

## 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.

The screenshot displays the Oracle Database Express Edition interface. The top bar shows 'ORACLE Database Express Edition' and user 'User: 23DIT066'. The main area is titled 'SQL Commands' and contains the following SQL script:

```
create table Salespeople(Snum number(4), Sname varchar2(20), City varchar2(15), comm number(5,2))
insert into Salespeople(Snum, Sname, City, Comm)
values('101', 'Ansh', 'kheda', '700')
insert into Salespeople values('102', 'Vaibhav', 'Navsari', '500')
insert into Salespeople values('103', 'Vraj', 'Surat', '650')
insert into Salespeople values('104', 'Soham', 'Ahwa', '800')
insert into Salespeople values('105', 'Mauliya', 'dadar', '750')
insert into Salespeople values('106', 'mayur', 'borivali', '550')
select * from Salespeople
```

Below the command area, the 'Results' tab is active, showing a table with 6 rows and 4 columns: SNUM, SNAME, CITY, and COMM.

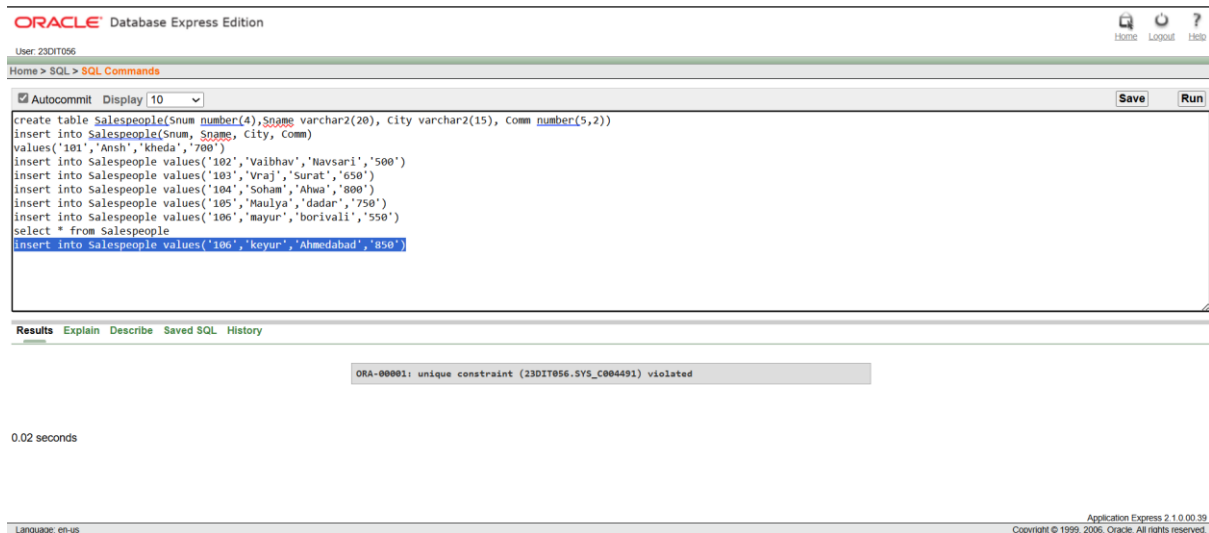
SNUM	SNAME	CITY	COMM
101	Ansh	kheda	700
102	Vaibhav	Navsari	500
103	Vraj	Surat	650
104	Soham	Ahwa	800
105	Mauliya	dadar	750
106	mayur	borivali	550

At the bottom, it states '6 rows returned in 0.00 seconds' and provides a 'CSV Export' link. The footer includes 'Language: en-us' and 'Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.'

