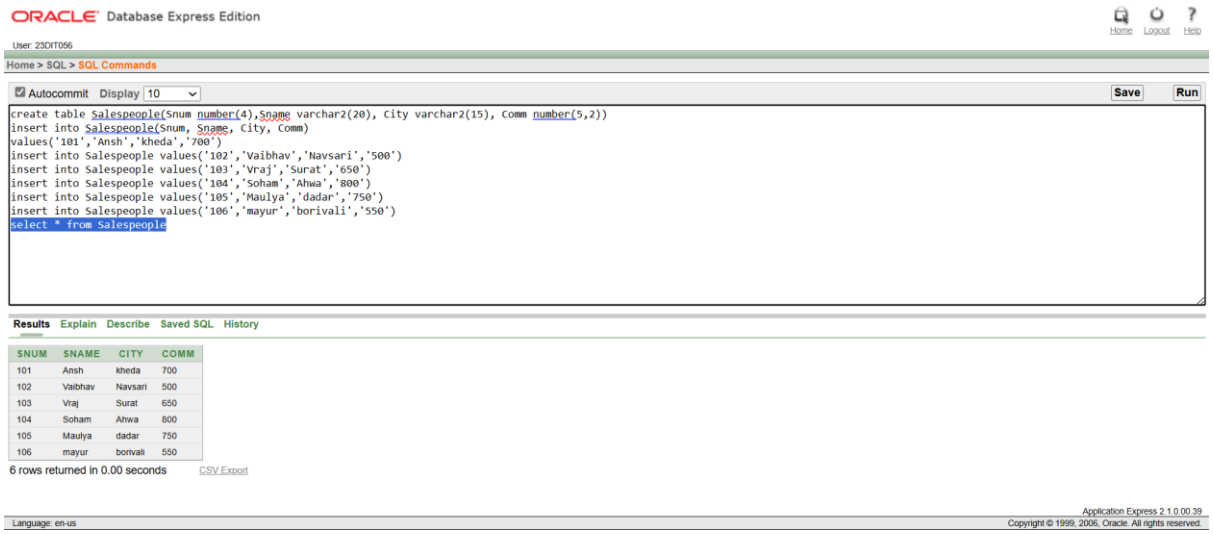
2. Not Null Constraint: Ensure Sname is not null.

Tasks:

Test Case 1: Insert a valid record.

Objective: Verify that a valid record can be inserted into the Salespeople table.

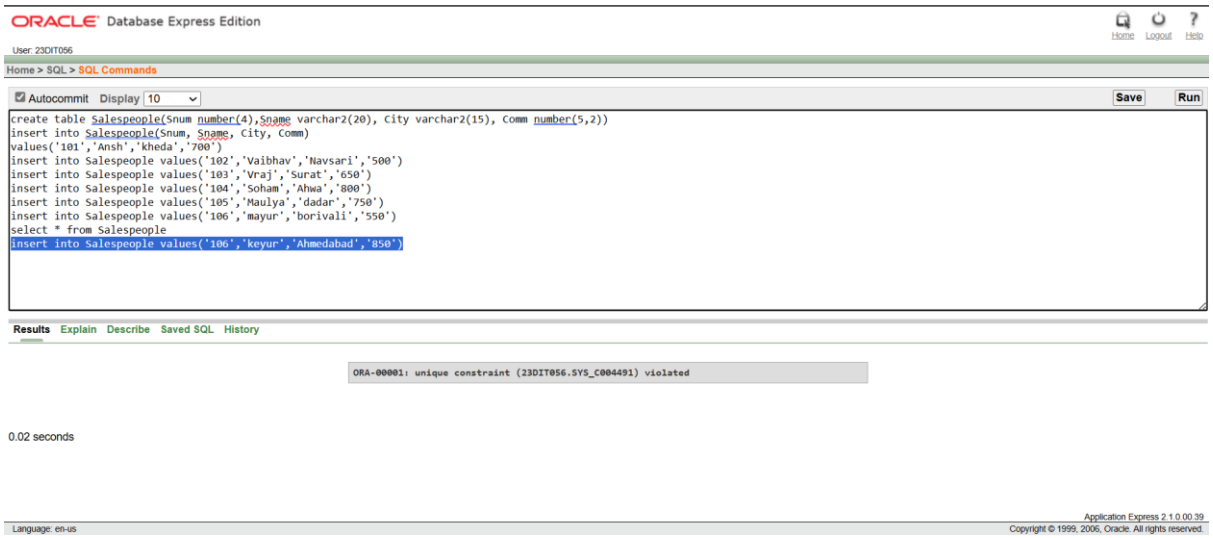
Expected Result: The record should be inserted successfully.



Test Case 2: Insert a record with a duplicate Snum

Objective: Verify that inserting a record with a duplicate Snum results in an error.

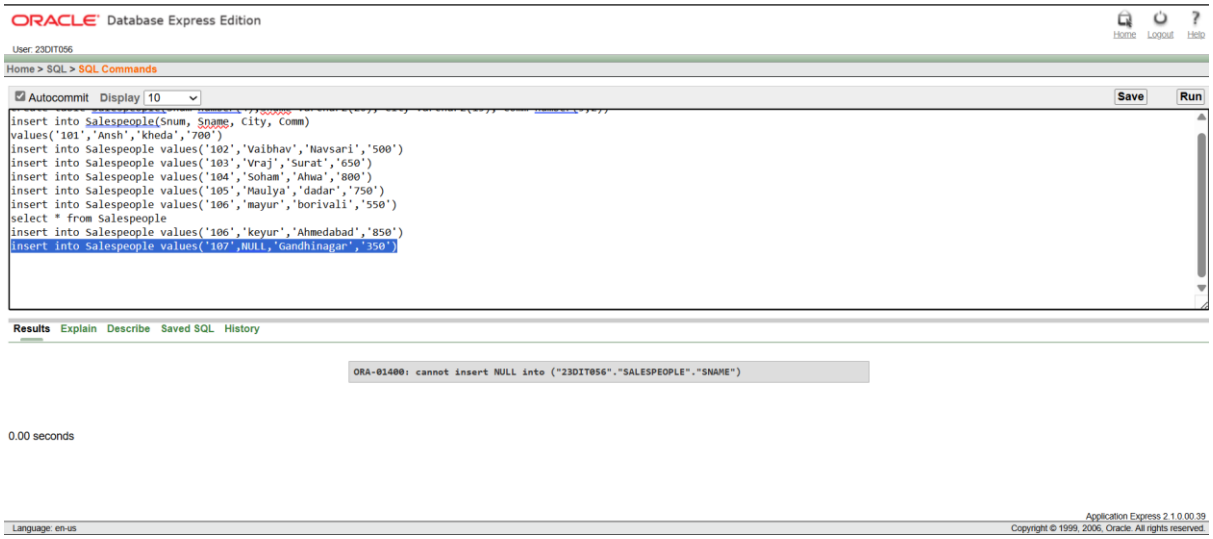
Expected Result: The insertion should fail with a primary key constraint violation error.



Test Case 3: Insert a record with a null Sname

Objective: Verify that inserting a record with a null Sname results in an error.

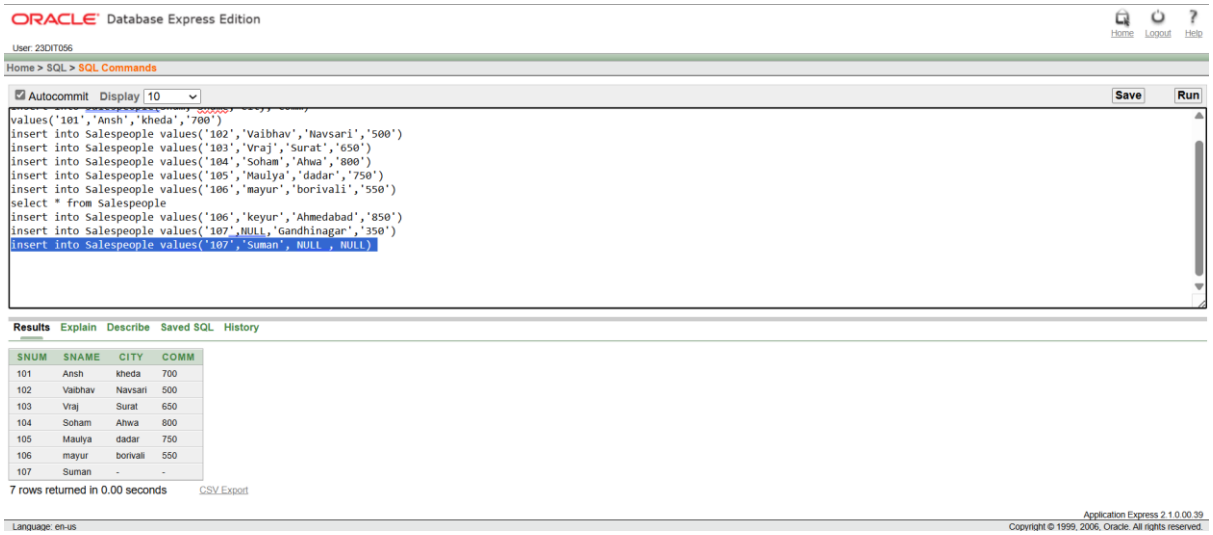
Expected Result: The insertion should fail with a not-null constraint violation error.



