



Faculty of Technology and Engineering

Chandubhai S. Patel Institute of Technology (CSPIT)

Department of Computer Science & Engineering

Date: / /

Laboratory Manual

Academic Year	:	2024-25	Semester	:	4
Course code	:	CSE206	Course name	:	DATABASE MANAGEMENT SYSTEM

Practical - 8

AIM - You are tasked with designing a database for managing a sales and client management system. The database should support the creation, updating, and querying of data related to salespeople, customers, orders, and clients while ensuring data integrity through constraints. (Refer the attached excel sheet for Database).

Tasks:-

- 1. Managing Salespeople Information:** The organization needs a table to store data about its salespeople. Each salesperson must have a unique ID, a name, and optionally, a city and commission rate.

Tasks: 1. Create the Salespeople Table:

- Attributes:**
 - Snum: Salesperson ID (Primary Key, number).
 - Sname: Salesperson Name (Not Null).
 - City: City (nullable).
 - Comm: Commission Rate (nullable).

Constraints:

- Primary Key Constraint: Ensure Snum uniquely identifies each record.
- Not Null Constraint: Ensure Sname is not null.

2.Test Cases:

- o Try inserting a record with duplicate Snum and ensure the system rejects it.

The screenshot displays an SQL worksheet with the following SQL commands:

```

INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1047, 'SL046', 'Chennai', 0.13);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1048, 'SL047', 'Kolkata', 0.15);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1049, 'SL048', 'Guaajarat', 0.14);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1050, 'SL049', 'Anand', 0.13);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1051, 'SL050', 'London', 0.15);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1052, 'SL051', 'San Jose', 0.16);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1053, 'SL052', 'Ahmedabad', 0.17);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1054, 'SL053', 'Indore', 0.18);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1055, 'SL054', 'New York', 1);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1055, 'SL054', 'New York', 2);
SELECT * FROM SALESPEOPLE;
TRUNCATE TABLE SALESPEOPLE;
TRUNCATE TABLE CUSTOMERS;
TRUNCATE TABLE ORDERS;
TRUNCATE TABLE SALESPEOPLE;
TRUNCATE TABLE SALESPEOPLE;
TRUNCATE TABLE SALESPEOPLE;

CREATE TABLE CUSTOMERS(
    CNUM NUMBER PRIMARY KEY,
    CNAME VARCHAR2(20) NOT NULL,
    CITY VARCHAR2(20),
    RATING NUMBER DEFAULT (10),
    SNUM NUMBER,
    FOREIGN KEY (SNUM)

```

The 'Script Output' pane shows the following error message:

```

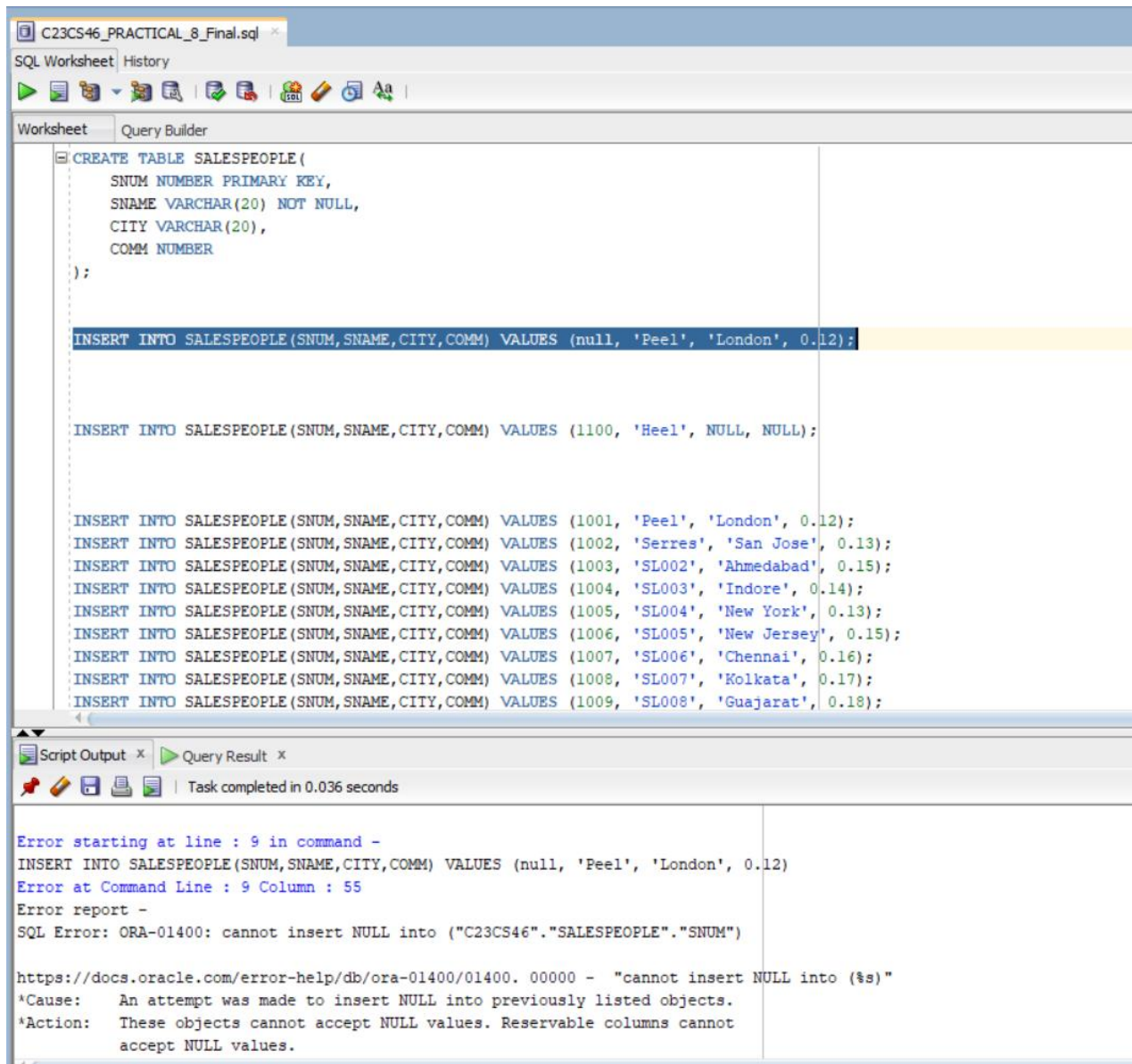
Error starting at line : 72 in command -
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1055, 'SL054', 'New York', 2)
Error report -
ORA-00001: unique constraint (C23CS46.SYS_C0024559) violated

https://docs.oracle.com/error-help/db/ora-00001/

More Details :
https://docs.oracle.com/error-help/db/ora-00001/