### 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.

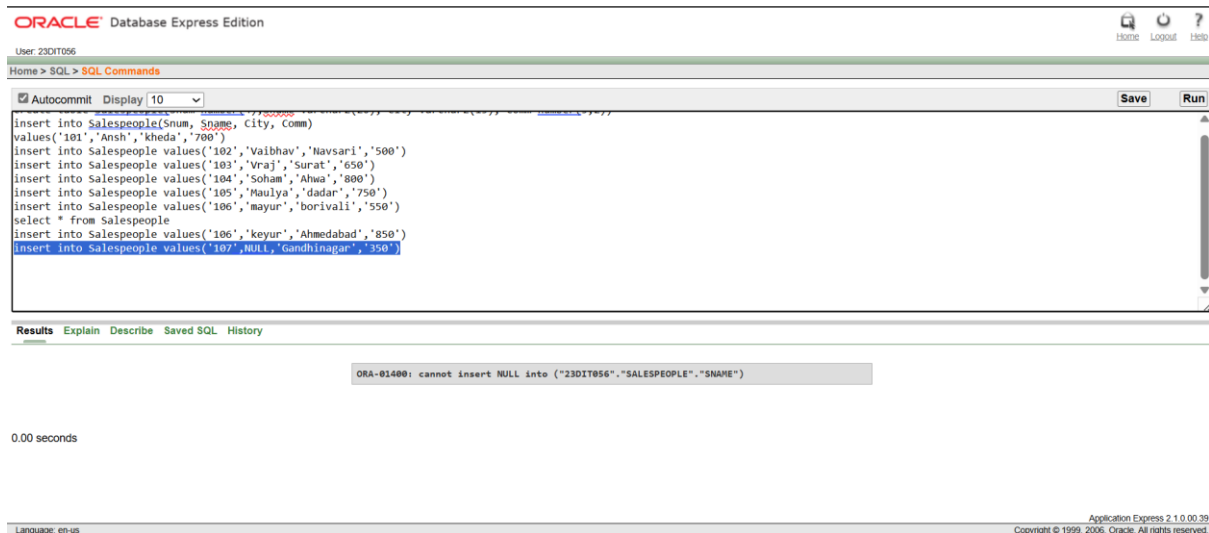


```
ORACLE Database Express Edition
User 23DIT056
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
create table Salespeople(Snum number(4), Sname varchar2(20), City varchar2(15), Comm number(5,2))
insert into Salespeople(Snum, Sname, City, Comm)
values('101','Ansh','Kheda','700')
insert into Salespeople values('102','Vaibhav','Navsari','500')
insert into Salespeople values('103','Vraj','Surat','650')
insert into Salespeople values('104','Soham','Ahwa','800')
insert into Salespeople values('105','Mauliya','dadar','750')
insert into Salespeople values('106','mayur','borivali','550')
select * from Salespeople
insert into Salespeople values('106','keyur','Ahmedabad','850')
Results Explain Describe Saved SQL History
ORA-00001: unique constraint (23DIT056.SYS_C004491) violated
0.02 seconds
Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.
```

### 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.



```
ORACLE Database Express Edition
User 23DIT056
Home > SQL > SQL Commands
Autocommit Display 10 Save Run
insert into Salespeople(Snum, Sname, City, Comm)
values('101','Ansh','Kheda','700')
insert into Salespeople values('102','Vaibhav','Navsari','500')
insert into Salespeople values('103','Vraj','Surat','650')
insert into Salespeople values('104','Soham','Ahwa','800')
insert into Salespeople values('105','Mauliya','dadar','750')
insert into Salespeople values('106','mayur','borivali','550')
select * from Salespeople
insert into Salespeople values('106','keyur','Ahmedabad','850')
insert into Salespeople values('107',NULL,'Gandhinagar','350')
Results Explain Describe Saved SQL History
ORA-01400: cannot insert NULL into ("23DIT056"."SALESPEOPLE"."SNAME")
0.00 seconds
Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.
```

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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
values('101','Ansh','kheda','700')
insert into Salespeople values('102','Vaibhav','Navsari','500')
insert into Salespeople values('103','Vraj','Surat','650')
insert into Salespeople values('104','Soham','Ahwa','800')
insert into Salespeople values('105','Mauliya','dadar','750')
insert into Salespeople values('106','mayur','borivali','550')
select * from Salespeople
insert into Salespeople values('106','keyur','Ahmedabad','850')
insert into Salespeople values('107',NULL,'Gandhinagar','350')
insert into Salespeople values('107','Suman', NULL , NULL)
```

The Results window shows the output of the SQL commands:

SNUM	SNAME	CITY	COMM
101	Ansh	kheda	700
102	Vaibhav	Navsari	500
103	Vraj	Surat	650
104	Soham	Ahwa	800
105	Mauliya	dadar	750
106	mayur	borivali	550
107	Suman	-	-

7 rows returned in 0.00 seconds

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

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

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
values('101','Ansh','kheda','700')
insert into Salespeople values('102','Vaibhav','Navsari','500')
insert into Salespeople values('103','Vraj','Surat','650')
insert into Salespeople values('104','Soham','Ahwa','800')
insert into Salespeople values('105','Mauliya','dadar','750')
insert into Salespeople values('106','mayur','borivali','550')
select * from Salespeople
insert into Salespeople values('106','keyur','Ahmedabad','850')
insert into Salespeople values('107',NULL,'Gandhinagar','350')
insert into Salespeople values('107','Suman', NULL , NULL)
```