Test Case 4: Insert a record with missing City and Comm

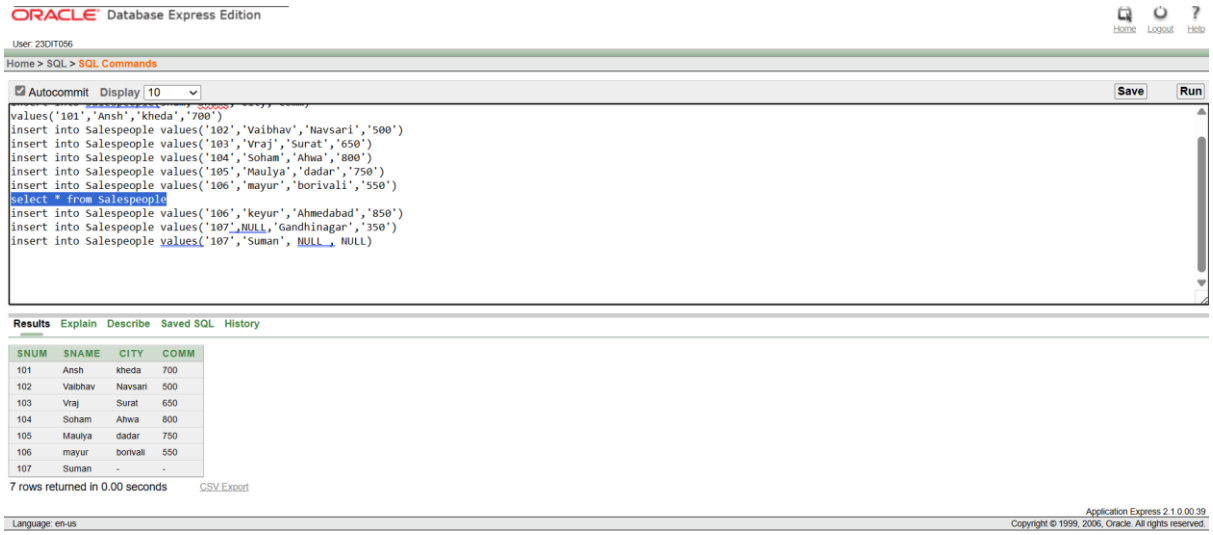
Objective: Verify that a record can be inserted with City and Comm as null.

Expected Result: The record should be inserted successfully with City and Comm as null.



Test Case 5: Retrieve all records from the Salespeople table.

Objective: Verify that all records can be retrieved from the table.



2) Create Table customer where Cnum number (4) P.K, Cname varchar2(20)NOT NULL, City varchar2(20), Rating number(3) DEFAULT 10, Snum number(4) F.K.(where snum refer salespeople table).

Constraints

1. Primary Key Constraint: Ensure Cnum uniquely identifies each record.

2. Not Null Constraint: Ensure Cname is not null.

3. Foreign Key Constraint: Ensure Snum references the Snum field in the Salespeople table.

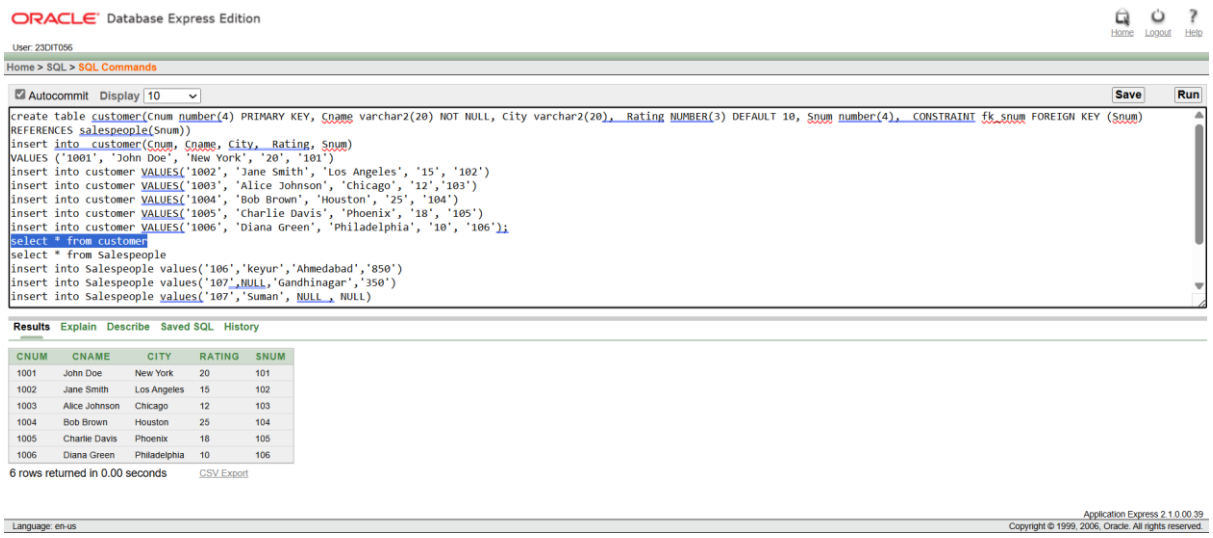
4. Default Constraint: Ensure Rating defaults to 10 if no value is provided.

Tasks:

Test Case 1: Insert a valid record

Objective: Verify that a valid record can be inserted into the Customer table.

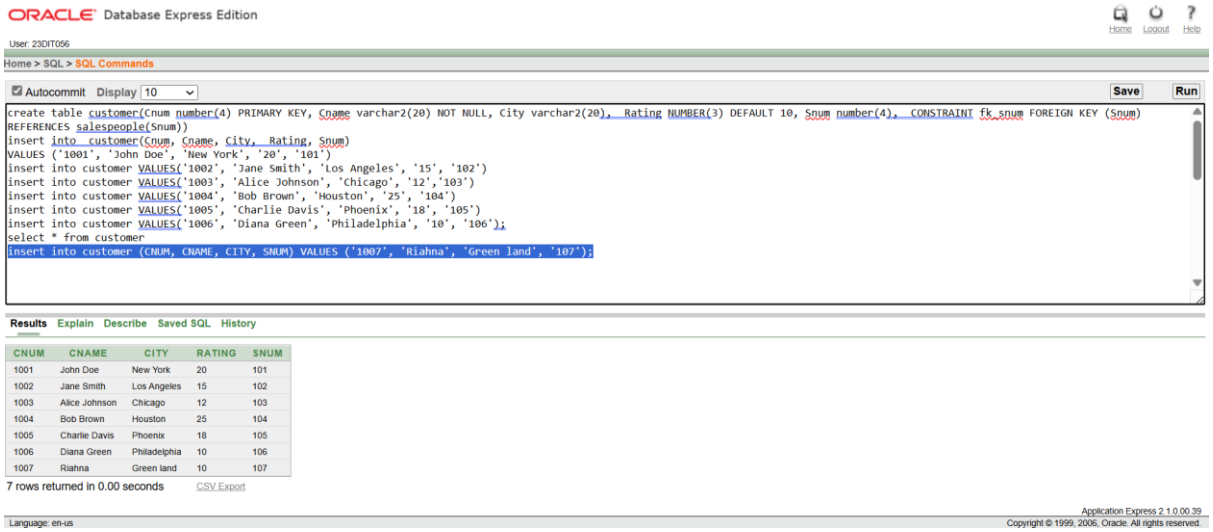
Expected Result: The record should be inserted successfully.



Test Case 2: Insert a record with a missing Rating

Objective: Verify that a record can be inserted with a Rating defaulting to 10.

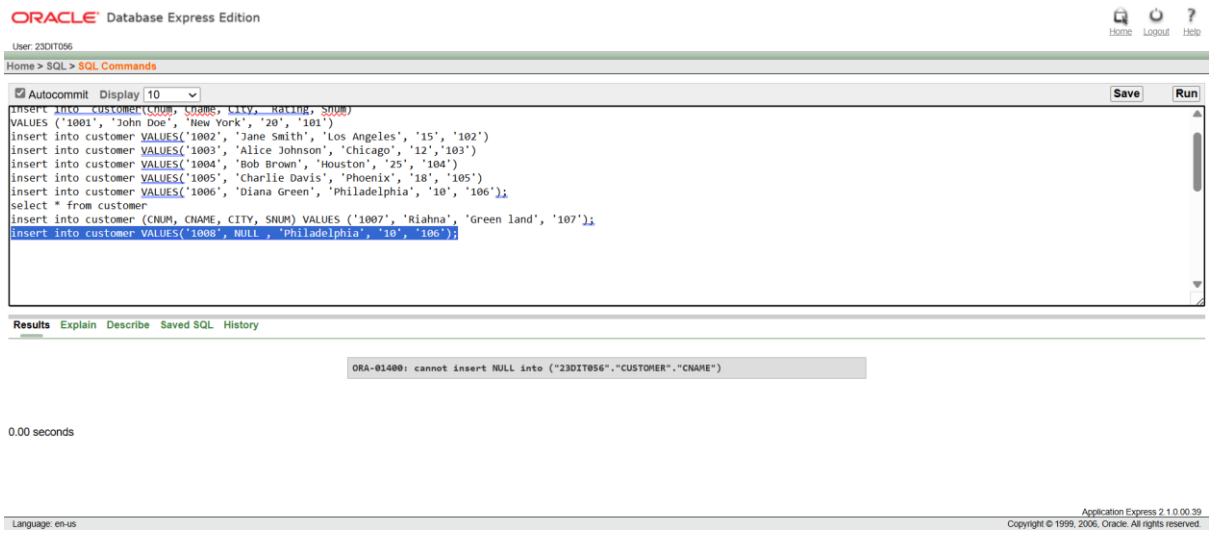
Expected Result: The record should be inserted successfully with a Rating of 10.