```

- o Attempt to insert a record with a null Sname and ensure it fails.



```
C23CS46_PRACTICAL_8_Final.sql
SQL Worksheet History
Worksheet Query Builder

CREATE TABLE SALESPEOPLE(
    SNUM NUMBER PRIMARY KEY,
    SNAME VARCHAR(20) NOT NULL,
    CITY VARCHAR(20),
    COMM NUMBER
);

INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (null, 'Peel', 'London', 0.12);

INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1100, 'Heel', NULL, NULL);

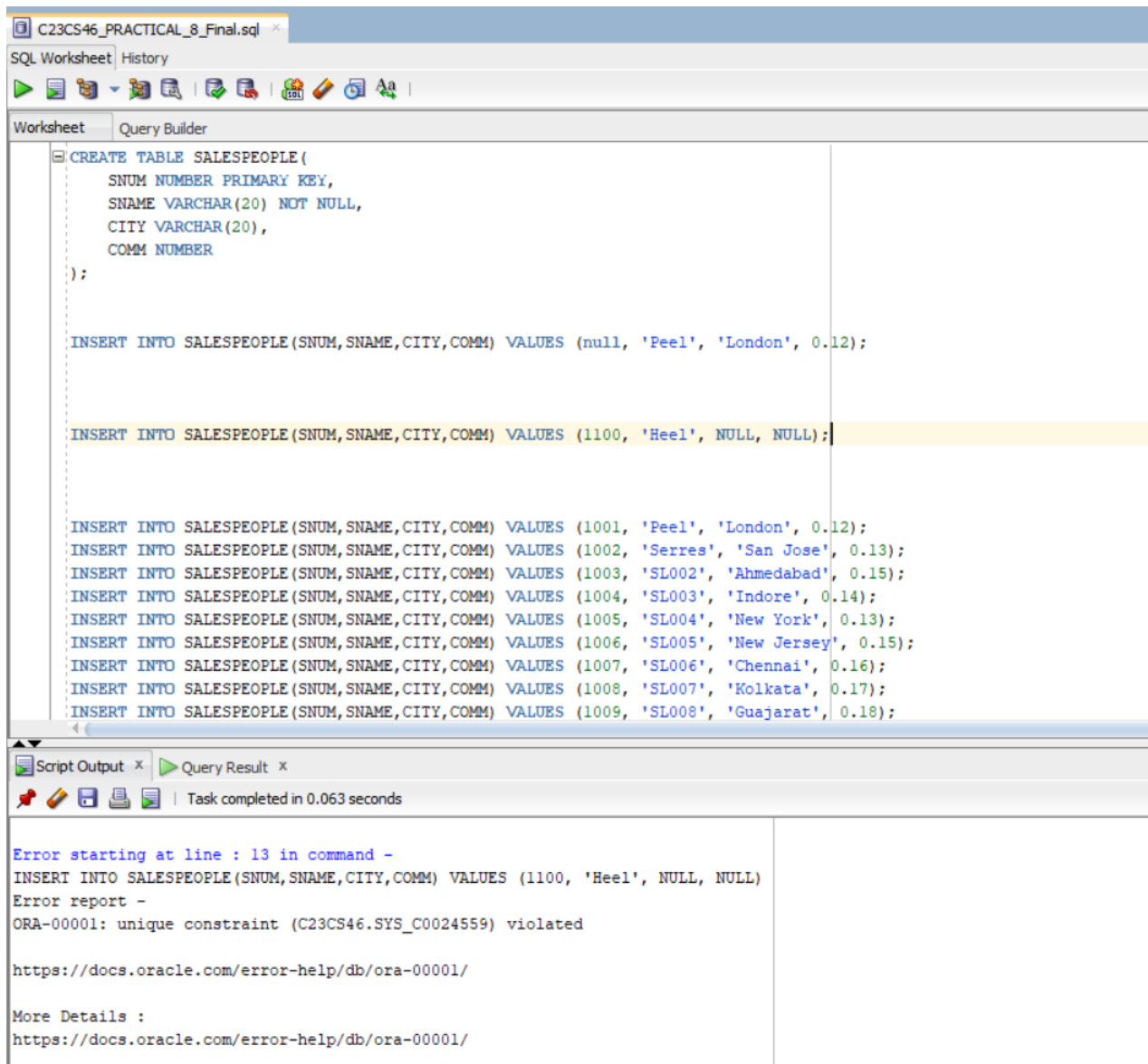
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1001, 'Peel', 'London', 0.12);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1002, 'Serres', 'San Jose', 0.13);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1003, 'SL002', 'Ahmedabad', 0.15);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1004, 'SL003', 'Indore', 0.14);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1005, 'SL004', 'New York', 0.13);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1006, 'SL005', 'New Jersey', 0.15);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1007, 'SL006', 'Chennai', 0.16);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1008, 'SL007', 'Kolkata', 0.17);
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1009, 'SL008', 'Guaajarat', 0.18);

Script Output x Query Result x
Task completed in 0.036 seconds

Error starting at line : 9 in command -
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (null, 'Peel', 'London', 0.12)
Error at Command Line : 9 Column : 55
Error report -
SQL Error: ORA-01400: cannot insert NULL into ("C23CS46"."SALESPEOPLE"."SNUM")

https://docs.oracle.com/error-help/db/ora-01400/01400.00000 - "cannot insert NULL into (%s)"
*Cause: An attempt was made to insert NULL into previously listed objects.
*Action: These objects cannot accept NULL values. Reservable columns cannot
accept NULL values.
```

o Insert a record with null City and Comm and ensure it is allowed.



The screenshot shows the SQL Developer interface with a worksheet titled 'C23CS46_PRACTICAL_8_Final.sql'. The worksheet contains a SQL script that creates a table named 'SALESPEOPLE' and inserts several records. The table has columns: SNUM (NUMBER PRIMARY KEY), SNAME (VARCHAR(20) NOT NULL), CITY (VARCHAR(20)), and COMM (NUMBER). The script includes the following SQL statements:

```
CREATE TABLE SALESPEOPLE(  
    SNUM NUMBER PRIMARY KEY,  
    SNAME VARCHAR(20) NOT NULL,  
    CITY VARCHAR(20),  
    COMM NUMBER  
);  
  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (null, 'Peel', 'London', 0.12);  
  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1100, 'Heel', NULL, NULL);  
  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1001, 'Peel', 'London', 0.12);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1002, 'Serres', 'San Jose', 0.13);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1003, 'SL002', 'Ahmedabad', 0.15);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1004, 'SL003', 'Indore', 0.14);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1005, 'SL004', 'New York', 0.13);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1006, 'SL005', 'New Jersey', 0.15);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1007, 'SL006', 'Chennai', 0.16);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1008, 'SL007', 'Kolkata', 0.17);  
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1009, 'SL008', 'Guaajarat', 0.18);
```

The script is executed, and the results are shown in the 'Script Output' pane. The output indicates that the task completed in 0.063 seconds. However, an error occurred at line 13 in the command:

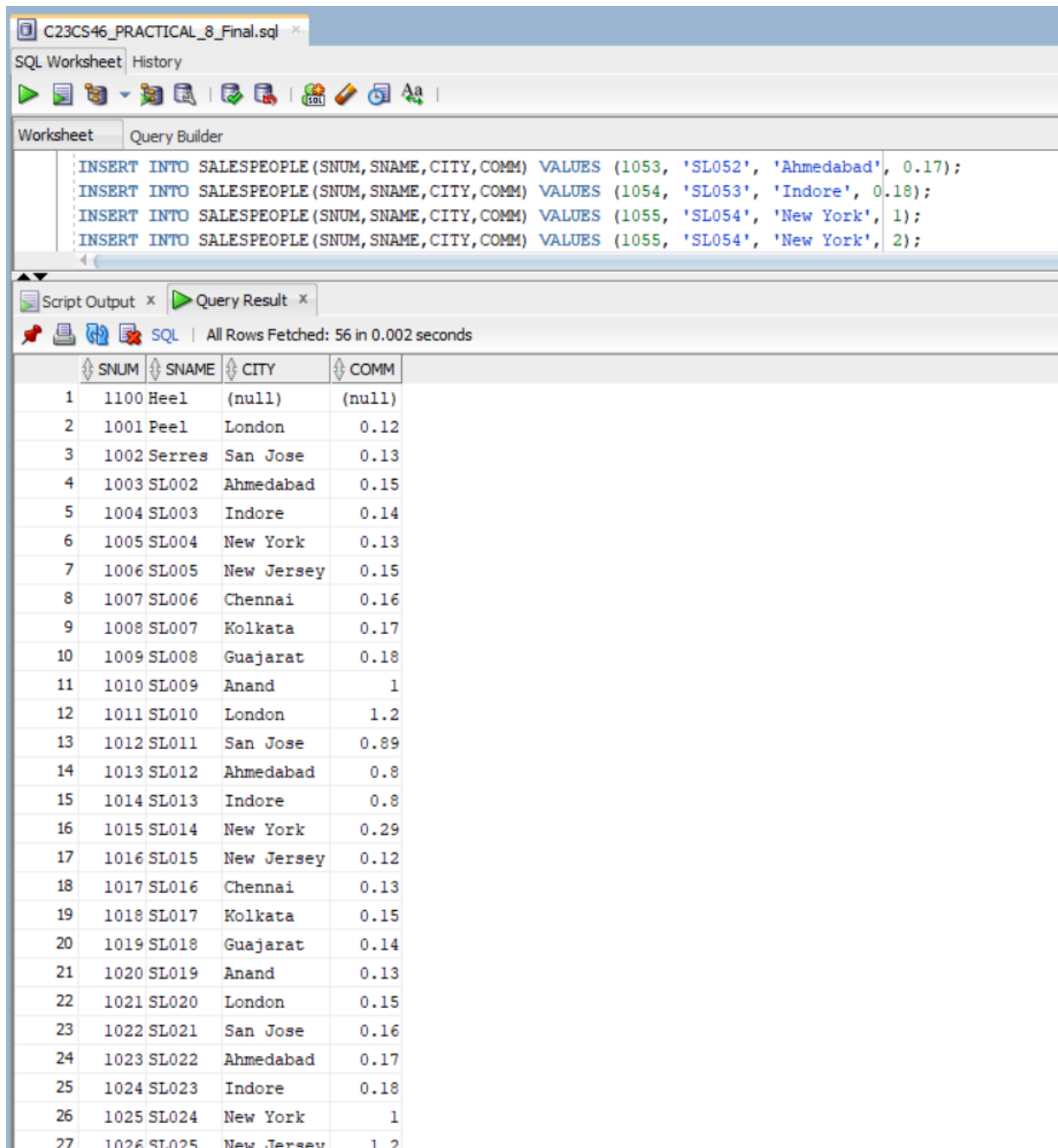
```
INSERT INTO SALESPEOPLE(SNUM,SNAME,CITY,COMM) VALUES (1100, 'Heel', NULL, NULL)
```

The error report shows:

```
ORA-00001: unique constraint (C23CS46.SYS_C0024559) violated
```

The error message is linked to the Oracle documentation page: <https://docs.oracle.com/error-help/db/ora-00001/>. The 'More Details' section also provides the same link.

o Retrieve all records from the Salespeople table to verify data integrity.



The screenshot shows an SQL IDE window titled 'C23CS46_PRACTICAL_8_Final.sql'. The 'Script Output' tab is active, displaying the results of a query. The results are shown in a table with 5 columns: SNUM, SNAME, CITY, and COMM. The table contains 27 rows of data, including the newly inserted records.

```

INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1053, 'SL052', 'Ahmedabad', 0.17);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1054, 'SL053', 'Indore', 0.18);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1055, 'SL054', 'New York', 1);
INSERT INTO SALESPEOPLE (SNUM, SNAME, CITY, COMM) VALUES (1055, 'SL054', 'New York', 2);
  
```

	SNUM	SNAME	CITY	COMM
1	1100	Heel	(null)	(null)
2	1001	Peel	London	0.12
3	1002	Serres	San Jose	0.13
4	1003	SL002	Ahmedabad	0.15
5	1004	SL003	Indore	0.14
6	1005	SL004	New York	0.13
7	1006	SL005	New Jersey	0.15
8	1007	SL006	Chennai	0.16
9	1008	SL007	Kolkata	0.17
10	1009	SL008	Gujarat	0.18
11	1010	SL009	Anand	1
12	1011	SL010	London	1.2
13	1012	SL011	San Jose	0.89
14	1013	SL012	Ahmedabad	0.8
15	1014	SL013	Indore	0.8
16	1015	SL014	New York	0.29
17	1016	SL015	New Jersey	0.12
18	1017	SL016	Chennai	0.13
19	1018	SL017	Kolkata	0.15
20	1019	SL018	Gujarat	0.14
21	1020	SL019	Anand	0.13
22	1021	SL020	London	0.15
23	1022	SL021	San Jose	0.16
24	1023	SL022	Ahmedabad	0.17
25	1024	SL023	Indore	0.18
26	1025	SL024	New York	1
27	1026	SL025	New Jersey	1.2

- 2. Managing Customer Information:** The system must store customer details, including their relationship with salespeople. Customers have unique IDs, names, and optionally a city. They also have a rating with a default value.

Tasks:

1. Create the Customer Table:

- Attributes:
 - Cnum: Customer ID (Primary Key, number).
 - Cname: Customer Name (Not Null).

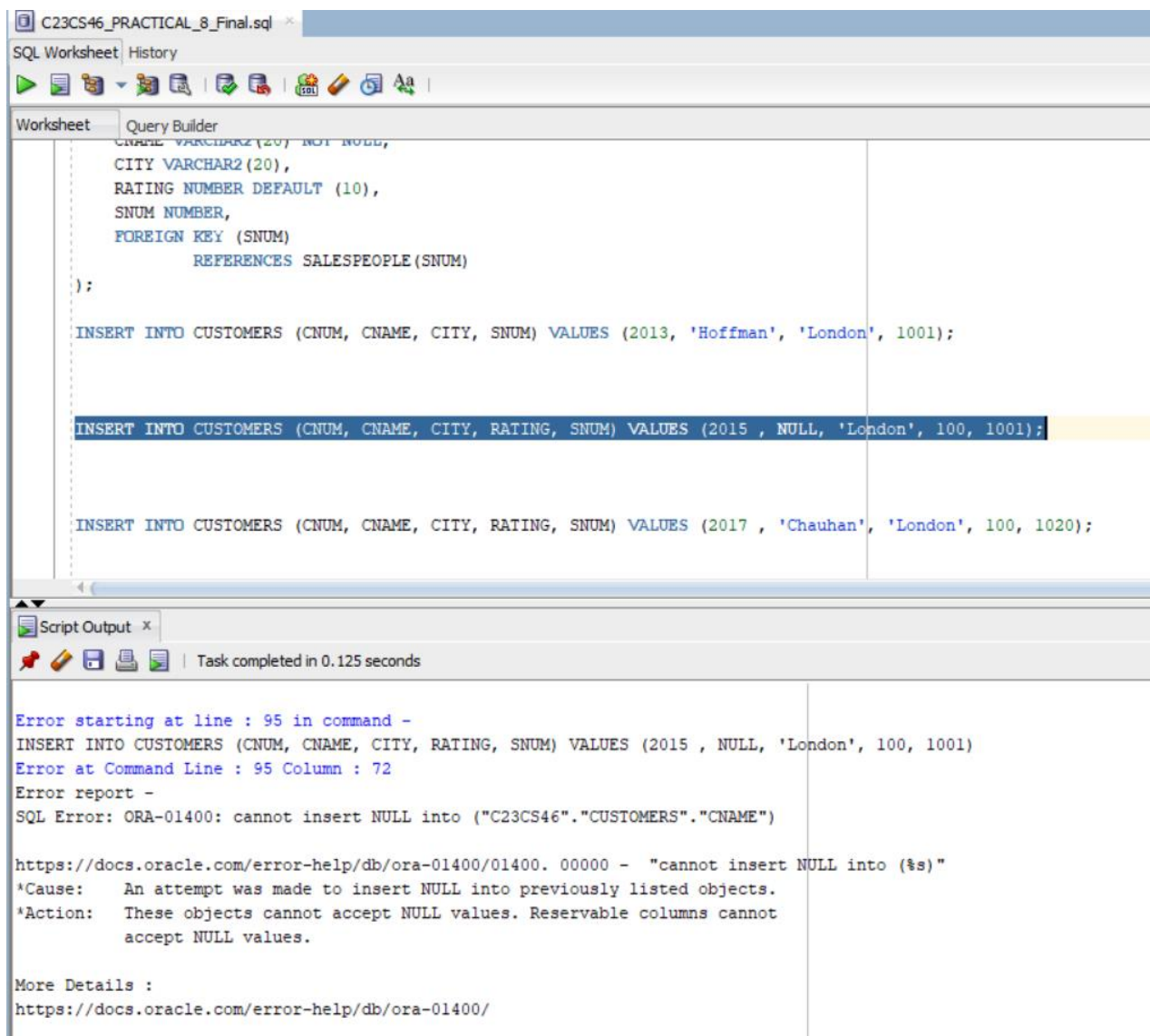
- City: City (nullable).
- Rating: Customer rating (Default: 10).
- Snum: Salesperson ID (Foreign Key references Salespeople).