The Results window shows the output of the SQL commands:

SNUM	SNAME	CITY	COMM
101	Ansh	kheda	700
102	Vaibhav	Navsari	500
103	Vraj	Surat	650
104	Soham	Ahwa	800
105	Mauliya	dadar	750
106	mayur	borivali	550
107	Suman	-	-

7 rows returned in 0.00 seconds

**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.

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: ☒ Display: 10

Save Run

```
create table customer(cnum number(4) PRIMARY KEY, cname varchar2(20) NOT NULL, city varchar2(20), rating NUMBER(3) DEFAULT 10, snum number(4), CONSTRAINT fk_snum FOREIGN KEY (Snum)
REFERENCES salespeople(Snum))
insert into customer(cnum, cname, city, rating, snum)
VALUES ('1001', 'John Doe', 'New York', '20', '101')
insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
select * from Salespeople
insert into Salespeople values('106','keyur','Ahmedabad','850')
insert into Salespeople values('107',NULL,'gandhinagar','350')
insert into Salespeople values('107','Suman', NULL, NULL)
```

Results Explain Describe Saved SQL History

CNUM	CNAME	CITY	RATING	SNUM
1001	John Doe	New York	20	101
1002	Jane Smith	Los Angeles	15	102
1003	Alice Johnson	Chicago	12	103
1004	Bob Brown	Houston	25	104
1005	Charlie Davis	Phoenix	18	105
1006	Diana Green	Philadelphia	10	106

6 rows returned in 0.00 seconds [CSV Export](#)

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## 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.

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: Display 10

Save Run

```

create table customer(cnum number(4) PRIMARY KEY, cname varchar2(20) NOT NULL, city varchar2(20), rating NUMBER(3) DEFAULT 10, snum number(4), CONSTRAINT fk_snum FOREIGN KEY (snum)
REFERENCES salespeople(snum))
insert into customer(cnum, cname, city, rating, snum)
VALUES ('1001', 'John Doe', 'New York', '20', '101')
insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
insert into customer (cnum, cname, city, snum) values ('1007', 'Riahna', 'Green land', '107');

```

Results Explain Describe Saved SQL History

CNUM	CNAME	CITY	RATING	SNUM
1001	John Doe	New York	20	101
1002	Jane Smith	Los Angeles	15	102
1003	Alice Johnson	Chicago	12	103
1004	Bob Brown	Houston	25	104
1005	Charlie Davis	Phoenix	18	105
1006	Diana Green	Philadelphia	10	106
1007	Riahna	Green land	10	107

7 rows returned in 0.00 seconds CSV Export

Language: en-us

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## 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.

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: Display 10

Save Run

```

insert into customer(cnum, cname, city, rating, snum)
VALUES ('1001', 'John Doe', 'New York', '20', '101')
insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
insert into customer (cnum, cname, city, snum) values ('1007', 'Riahna', 'Green land', '107');
insert into customer VALUES('1008', NULL, 'Philadelphia', '10', '106');

```

Results Explain Describe Saved SQL History

ORA-01400: cannot insert NULL into ("23DIT056"."CUSTOMER"."CNAME")

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```
insert into customer (CNUM, CNAME, CITY, RATING, SNUM)
VALUES ('1001', 'John Doe', 'New York', '20', '101')
insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
insert into customer (CNUM, CNAME, CITY, SNUM) VALUES ('1007', 'Riahna', 'Green land', '107');
insert into customer VALUES('1008', NULL, 'Philadelphia', '10', '106');
insert into customer VALUES('1009', 'Syana', 'Nimbus', '17', '199');
```

The Results window shows the following error message:

```
ORA-02291: integrity constraint (23DIT056.FK_SNUM) violated - parent key not found
```

The execution time is 0.00 seconds.

## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```
insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
insert into customer (CNUM, CNAME, CITY, SNUM) VALUES ('1007', 'Riahna', 'Green land', '107');
insert into customer VALUES('1008', NULL, 'Philadelphia', '10', '106');
insert into customer VALUES('1009', 'Syana', 'Nimbus', '17', '199');
insert into customer (CNUM, CNAME, SNUM) VALUES ('2001', 'Raha', '101');
```