Test Case 3: Insert a record with a null Cname

Objective: Verify that inserting a record with a null Cname results in an error.

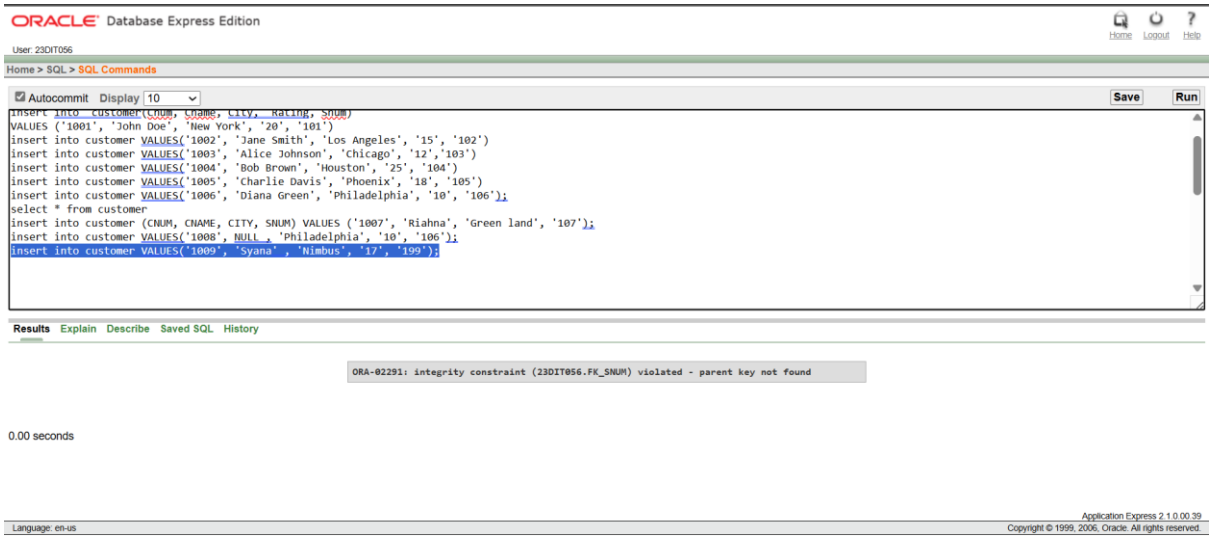
Expected Result: The insertion should fail with a not null constraint violation error.



Test Case 4: Insert a record with a non-existent Snum

Objective: Verify that inserting a record with a non-existent Snum results in an error.

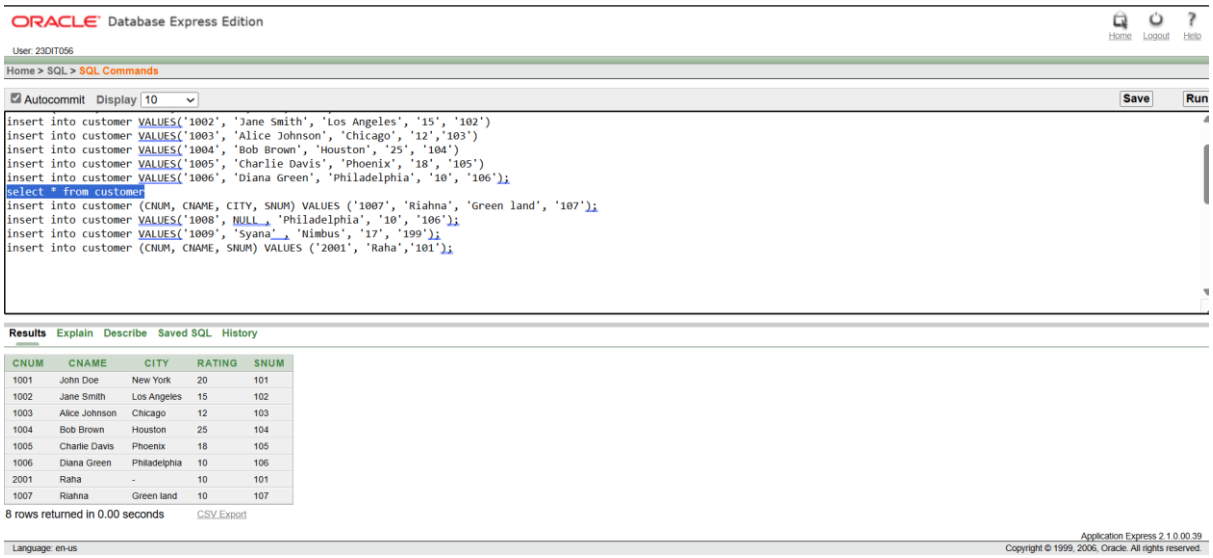
Expected Result: The insertion should fail with a foreign key constraint violation error.



Test Case 5: Insert a record with missing City and Rating

Objective: Verify that a record can be inserted with City and Rating as null/default.

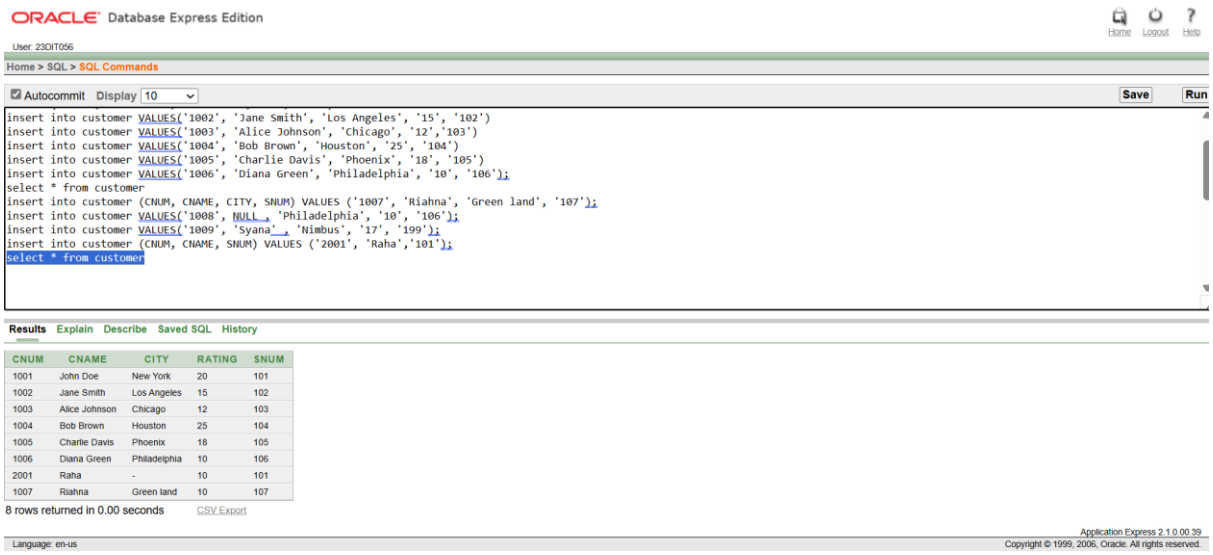
Expected Result: The record should be inserted successfully with City as null and Rating as 10.



Test Case 6: Retrieve all records from the Customer table

Objective: Verify that all records can be retrieved from the table.

Expected Result: The query should return all the inserted records.



3) Create table Order where Order_no number(4) P.K, Amount number(5), Odate varchar2(10), Cnum number(4) F.K, (where cnum refer customer table). Snum number(4) F.K (where snum refers salespeople table).

Constraints

1. Primary Key Constraint: Ensure Order_no uniquely identifies each record.

2. Foreign Key Constraint: Ensure Cnum references the Cnum field in the Customer table.

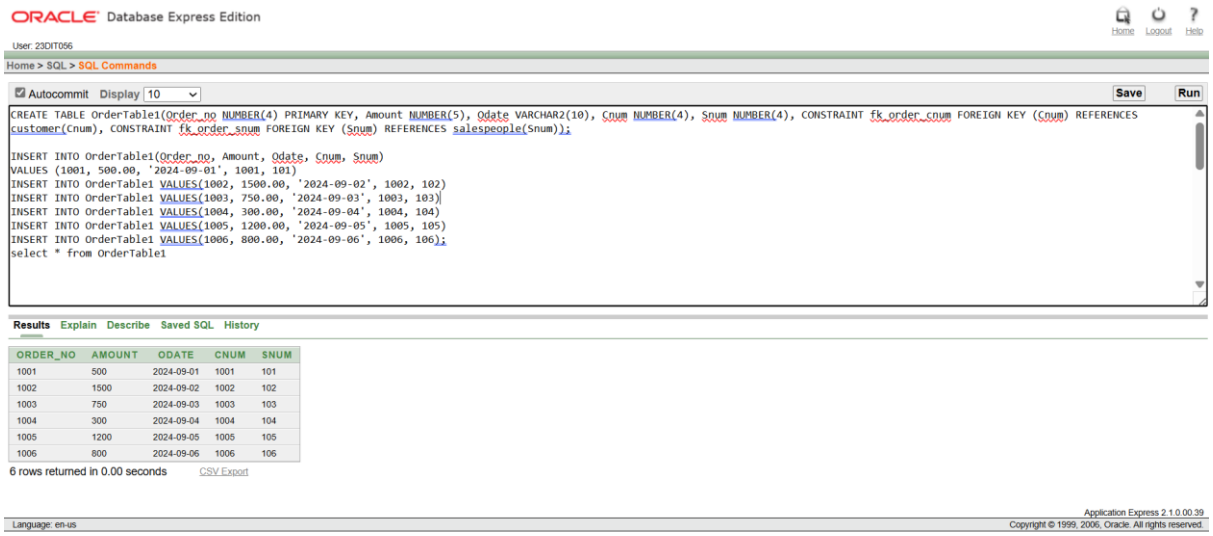
3. Foreign Key Constraint: Ensure Snum references the Snum field in the Salespeople table.