Constraints:

- Primary Key Constraint: Ensure Cnum uniquely identifies each record.
- Foreign Key Constraint: Ensure Snum references Salespeople(Snum).
- Default Constraint: Ensure Rating defaults to 10 when not provided.

2. Test Cases:

- Attempt to insert a record with null Cname and ensure it fails.



```
C23CS46_PRACTICAL_8_Final.sql
SQL Worksheet History
Worksheet Query Builder
CNAME VARCHAR2(20) NOT NULL,
CITY VARCHAR2(20),
RATING NUMBER DEFAULT(10),
SNUM NUMBER,
FOREIGN KEY (SNUM)
REFERENCES SALESPEOPLE(SNUM)
);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, SNUM) VALUES (2013, 'Hoffman', 'London', 1001);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2015, NULL, 'London', 100, 1001);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2017, 'Chauhan', 'London', 100, 1020);

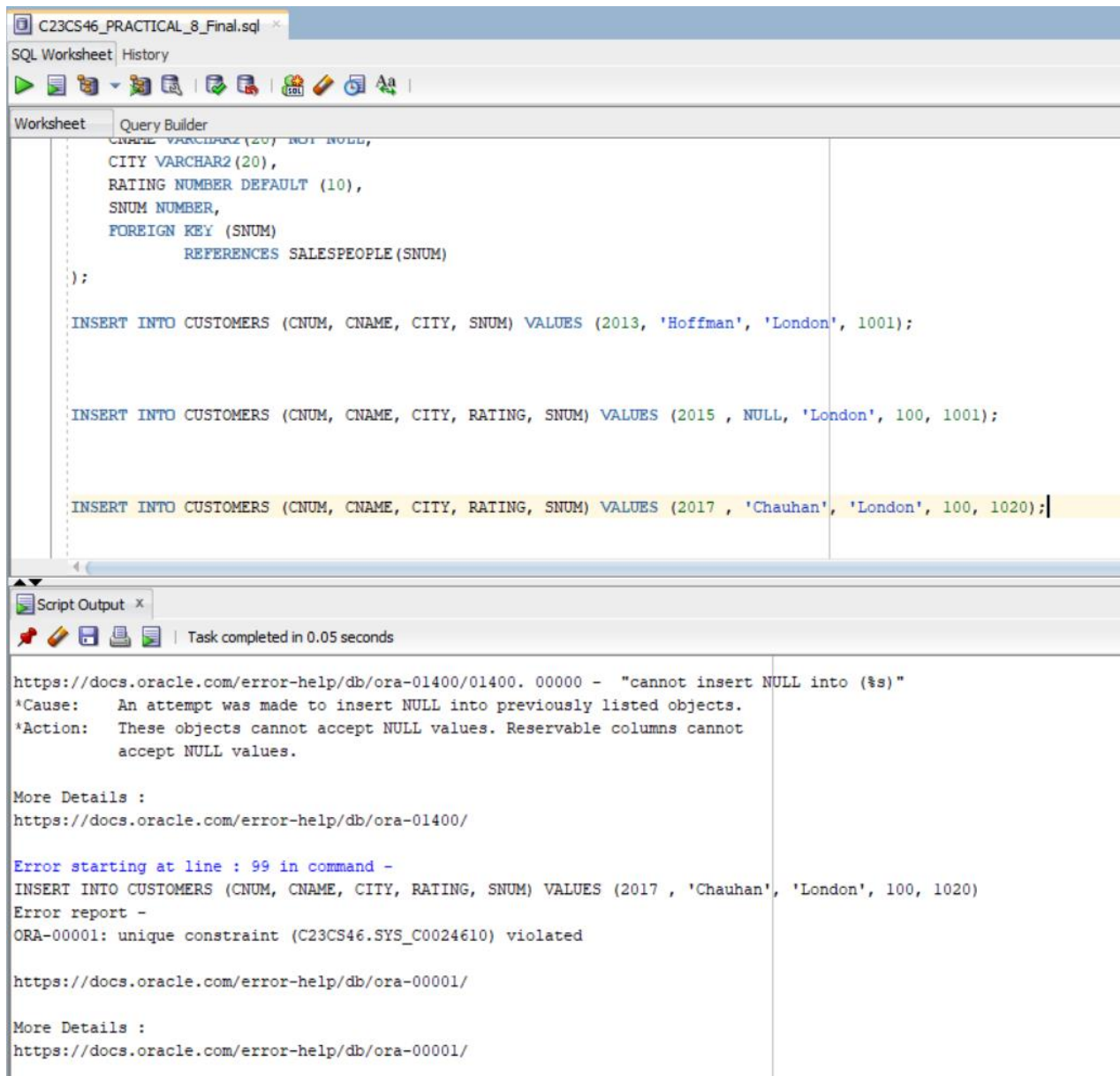
Script Output
Task completed in 0.125 seconds

Error starting at line : 95 in command -
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2015, NULL, 'London', 100, 1001)
Error at Command Line : 95 Column : 72
Error report -
SQL Error: ORA-01400: cannot insert NULL into ("C23CS46"."CUSTOMERS"."CNAME")

https://docs.oracle.com/error-help/db/ora-01400/01400.00000 - "cannot insert NULL into (%s)"
*Cause: An attempt was made to insert NULL into previously listed objects.
*Action: These objects cannot accept NULL values. Reservable columns cannot
accept NULL values.

More Details :
https://docs.oracle.com/error-help/db/ora-01400/
```


- Try inserting a record with a non-existent Snum and ensure it fails.



```
C23CS46_PRACTICAL_8_Final.sql
SQL Worksheet History
Worksheet Query Builder
CNAME VARCHAR2(20) NOT NULL,
CITY VARCHAR2(20),
RATING NUMBER DEFAULT (10),
SNUM NUMBER,
FOREIGN KEY (SNUM)
REFERENCES SALESPEOPLE(SNUM)
);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, SNUM) VALUES (2013, 'Hoffman', 'London', 1001);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2015 , NULL, 'London', 100, 1001);

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2017 , 'Chauhan', 'London', 100, 1020);|

Script Output x
Task completed in 0.05 seconds

https://docs.oracle.com/error-help/db/ora-01400/01400. 00000 - "cannot insert NULL into ({s})"
*Cause: An attempt was made to insert NULL into previously listed objects.
*Action: These objects cannot accept NULL values. Reservable columns cannot
accept NULL values.

More Details :
https://docs.oracle.com/error-help/db/ora-01400/

Error starting at line : 99 in command -
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2017 , 'Chauhan', 'London', 100, 1020)
Error report -
ORA-00001: unique constraint (C23CS46.SYS_C0024610) violated

https://docs.oracle.com/error-help/db/ora-00001/

More Details :
https://docs.oracle.com/error-help/db/ora-00001/
```

- Retrieve all records from the Customer table to verify the data.