The Results window shows the following table:

CNUM	CNAME	CITY	RATING	SNUM
1001	John Doe	New York	20	101
1002	Jane Smith	Los Angeles	15	102
1003	Alice Johnson	Chicago	12	103
1004	Bob Brown	Houston	25	104
1005	Charlie Davis	Phoenix	18	105
1006	Diana Green	Philadelphia	10	106
2001	Raha	-	10	101
1007	Riahna	Green land	10	107

8 rows returned in 0.00 seconds

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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```

insert into customer VALUES('1002', 'Jane Smith', 'Los Angeles', '15', '102')
insert into customer VALUES('1003', 'Alice Johnson', 'Chicago', '12', '103')
insert into customer VALUES('1004', 'Bob Brown', 'Houston', '25', '104')
insert into customer VALUES('1005', 'Charlie Davis', 'Phoenix', '18', '105')
insert into customer VALUES('1006', 'Diana Green', 'Philadelphia', '10', '106');
select * from customer
insert into customer (CNUM, CNAME, CITY, SNUM) VALUES ('1007', 'Riahna', 'Green land', '107');
insert into customer VALUES('1008', NULL, 'Philadelphia', '10', '106');
insert into customer VALUES('1009', 'Syana', 'Nimbus', '17', '199');
insert into customer (CNUM, CNAME, SNUM) VALUES ('2001', 'Raha', '101');
select * from customer
  
```

The Results window shows the following data:

CNUM	CNAME	CITY	RATING	SNUM
1001	John Doe	New York	20	101
1002	Jane Smith	Los Angeles	15	102
1003	Alice Johnson	Chicago	12	103
1004	Bob Brown	Houston	25	104
1005	Charlie Davis	Phoenix	18	105
1006	Diana Green	Philadelphia	10	106
2001	Raha	-	10	101
1007	Riahna	Green land	10	107

8 rows returned in 0.00 seconds CSV Export

**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

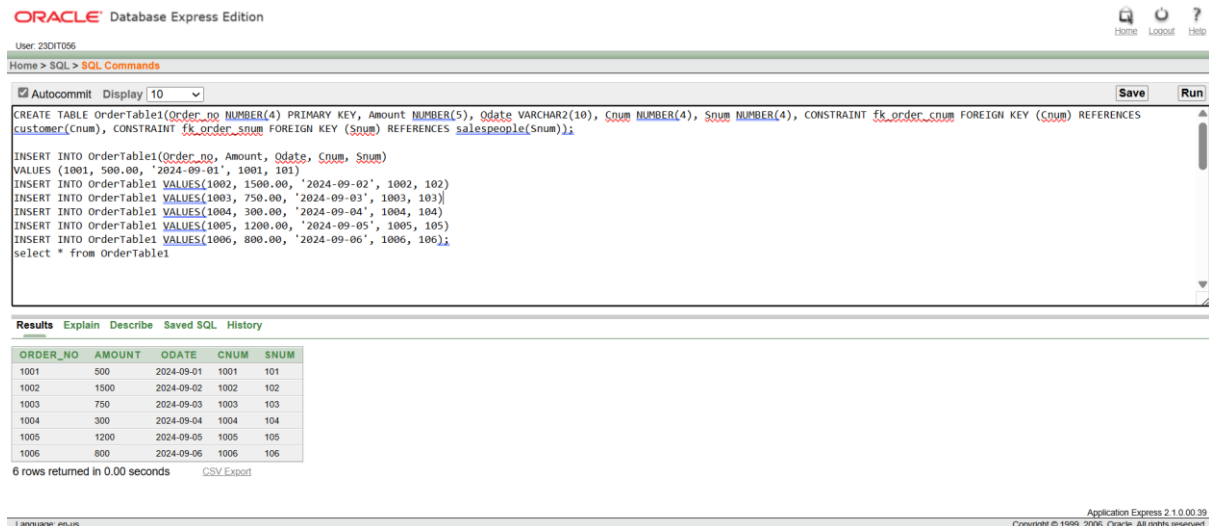
- 1. Primary Key Constraint: Ensure Order\_no uniquely identifies each record.**
- 2. Foreign Key Constraint: Ensure Cnum references the Cnum field in the Customer table.**
- 3. Foreign Key Constraint: Ensure Snum references the Snum field in the Salespeople table.**

### 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.



ORACLE Database Express Edition

User 23DIT056

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
CREATE TABLE OrderTable1 (Order_no NUMBER(4) PRIMARY KEY, Amount NUMBER(5), Odate VARCHAR2(10), Cnum NUMBER(4), Snum NUMBER(4), CONSTRAINT fk_order_cnum FOREIGN KEY (Cnum) REFERENCES customer(Cnum), CONSTRAINT fk_order_snum FOREIGN KEY (Snum) REFERENCES salespeople(Snum));
```

```
INSERT INTO OrderTable1 (Order_no, Amount, Odate, Cnum, Snum) VALUES (1001, 500.00, '2024-09-01', 1001, 101);
```

```
INSERT INTO OrderTable1 VALUES (1002, 1500.00, '2024-09-02', 1002, 102);
```

```
INSERT INTO OrderTable1 VALUES (1003, 750.00, '2024-09-03', 1003, 103);
```

```
INSERT INTO OrderTable1 VALUES (1004, 300.00, '2024-09-04', 1004, 104);
```

```
INSERT INTO OrderTable1 VALUES (1005, 1200.00, '2024-09-05', 1005, 105);
```

```
INSERT INTO OrderTable1 VALUES (1006, 800.00, '2024-09-06', 1006, 106);
```

```
select * from OrderTable1
```