Tasks:

Test Case 1: Insert a valid record

Objective: Verify that a valid record can be inserted into the Orders table.

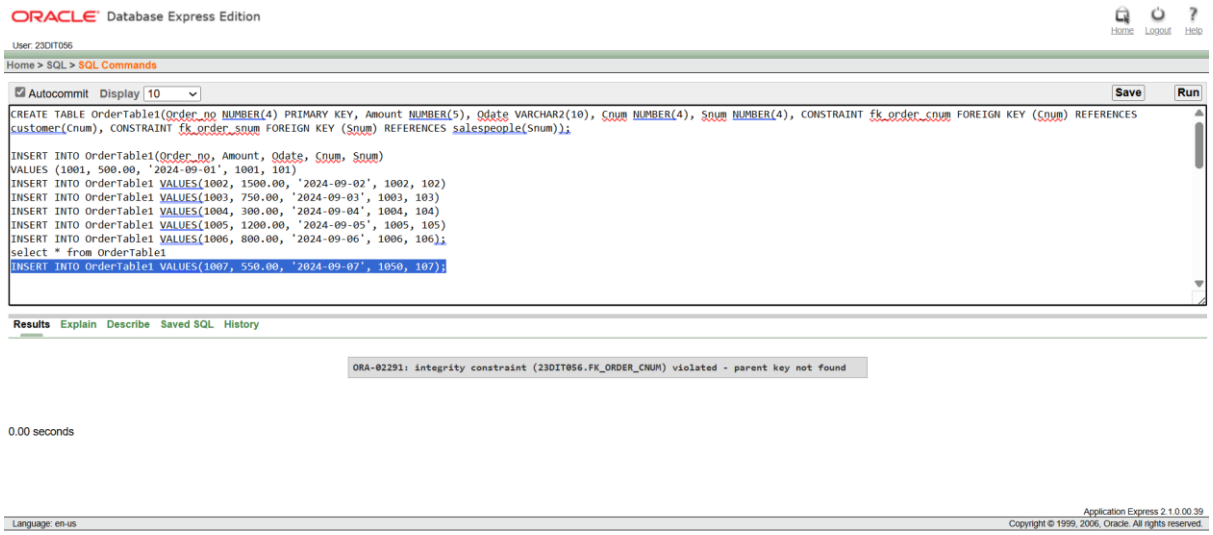
Expected Result: The record should be inserted successfully.



Test Case 2: Insert a record with a non-existent Cnum

Objective: Verify that inserting a record with a non-existent Cnum results in an error.

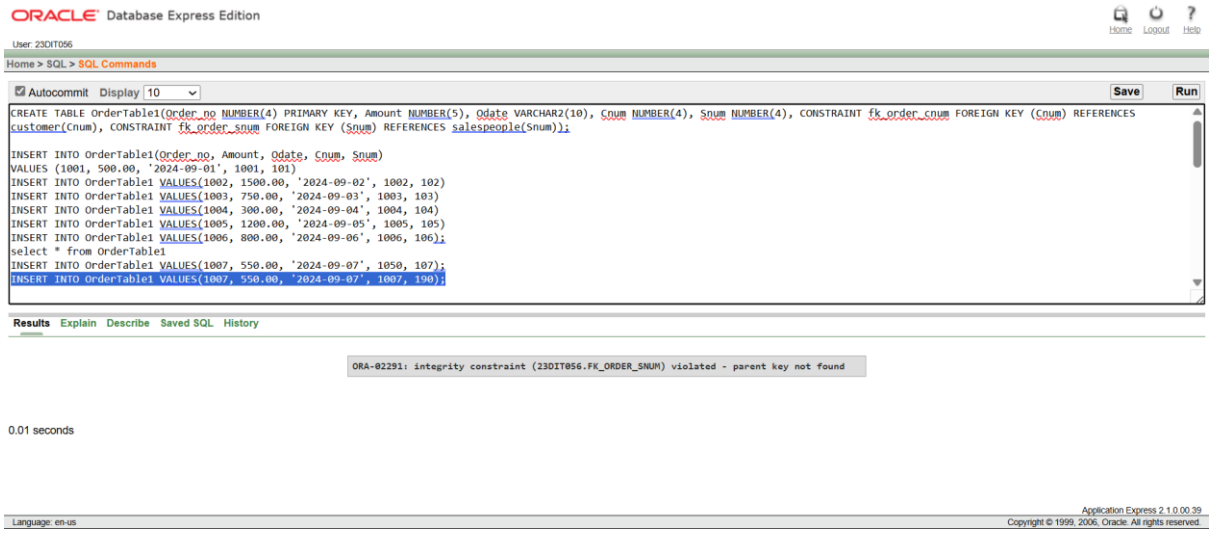
Expected Result: The insertion should fail with a foreign key constraint violation error for Cnum.



Test Case 3: Insert a record with a non-existent Snum

Objective: Verify that inserting a record with a non-existent Snum results in an error.

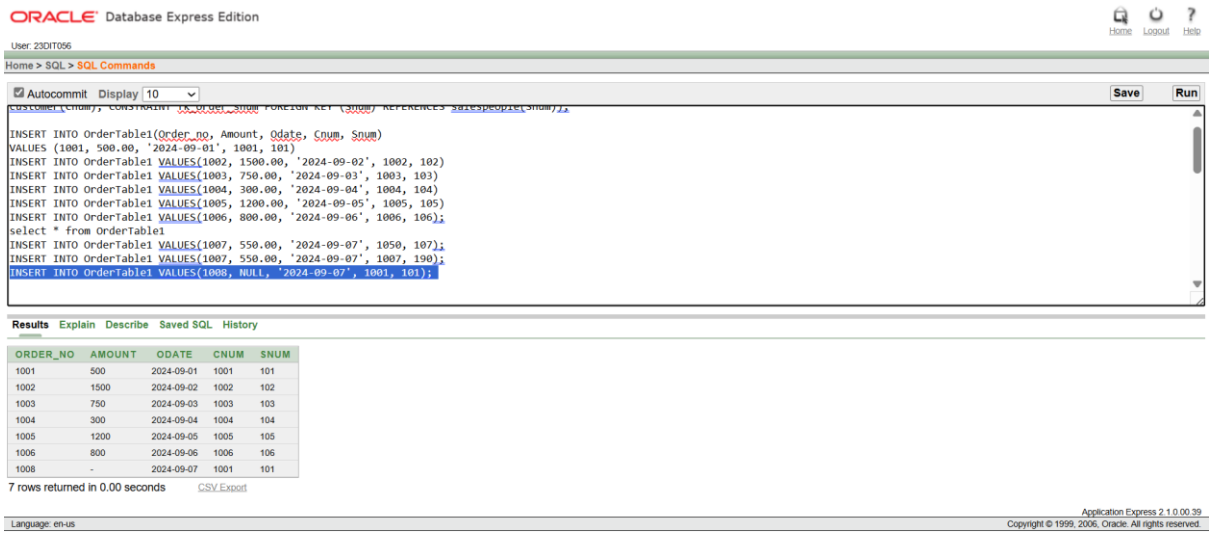
Expected Result: The insertion should fail with a foreign key constraint violation error for Snum.



Test Case 4: Insert a record with a null Amount

Objective: Verify that a record can be inserted with Amount as null.

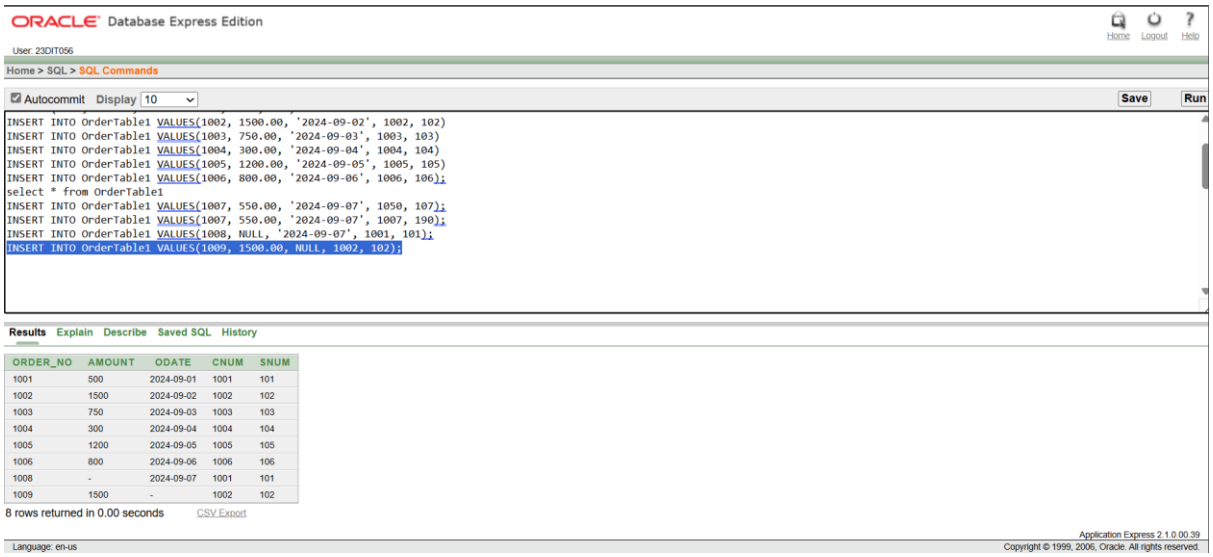
Expected Result: The record should be inserted successfully with Amount as null.