The screenshot shows a SQL worksheet with the following queries:

```

INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2103, 'Customer13', 'Ahmedabad', 300, 1033);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2107, 'Customer52', 'Indore', 400, 1054);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2109, 'Customer53', 'New York', 500, 1055);
SELECT * FROM CUSTOMERS;

```

The Query Result shows 55 rows fetched in 0.043 seconds. The data is as follows:

	CNUM	CNAME	CITY	RATING	SNUM
1	2013	Hoffman	London	10	1001
2	2017	Chauhan	London	100	1020
3	2019	Hoffman	(null)	100	1001
4	2001	Hoffman	London	100	1001
5	2003	Liu	San Jose	300	1002
6	2005	Customer1	Ahmedabad	100	1003
7	2007	Customer2	Indore	200	1004
8	2009	Customer3	New York	300	1005
9	2011	Customer4	New Jersey	400	1006
10	2015	Customer6	Kolkata	600	1008
11	2021	Customer9	London	900	1011
12	2023	Customer10	San Jose	1000	1012
13	2025	Customer11	Ahmedabad	100	1013
14	2027	Customer12	Indore	300	1014
15	2029	Customer13	New York	100	1015
16	2031	Customer14	New Jersey	200	1016
17	2033	Customer15	Chennai	300	1017
18	2035	Customer16	Kolkata	400	1018
19	2037	Customer17	Guajarat	500	1019
20	2039	Customer18	Anand	600	1020
21	2041	Customer19	London	700	1021
22	2043	Customer20	San Jose	800	1022
23	2045	Customer21	Ahmedabad	900	1023
24	2047	Customer22	Indore	1000	1024
25	2049	Customer23	New York	100	1025
26	2051	Customer24	New Jersey	300	1026
27	2053	Customer25	Chennai	100	1027

- 3. Managing Orders:** The company tracks orders placed by customers, which are managed by salespeople. Each order has an ID, amount, date, and links to customers and salesman.

Tasks:

- Create the Order Table:

Attributes:

- Order_no: Order Number (Primary Key, number).
- Amount: Order Amount (nullable).
- Odate: Order Date (nullable).
- Cnum: Customer ID (Foreign Key references Customer).
- Snum: Salesperson ID (Foreign Key references Salespeople).

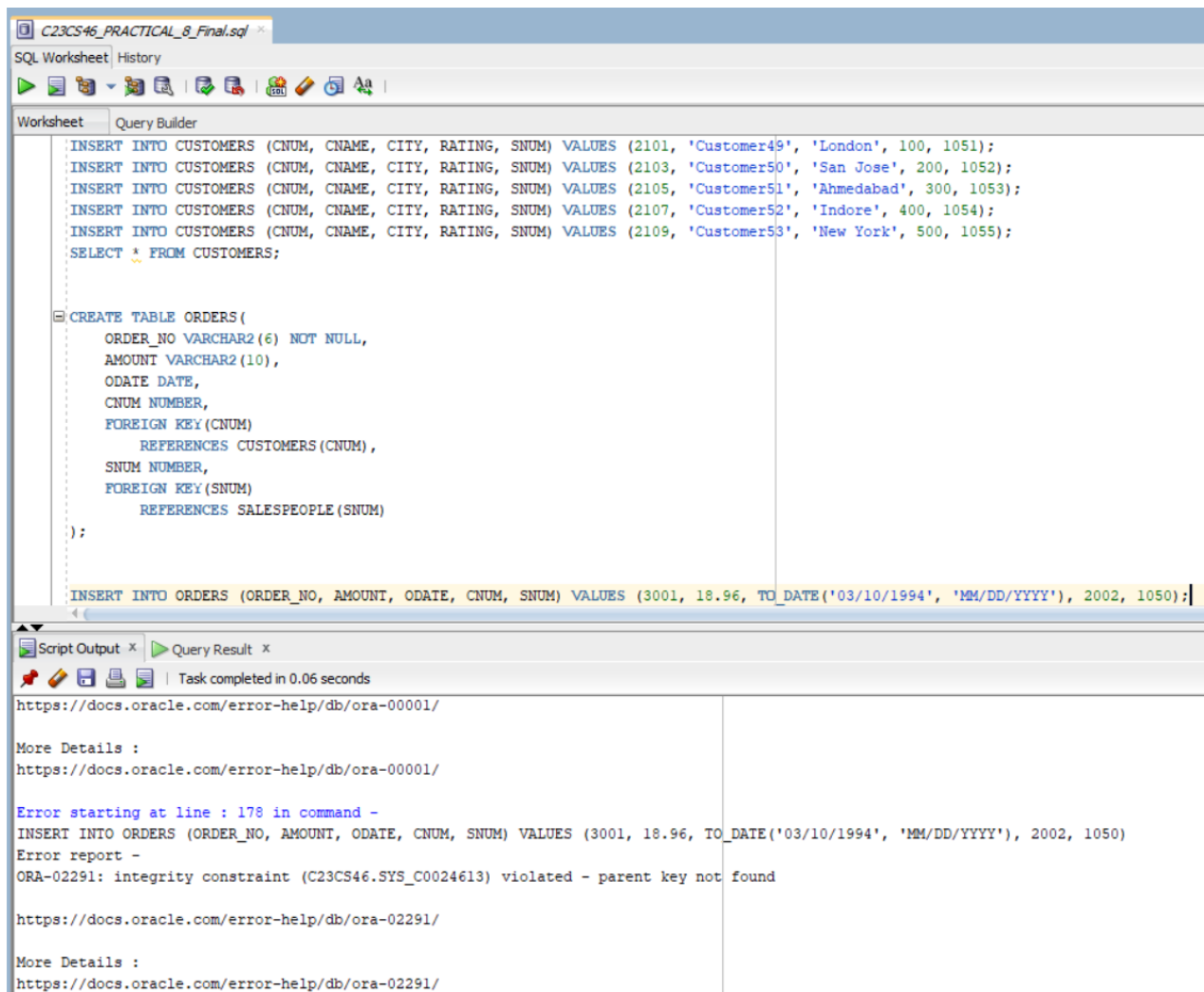
Constraints:

- Primary Key Constraint: Ensure Order_no uniquely identifies each record.
- Foreign Key Constraint: Ensure Cnum references Customer(Cnum).

- Foreign Key Constraint: Ensure Snum references Salespeople(Snum).

2. Test Cases:

- Attempt to insert records with non-existent Cnum or Snum and ensure the system rejects them.