ORDER_NO	AMOUNT	ODATE	CNUM	SNUM
1001	500	2024-09-01	1001	101
1002	1500	2024-09-02	1002	102
1003	750	2024-09-03	1003	103
1004	300	2024-09-04	1004	104
1005	1200	2024-09-05	1005	105
1006	800	2024-09-06	1006	106

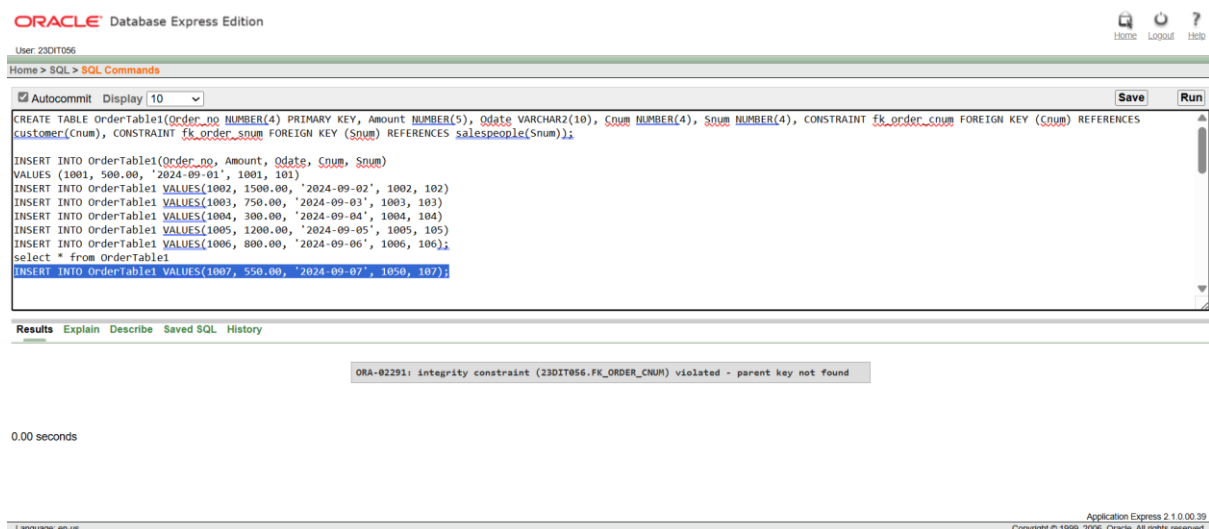
6 rows returned in 0.00 seconds CSV Export

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

## 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.



ORACLE Database Express Edition

User 23DIT056

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```
CREATE TABLE OrderTable1 (Order_no NUMBER(4) PRIMARY KEY, Amount NUMBER(5), Odate VARCHAR2(10), Cnum NUMBER(4), Snum NUMBER(4), CONSTRAINT fk_order_cnum FOREIGN KEY (Cnum) REFERENCES customer(Cnum), CONSTRAINT fk_order_snum FOREIGN KEY (Snum) REFERENCES salespeople(Snum));
```

```
INSERT INTO OrderTable1 (Order_no, Amount, Odate, Cnum, Snum) VALUES (1001, 500.00, '2024-09-01', 1001, 101);
```