Test Case 5: Insert a record with null Odate

Objective: Verify that a record can be inserted with Odate as null.

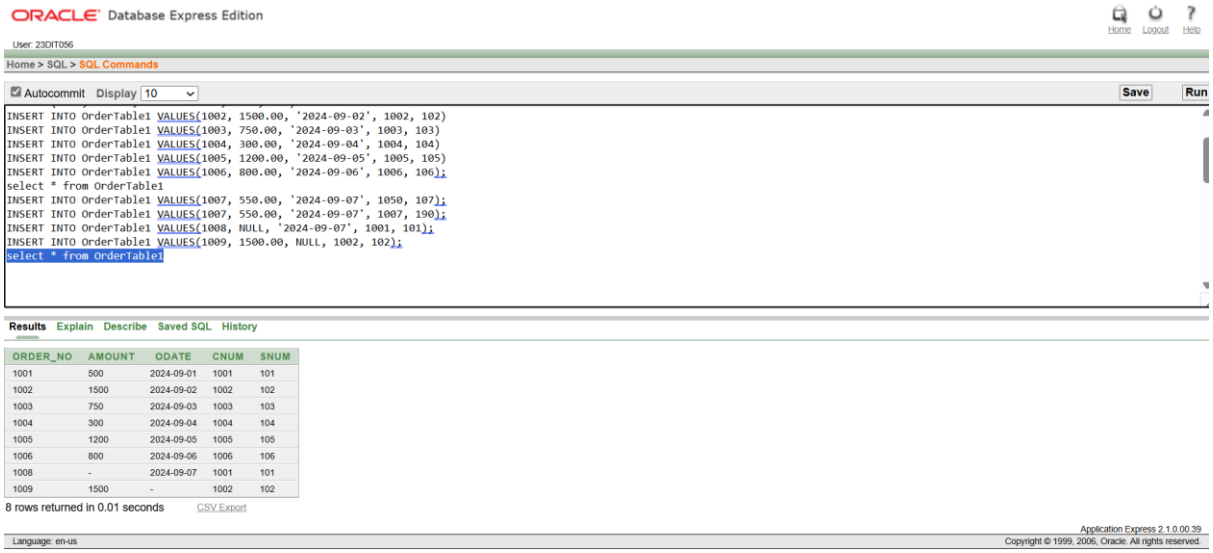
Expected Result: The record should be inserted successfully with Odate as null.



Test Case 6: Retrieve all records from the Orders table

Objective: Verify that all records can be retrieved from the table.

Expected Result: The query should return all the inserted records.



4. Table: Sales_order

Constraints

• Primary Key Constraints: Ensure unique identification of records.

• Foreign Key Constraints: Maintain relationships between tables.

• Not Null Constraints: Ensure critical fields are not null.

• Check Constraints: Ensure data integrity by limiting column values.

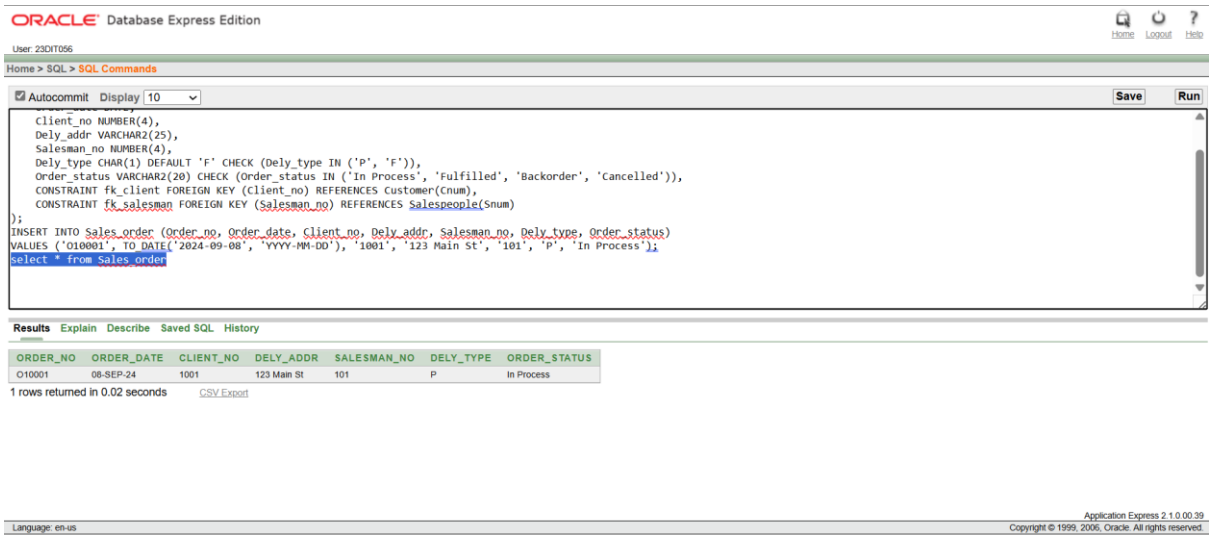
• Unique Constraints: Ensure columns have unique values where required.

• Default Constraints: Assign default values to columns when no value is provided.

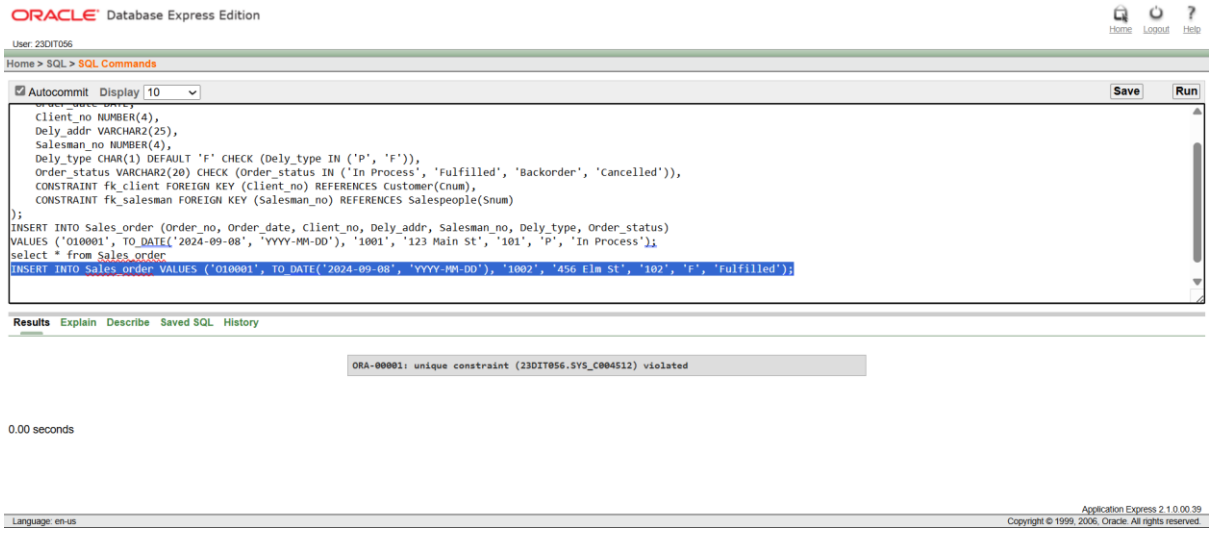
Column Name	Data Type	Constraints
Order_no	Varchar2(6)	Primary key/First letter starting with 'O'
Order_date	Date	
Client_no	Varchar2(6)	Foreign Key references client_no of client_master table
Dely_addr	Varchar2(25)	
Salesman_no	Varchar2(6)	Foreign Key references sales_no of Salesman_master table
Dely_type	char	Delivery: part(P)/ full (f) Default 'F'
Order_status	Varchar2	In Process, Fulfilled, Backorder, Cancelled

Test Case: Verify that all constraints, including the primary key, foreign key, check constraints, and default values, are correctly applied.