The screenshot shows an SQL Worksheet with the following SQL code:

```
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2101, 'Customer49', 'London', 100, 1051);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2103, 'Customer50', 'San Jose', 200, 1052);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2105, 'Customer51', 'Ahmedabad', 300, 1053);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2107, 'Customer52', 'Indore', 400, 1054);
INSERT INTO CUSTOMERS (CNUM, CNAME, CITY, RATING, SNUM) VALUES (2109, 'Customer53', 'New York', 500, 1055);
SELECT * FROM CUSTOMERS;

CREATE TABLE ORDERS(
    ORDER_NO VARCHAR2(6) NOT NULL,
    AMOUNT VARCHAR2(10),
    ODATE DATE,
    CNUM NUMBER,
    FOREIGN KEY(CNUM)
        REFERENCES CUSTOMERS(CNUM),
    SNUM NUMBER,
    FOREIGN KEY(SNUM)
        REFERENCES SALESPEOPLE(SNUM)
);

INSERT INTO ORDERS (ORDER_NO, AMOUNT, ODATE, CNUM, SNUM) VALUES (3001, 18.96, TO_DATE('03/10/1994', 'MM/DD/YYYY'), 2002, 1050);
```

The error message displayed is:

```
ORA-02291: integrity constraint (C23CS46.SYS_C0024613) violated - parent key not found
```

- Insert records with null Amount or Odate and ensure they are allowed.

The screenshot displays an SQL Worksheet titled 'C23CS46_PRACTICAL_8_Final.sql'. The 'Query Builder' tab is active, showing a table structure for 'ORDERS' with columns 'ORDER_NO', 'AMOUNT', 'ODATE', 'CNUM', and 'SNUM'. It includes foreign key constraints: 'FOREIGN KEY (CNUM) REFERENCES CUSTOMERS (CNUM)' and 'FOREIGN KEY (SNUM) REFERENCES SALESPeOPLE (SNUM)'. Below the query builder, several INSERT statements are listed. The first statement is highlighted in yellow: `INSERT INTO ORDERS (ORDER_NO, AMOUNT, ODATE, CNUM, SNUM) VALUES (3001, null, null, 2001, 1001);`. Other statements include values for (3001, 18.96, TO_DATE('03/10/1994', 'MM/DD/YYYY'), 2001, 1001), (3002, 19.95, TO_DATE('03/01/1995', 'MM/DD/YYYY'), 2003, 1002), (3003, 201, TO_DATE('01/02/1995', 'MM/DD/YYYY'), 2005, 1003), and (3004, 2005, TO_DATE('06/02/1995', 'MM/DD/YYYY'), 2007, 1004).

The 'Script Output' pane shows the execution results. It indicates that the task completed in 0.041 seconds. It then displays an error starting at line 178 in the command: `INSERT INTO ORDERS (ORDER_NO, AMOUNT, ODATE, CNUM, SNUM) VALUES (3001, 18.96, TO_DATE('03/10/1994', 'MM/DD/YYYY'), 2002, 1050)`. The error report states: 'ORA-02291: integrity constraint (C23CS46.SYS_C0024613) violated - parent key not found'. It also shows '1 row inserted.' for the successful statements.

- Retrieve all records from the Order table to verify data integrity.

The screenshot shows an SQL worksheet with a script containing several INSERT statements into the 'ORDERS' table and a DROP TABLE statement. Below the script, the 'Query Result' tab is active, displaying a table with 24 rows of data. The table has columns: ORDER_NO, AMOUNT, ODATE, CNUM, and SNUM.

	ORDER_NO	AMOUNT	ODATE	CNUM	SNUM
1	3001	18.96	10-03-94	2001	1001
2	3002	19.95	01-03-95	2003	1002
3	3003	201	02-01-95	2005	1003
4	3004	2005	02-06-95	2007	1004
5	3005	2336	01-04-04	2009	1005
6	3006	523	15-04-96	2011	1006
7	3007	652	16-05-95	2013	1007
8	3008	125	17-05-95	2015	1008
9	3009	332	15-04-96	2017	1009
10	3010	225	16-05-95	2019	1010
11	3011	3356	17-05-95	2021	1011
12	3012	2156	15-04-96	2023	1012
13	3013	325	16-05-95	2025	1013
14	3014	365	17-05-95	2027	1014
15	3015	893	15-04-96	2029	1015
16	3016	245	16-05-95	2031	1016
17	3017	652	17-06-95	2033	1017
18	3018	3652	18-06-95	2035	1001
19	3019	325	25-07-96	2037	1002
20	3020	145	28-07-95	2039	1003
21	3021	254	03-10-95	2041	1004
22	3022	2654	04-10-95	2043	1005
23	3023	258	05-11-95	2045	1006
24	3024	985	18-12-95	2047	1007

4. Managing Sales Orders: Sales orders track additional details such as delivery type and order status, with constraints to ensure consistency.

Tasks:

- Create the Sales_order Table:

Attributes:

- Order_no: Order Number (Primary Key, first letter must start with 'O').
- Order_date: Date of the Order.
- Client_no: Client ID (Foreign Key references Client_master).
- Dely_addr: Delivery Address.
- Salesman_no: Salesperson ID (Foreign Key references Salesman_master).
- Dely_type: Delivery Type (Default: 'F').
- Order_status: Order Status (Allowed Values: In Process, Fulfilled, Backorder, Cancelled).

Constraints:

- Primary Key, Foreign Key, Check, and Default constraints.

2. Test Cases:

- Verify that all constraints, including the primary key, check constraints, and default values, are applied correctly.

The screenshot shows a SQL Developer window with a query editor and a results grid. The query editor contains several SQL statements: multiple INSERT INTO SALES_ORDER statements, a TRUNCATE TABLE SALES_ORDER statement, a SELECT * FROM SALES_ORDER statement, and a CREATE TABLE SALESMAN_MASTER statement. The results grid displays 15 rows of data from the SALES_ORDER table, with columns: ORDER_NO, ORDER_DATE, CLIENT_NO, DELV_ADDR, SALESMAN_NO, DELV_TYPE, and ORDER_STATUS.

ORDER_NO	ORDER_DATE	CLIENT_NO	DELV_ADDR	SALESMAN_NO	DELV_TYPE	ORDER_STATUS
1 001	10-01-25	C101	123 Main St, Cityville	S101	F	In Process
2 002	12-01-25	C102	456 Oak Rd, Townsville	S102	F	Fulfilled
3 003	15-01-25	C103	789 Pine Blvd, Village City	S103	F	Backorder
4 004	17-01-25	C104	321 Birch Ln, Greenfield	S104	F	Cancelled
5 005	18-01-25	C105	654 Cedar Ave, Hilltop	S105	F	Fulfilled
6 006	20-01-25	C106	987 Maple Dr, Seaside	S106	F	In Process
7 007	22-01-25	C107	135 Elm St, Rivertown	S107	F	Backorder
8 008	25-01-25	C108	246 Pinecrest Ave, Sunnyside	S108	F	Fulfilled
9 009	27-01-25	C109	369 Willow Dr, Lakeside	S109	F	In Process
10 010	28-01-25	C110	111 Oakwood St, Park City	S110	F	Cancelled
11 011	30-01-25	C111	222 Ash Blvd, Woodland	S111	F	Backorder
12 012	01-02-25	C112	333 Maple Ave, Hillside	S112	F	In Process
13 013	03-02-25	C113	444 Spruce Dr, Meadowbrook	S113	F	Fulfilled
14 014	04-02-25	C114	555 Fir St, Brookfield	S114	F	Fulfilled
15 015	05-02-25	C115	666 Redwood Ave, Woodbridge	S115	F	Cancelled

- 5. Managing Salesman Details:** The organization needs to maintain records of salesmen, including their target and year-to-date sales, with strict constraints for validation.