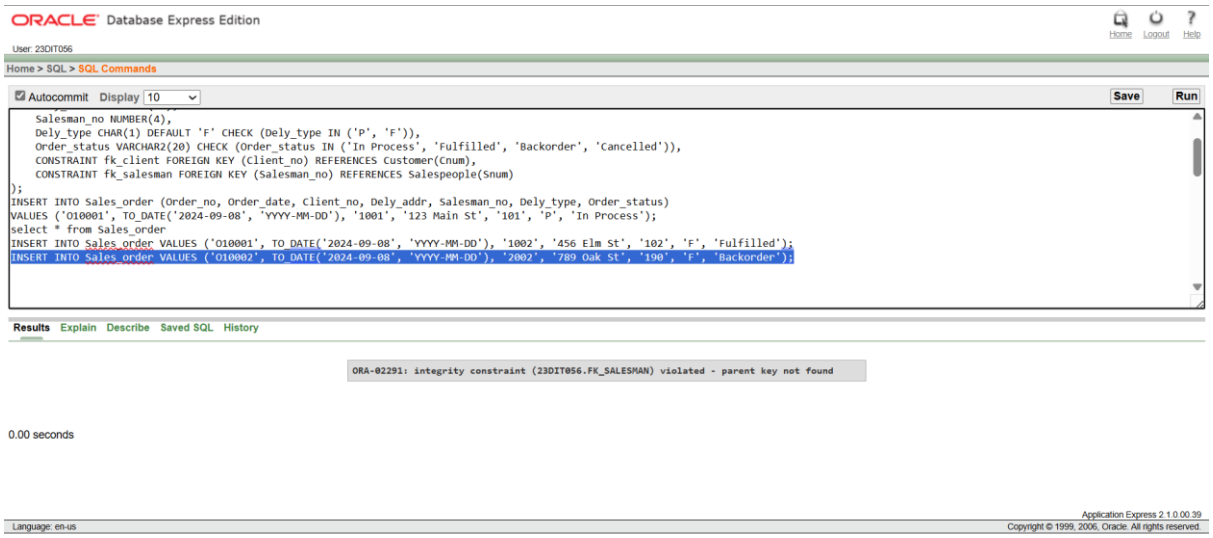
Insert Valid Data**:**



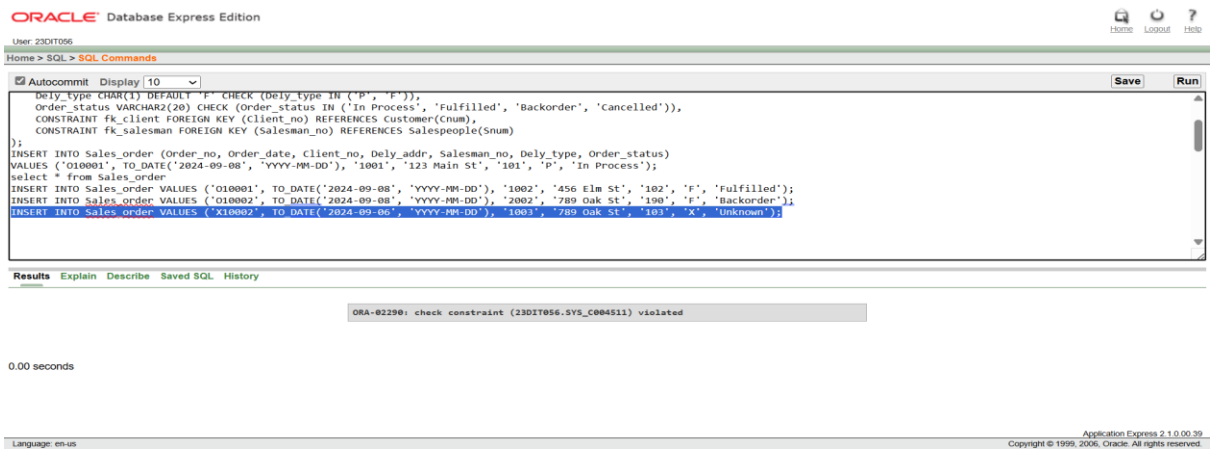
Test the Primary Key Constraint:



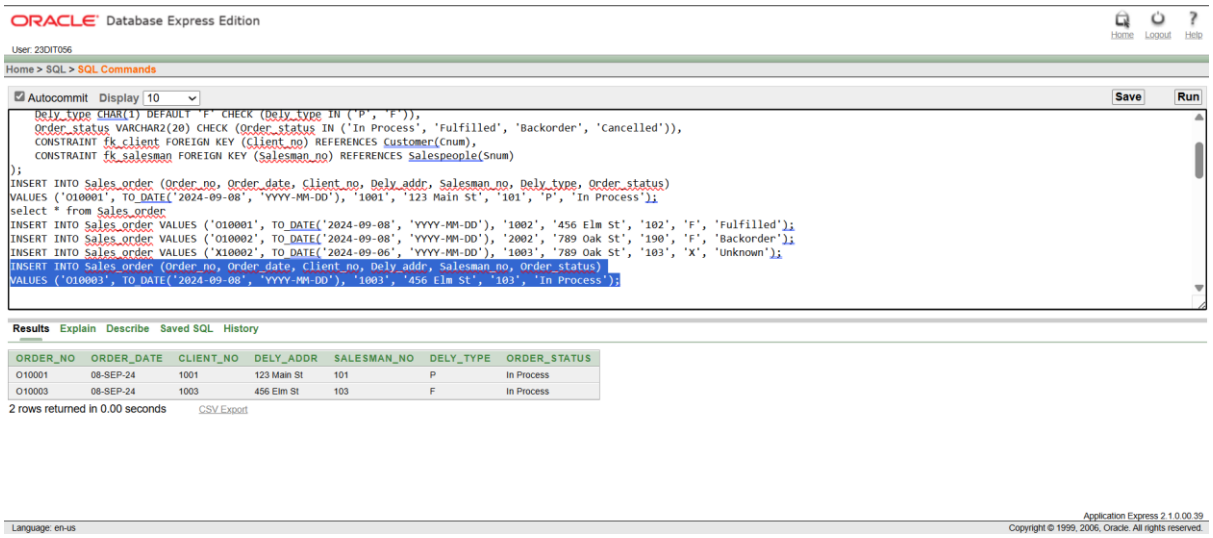
Test the Foreign Key Constraints:



Test the Check Constraints:



Test the Default Constraint**:**



5. Table: salesman_master

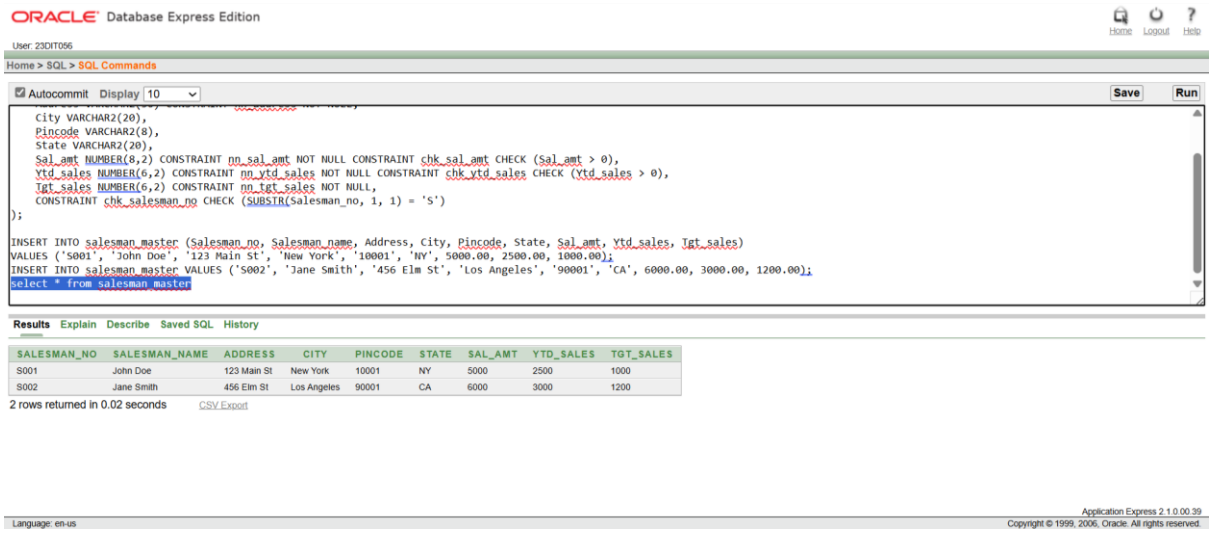
Constraints

- **Primary Key Constraints: Ensure unique identification of records.**
- **Foreign Key Constraints: Maintain relationships between tables.**
- **Not Null Constraints: Ensure critical fields are not null.**
- **Check Constraints: Ensure data integrity by limiting column values.**
- **Unique Constraints: Ensure columns have unique values where required.**
- **Default Constraints: Assign default values to columns when no value is provided.**

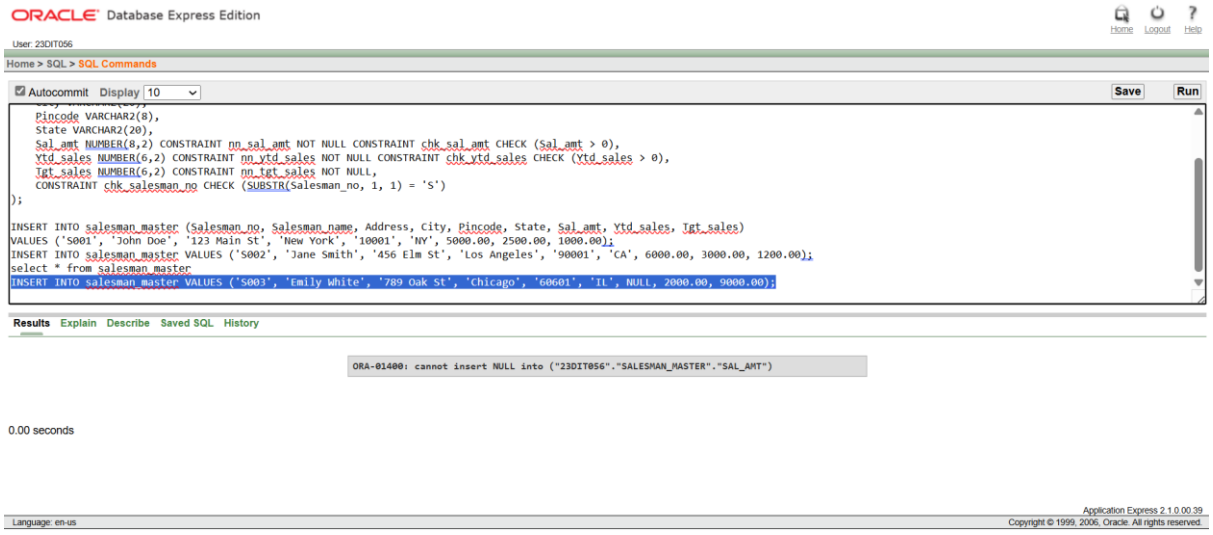
Column name	Data type	Constraints
Salesman_no	Varchar2(6)	The primary key/first letter must start with 'S'
Salesman _name	Varchar2(20)	Not null
Address	Varchar2(30)	Not null
City	Varchar2(20)	
Pincode	Varchar2(8)	
State	Varchar2(20)	
Sal_amt	Number(8,2)	Not null, cannot be 0
Ytd_sales	Number(6,2)	Not null, cannot be 0
Tgt_sales	Number(6,2)	Not null

Test Case: Verify that all constraints, including the primary key, not null, and check constraints, are correctly applied.

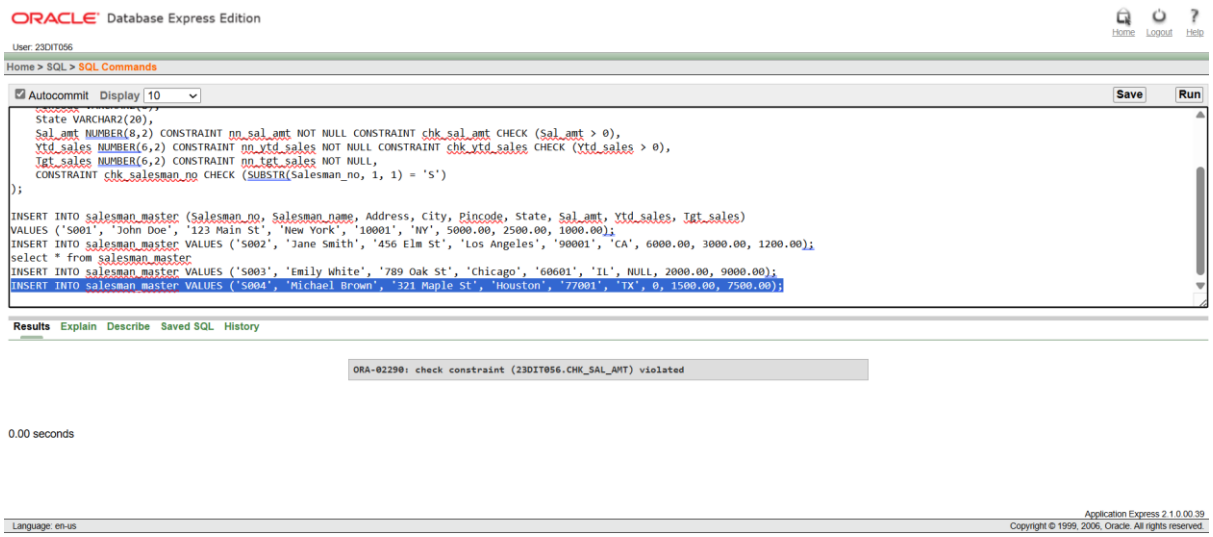
Table: salesman_master



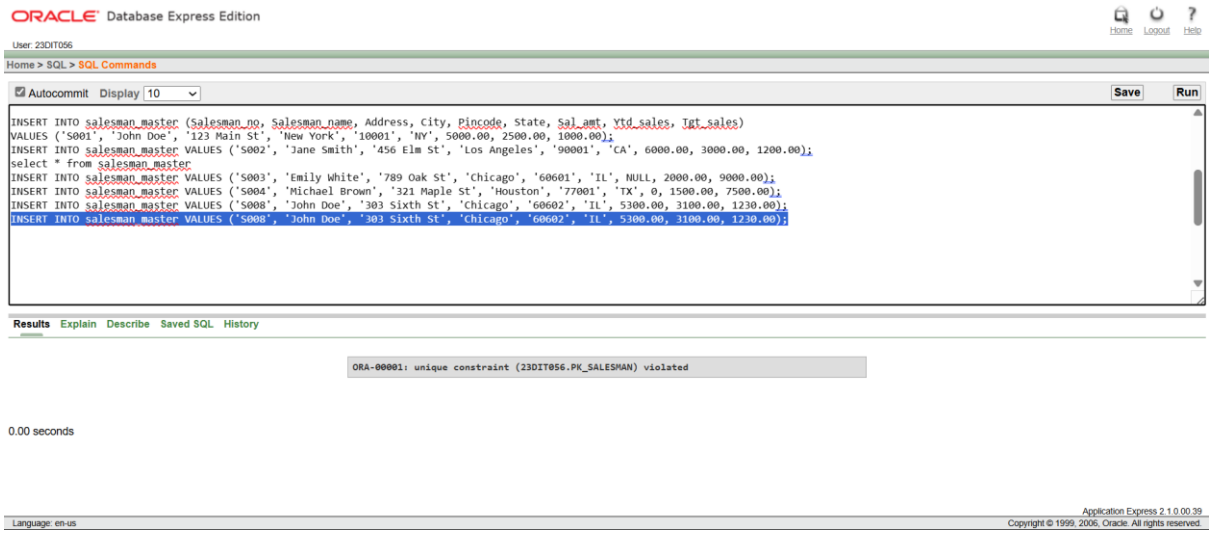
Not Null Constraints:



Check Constraints:



Unique Constraints:



No Foreign Key:

The table does not include foreign key constraints as no relationships with other tables are defined in the requirements.

6. Table: Client_master

Constraints

• Primary Key Constraints: Ensure unique identification of records.

• Foreign Key Constraints: Maintain relationships between tables.

• Not Null Constraints: Ensure critical fields are not null.

• Check Constraints: Ensure data integrity by limiting column values.

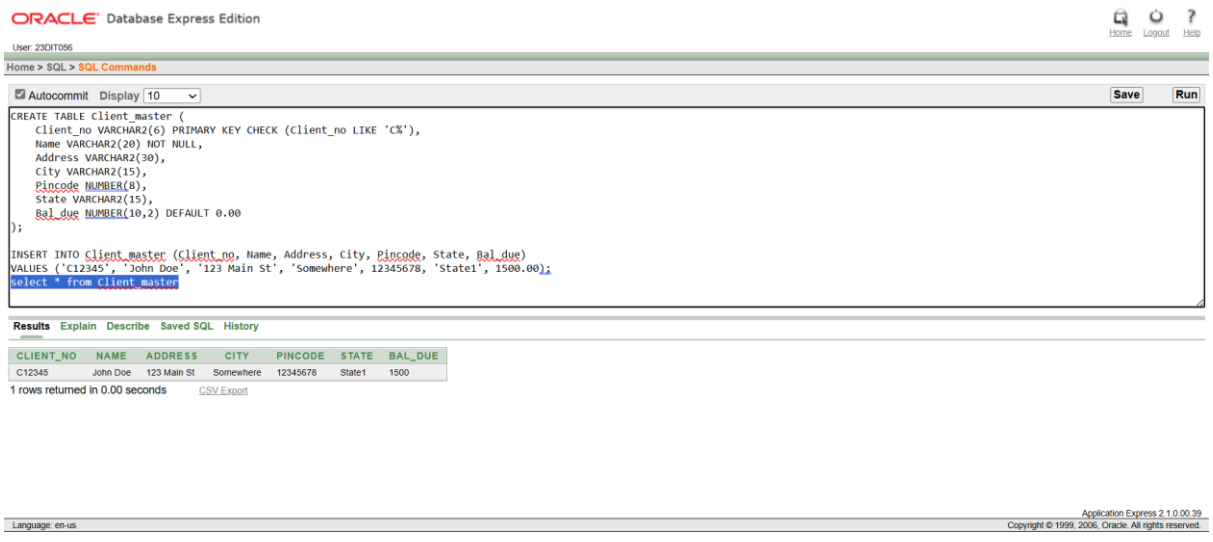
• Unique Constraints: Ensure columns have unique values where required.

• Default Constraints: Assign default values to columns when no value is provided.