Tasks:

1. Create the Salesman_master Table:

Attributes:

- Salesman_no: Salesman Number (Primary Key, must start with 'S').
- Salesman_name: Salesman Name (Not Null).
- Address, City, Pincode, State: Additional details.
- Sal_amt: Salary (Not Null, cannot be 0).
- Ytd_sales: Year-to-date Sales (Not Null, cannot be 0).
- Tgt_sales: Target Sales (Not Null).

2. Test Cases:

- Verify that records with invalid Sal_amt or Ytd_sales are rejected.

```

INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S101', 'James Brown', '123 High Street', 'Los Angeles', 'CA', '90001', 5000.00, 150215, 200000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S102', 'Michael Clark', '456 Pine Avenue', 'Chicago', 'IL', '60601', 4500.00, 125000, 175000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S103', 'Sarah Green', '789 Oak Road', 'Houston', 'TX', '77001', 4800.00, 130000, 190000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S104', 'David White', '101 Cedar Boulevard', 'Phoenix', 'AZ', '85001', 4700.00, 120000, 180000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S105', 'Jessica Blue', '202 Birch Street', 'San Diego', 'CA', '92101', 5300.00, 155000, 210000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S106', 'William Black', '303 Elm Drive', 'Philadelphia', 'PA', '19101', 5500.00, 160000, 220000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S107', 'Emma Red', '404 Maple Avenue', 'Dallas', 'TX', '75201', 4900.00, 140000, 190000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S108', 'Mason Yellow', '505 Pine Street', 'Austin', 'TX', '73301', 4600.00, 118000, 170000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S109', 'Sophia Silver', '606 Oak Lane', 'San Antonio', 'TX', '78201', 5200.00, 135000, 200000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S110', 'Lucas Brown', '707 Willow Road', 'Seattle', 'WA', '98101', 5100.00, 125500, 185000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S111', 'Isabella Gray', '808 Fir Drive', 'Denver', 'CO', '80201', 4800.00, 122000, 175000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S112', 'Ethan Gold', '909 Maple Lane', 'Boston', 'MA', '02101', 5100.00, 130000, 190000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S113', 'Harper Copper', '1010 Chestnut Street', 'Miami', 'FL', '33101', 4700.00, 115000, 165000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S114', 'Liam Bronze', '1111 Cedar Drive', 'Charlotte', 'NC', '28201', 5400.00, 210000, 210000);
INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S115', 'Olivia White', '1212 Pine Lane', 'Miami', 'FL', '33101', 5000.00, 128000, 180000);

INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S101', 'James Brown', '123 High Street', 'Los Angeles', 'CA', '90001', 50.420, 1);

SELECT * FROM SALESMAN_MASTER;

TRUNCATE TABLE SALESMAN_MASTER;

```

Error starting at line : 338 in command -
 INSERT INTO SALESMAN_MASTER (SALESMAN_NO, SALESMAN_NAME, ADDRESS, CITY, STATE, PINCODE, SAL_AMT, YTD_SALES, TGT_SALES) VALUES ('S101', 'James Brown', '123 High Street', 'Los Angeles', 'CA', '90001', 50.420, 150.215, 200000);
 Error report -
 ORA-00001: unique constraint (C23CS46.STS_C0024639) violated
<https://docs.oracle.com/error-help/db/ora-00001/>
 More Details :
<https://docs.oracle.com/error-help/db/ora-00001/>

- Ensure all constraints are correctly applied.

SALESMAN_NO	SALESMAN_NAME	ADDRESS	CITY	STATE	PINCODE	SAL_AMT	YTD_SALES	TGT_SALES
1 S101	James Brown	123 High Street	Los Angeles	CA	90001	5000	150000	200000
2 S102	Michael Clark	456 Pine Avenue	Chicago	IL	60601	4500	125000	175000
3 S103	Sarah Green	789 Oak Road	Houston	TX	77001	4800	130000	190000
4 S104	David White	101 Cedar Boulevard	Phoenix	AZ	85001	4700	120000	180000
5 S105	Jessica Blue	202 Birch Street	San Diego	CA	92101	5300	155000	210000
6 S106	William Black	303 Elm Drive	Philadelphia	PA	19101	5500	160000	220000
7 S107	Emma Red	404 Maple Avenue	Dallas	TX	75201	4900	140000	190000
8 S108	Mason Yellow	505 Pine Street	Austin	TX	73301	4600	118000	170000
9 S109	Sophia Silver	606 Oak Lane	San Antonio	TX	78201	5200	135000	200000
10 S110	Lucas Brown	707 Willow Road	Seattle	WA	98101	5100	125500	185000
11 S111	Isabella Gray	808 Fir Drive	Denver	CO	80201	4800	122000	175000
12 S112	Ethan Gold	909 Maple Lane	Boston	MA	02101	5100	130000	190000
13 S113	Harper Copper	1010 Chestnut Street	Miami	FL	33101	4700	115000	165000
14 S114	Liam Bronze	1111 Cedar Drive	Charlotte	NC	28201	5400	150000	210000
15 S115	Olivia White	1212 Pine Lane	Miami	FL	33101	5000	128000	185000

6. Managing Client Details: Clients are key stakeholders in the sales process. Their data must be consistent and adhere to specific constraints.

Tasks:

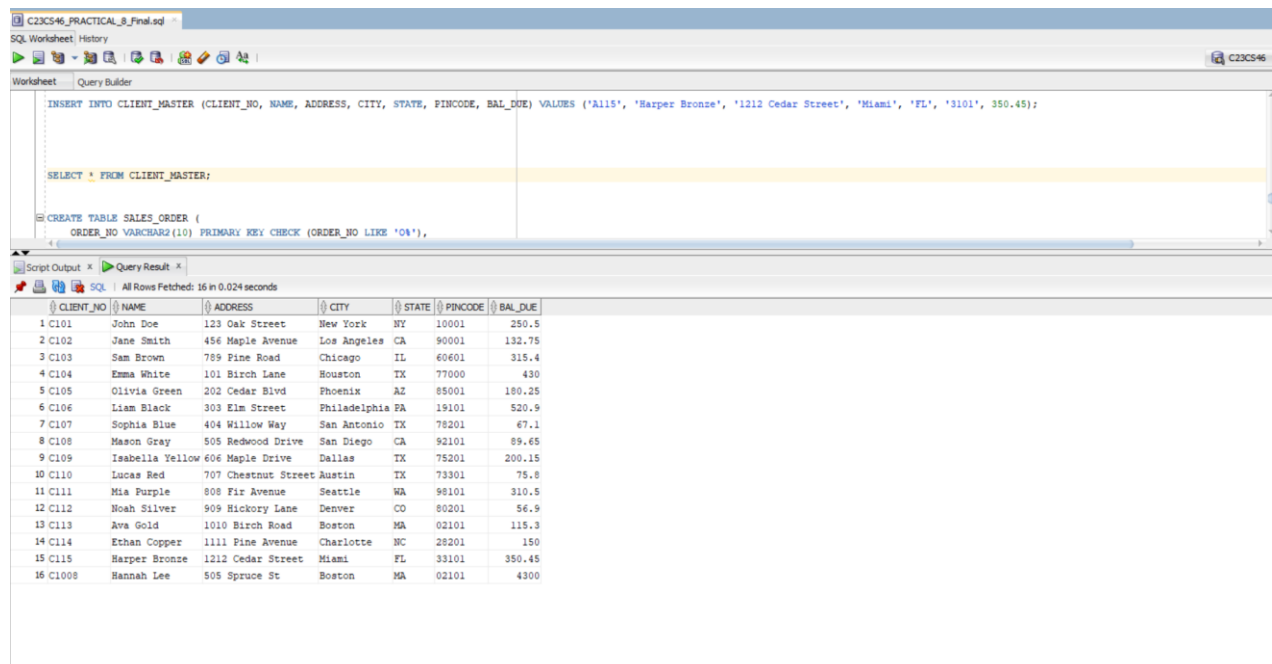
1. Create the Client_master Table:

Attributes:

- Client_no: Client Number (Primary Key, must start with 'C').
- Name: Client Name (Not Null).
- Address, City, State, Pincode: Client details.
- Bal_due: Balance Due.