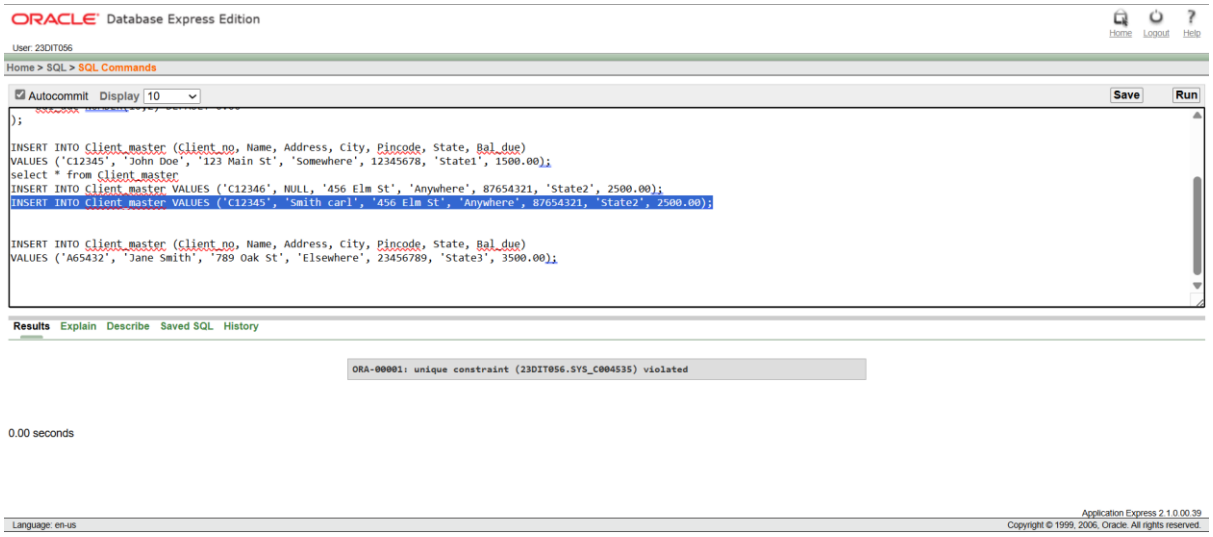
Column name	Data type	Constraints
Client_no	Varchar2(6)	The primary key/first letter must start with 'C'
Name	Varchar2(20)	Not null
Address	Varchar2(30)	
City	Varchar2(15)	
Pincode	Number(8)	
State	Varchar2(15)	
Bal_due	Number(10,2)	

Test Case: Verify that all constraints, including the primary key, not null, and check constraints, are correctly applied.

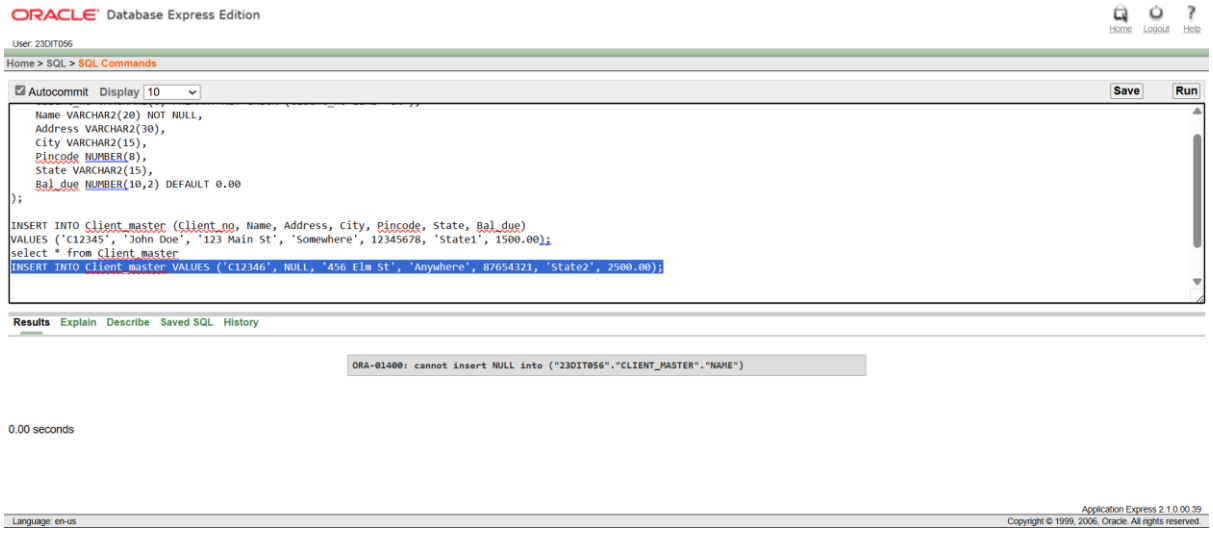
Table: Client_master



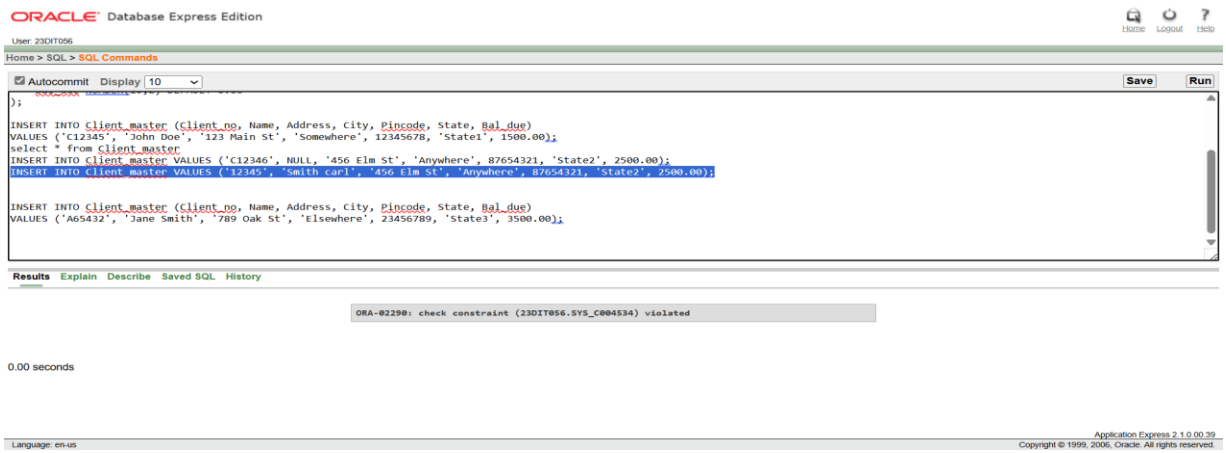
Primary Key Constraint:



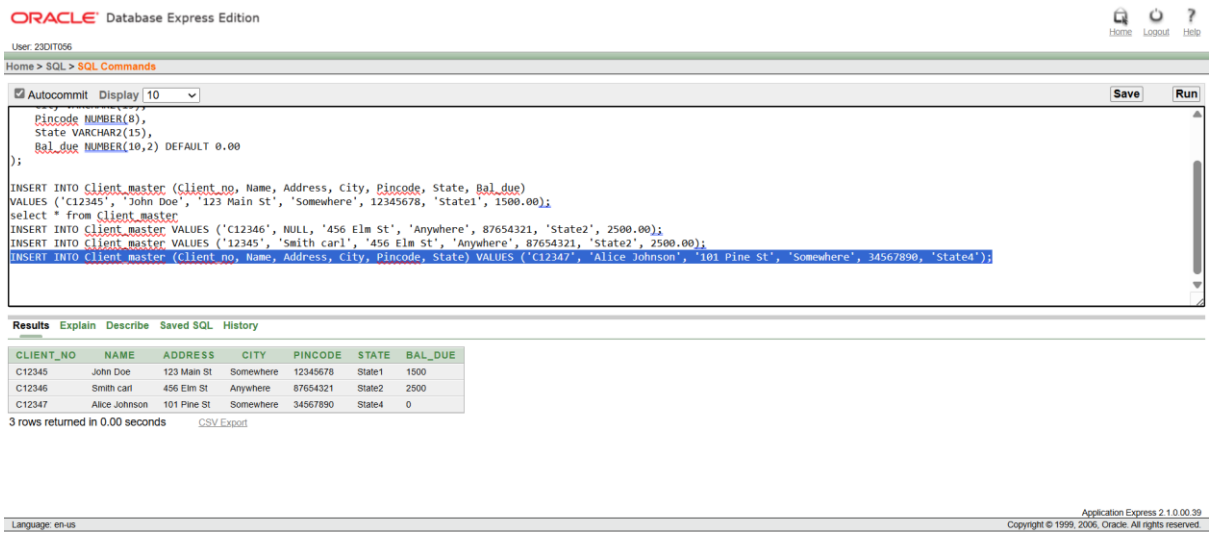
Not Null Constraint:



Check Constraint:



Default Constraint**:**



➢ DESCRIPTION (Theory):

CREATE TABLE: Defines the structure of a table including constraints.

PRIMARY KEY: Ensures uniqueness for the primary identifier.

NOT NULL: Ensures that a column cannot have null values.

FOREIGN KEY: Maintains referential integrity between tables.

DEFAULT: Provides a default value when no value is specified.

CHECK: Ensures data integrity by enforcing specific rules.

UNIQUE: Ensures that all values in a column are unique.

➢ CONCLUSION:

In this from this practical, I learned how to effectively apply various database constraints to ensure data integrity and consistency. Primary keys ensure unique records, not null constraints prevent incomplete data, and foreign keys maintain accurate relationships between tables. Default and check constraints simplify data management and enforce specific rules, while unique constraints prevent duplicate values. Overall, these practices enhance the robustness and reliability of database systems.