2. Test Cases:

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



```

INSERT INTO CLIENT_MASTER (CLIENT_NO, NAME, ADDRESS, CITY, STATE, PINCODE, BAL_DUE) VALUES ('A115', 'Harper Bronze', '1212 Cedar Street', 'Miami', 'FL', '33101', 350.45);

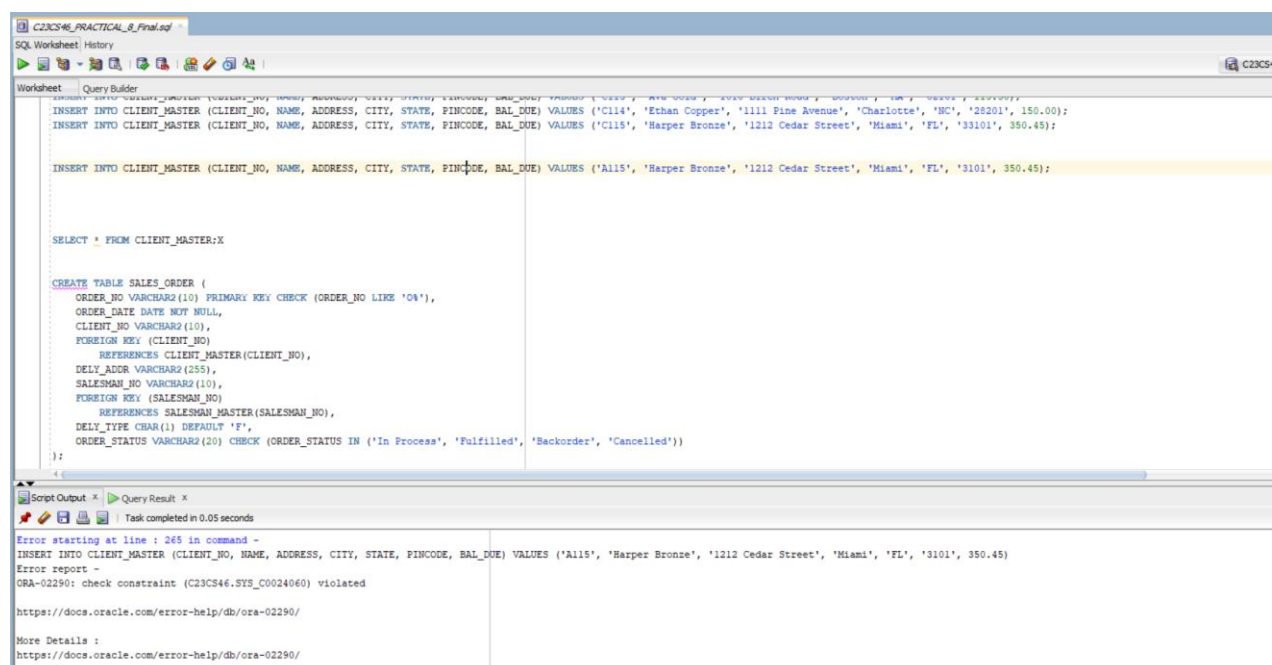
SELECT * FROM CLIENT_MASTER;

CREATE TABLE SALES_ORDER (
  ORDER_NO VARCHAR2(10) PRIMARY KEY CHECK (ORDER_NO LIKE 'O%'),

```

CLIENT_NO	NAME	ADDRESS	CITY	STATE	PINCODE	BAL_DUE
1 C101	John Doe	123 Oak Street	New York	NY	10001	250.5
2 C102	Jane Smith	456 Maple Avenue	Los Angeles	CA	90001	132.75
3 C103	Sam Brown	789 Pine Road	Chicago	IL	60601	315.4
4 C104	Emma White	101 Birch Lane	Houston	TX	77000	430
5 C105	Olivia Green	202 Cedar Blvd	Phoenix	AZ	85001	180.25
6 C106	Liam Black	303 Elm Street	Philadelphia	PA	19101	520.9
7 C107	Sophia Blue	404 Willow Way	San Antonio	TX	78201	67.1
8 C108	Mason Gray	505 Redwood Drive	San Diego	CA	92101	89.65
9 C109	Isabella Yellow	606 Maple Drive	Dallas	TX	75201	200.15
10 C110	Lucas Red	707 Chestnut Street	Austin	TX	73301	75.8
11 C111	Mia Purple	808 Fir Avenue	Seattle	WA	98101	310.5
12 C112	Noah Silver	909 Hickory Lane	Denver	CO	80201	56.9
13 C113	Ava Gold	1010 Birch Road	Boston	MA	02101	115.3
14 C114	Ethan Copper	1111 Pine Avenue	Charlotte	NC	28201	150
15 C115	Harper Bronze	1212 Cedar Street	Miami	FL	33101	350.45
16 C1008	Hannah Lee	505 Spruce St	Boston	MA	02101	4300

- Ensure invalid records are rejected.



```

INSERT INTO CLIENT_MASTER (CLIENT_NO, NAME, ADDRESS, CITY, STATE, PINCODE, BAL_DUE) VALUES ('C114', 'Ethan Copper', '1111 Pine Avenue', 'Charlotte', 'NC', '28201', 150.00);
INSERT INTO CLIENT_MASTER (CLIENT_NO, NAME, ADDRESS, CITY, STATE, PINCODE, BAL_DUE) VALUES ('C115', 'Harper Bronze', '1212 Cedar Street', 'Miami', 'FL', '33101', 350.45);

INSERT INTO CLIENT_MASTER (CLIENT_NO, NAME, ADDRESS, CITY, STATE, PINCODE, BAL_DUE) VALUES ('A115', 'Harper Bronze', '1212 Cedar Street', 'Miami', 'FL', '33101', 350.45);

SELECT * FROM CLIENT_MASTER;

CREATE TABLE SALES_ORDER (
  ORDER_NO VARCHAR2(10) PRIMARY KEY CHECK (ORDER_NO LIKE 'O%'),
  ORDER_DATE DATE NOT NULL,
  CLIENT_NO VARCHAR2(10),
  FOREIGN KEY (CLIENT_NO)
    REFERENCES CLIENT_MASTER(CLIENT_NO),
  DELV_ADDR VARCHAR2(255),
  SALESMAN_NO VARCHAR2(10),
  FOREIGN KEY (SALESMAN_NO)
    REFERENCES SALESMAN_MASTER(SALESMAN_NO),
  DELV_TYPE CHAR(1) DEFAULT 'F',
  ORDER_STATUS VARCHAR2(20) CHECK (ORDER_STATUS IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled'))
);

```

Error starting at line : 265 in command -
 INSERT INTO CLIENT_MASTER (CLIENT_NO, NAME, ADDRESS, CITY, STATE, PINCODE, BAL_DUE) VALUES ('A115', 'Harper Bronze', '1212 Cedar Street', 'Miami', 'FL', '33101', 350.45)
 Error report -
 ORA-02290: check constraint (C23CS46.SYS_C0024060) violated
<https://docs.oracle.com/error-help/db/ora-02290/>
 More Details :
<https://docs.oracle.com/error-help/db/ora-02290/>