```
INSERT INTO OrderTable1 VALUES (1002, 1500.00, '2024-09-02', 1002, 102);
```

```
INSERT INTO OrderTable1 VALUES (1003, 750.00, '2024-09-03', 1003, 103);
```

```
INSERT INTO OrderTable1 VALUES (1004, 300.00, '2024-09-04', 1004, 104);
```

```
INSERT INTO OrderTable1 VALUES (1005, 1200.00, '2024-09-05', 1005, 105);
```

```
INSERT INTO OrderTable1 VALUES (1006, 800.00, '2024-09-06', 1006, 106);
```

```
select * from OrderTable1
```

```
INSERT INTO OrderTable1 VALUES (1007, 550.00, '2024-09-07', 1050, 107);
```

ORA-02291: integrity constraint (23DIT056.FK\_ORDER\_CNUM) violated - parent key not found

0.00 seconds

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.



## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL command window contains the following code:

```
CREATE TABLE OrderTable1 (Order_no NUMBER(4) PRIMARY KEY, Amount NUMBER(5), Odate VARCHAR2(10), Cnum NUMBER(4), Snum NUMBER(4), CONSTRAINT fk_order_cnum FOREIGN KEY (Cnum) REFERENCES customer(cnum), CONSTRAINT fk_order_snum FOREIGN KEY (Snum) REFERENCES salespeople(snum));
```

```
INSERT INTO OrderTable1 (Order_no, Amount, Odate, Cnum, Snum) VALUES (1001, 500.00, '2024-09-01', 1001, 101);
```

```
INSERT INTO OrderTable1 VALUES (1002, 1500.00, '2024-09-02', 1002, 102);
```

```
INSERT INTO OrderTable1 VALUES (1003, 750.00, '2024-09-03', 1003, 103);
```

```
INSERT INTO OrderTable1 VALUES (1004, 300.00, '2024-09-04', 1004, 104);
```

```
INSERT INTO OrderTable1 VALUES (1005, 1200.00, '2024-09-05', 1005, 105);
```

```
INSERT INTO OrderTable1 VALUES (1006, 800.00, '2024-09-06', 1006, 106);
```

```
select * from OrderTable1
```

```
INSERT INTO OrderTable1 VALUES (1007, 550.00, '2024-09-07', 1050, 107);
```

```
INSERT INTO OrderTable1 VALUES (1007, 550.00, '2024-09-07', 1007, 190);
```

The error message displayed is: **ORA-02291: integrity constraint (23DIT056.FK\_ORDER\_SNUM) violated - parent key not found**

0.01 seconds

Language: en-us

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## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL command window contains the following code:

```
CREATE TABLE OrderTable1 (Order_no NUMBER(4) PRIMARY KEY, Amount NUMBER(5), Odate VARCHAR2(10), Cnum NUMBER(4), Snum NUMBER(4), CONSTRAINT fk_order_cnum FOREIGN KEY (Cnum) REFERENCES customer(cnum), CONSTRAINT fk_order_snum FOREIGN KEY (Snum) REFERENCES salespeople(snum));
```

```
INSERT INTO OrderTable1 (Order_no, Amount, Odate, Cnum, Snum) VALUES (1001, 500.00, '2024-09-01', 1001, 101);
```

```
INSERT INTO OrderTable1 VALUES (1002, 1500.00, '2024-09-02', 1002, 102);
```

```
INSERT INTO OrderTable1 VALUES (1003, 750.00, '2024-09-03', 1003, 103);
```

```
INSERT INTO OrderTable1 VALUES (1004, 300.00, '2024-09-04', 1004, 104);
```

```
INSERT INTO OrderTable1 VALUES (1005, 1200.00, '2024-09-05', 1005, 105);
```

```
INSERT INTO OrderTable1 VALUES (1006, 800.00, '2024-09-06', 1006, 106);
```

```
select * from OrderTable1
```

```
INSERT INTO OrderTable1 VALUES (1007, 550.00, '2024-09-07', 1050, 107);
```

```
INSERT INTO OrderTable1 VALUES (1007, 550.00, '2024-09-07', 1007, 190);
```

```
INSERT INTO OrderTable1 VALUES (1008, NULL, '2024-09-07', 1001, 101);
```

The results window displays the following table:

ORDER_NO	AMOUNT	ODATE	CNUM	SNUM
1001	500	2024-09-01	1001	101
1002	1500	2024-09-02	1002	102
1003	750	2024-09-03	1003	103
1004	300	2024-09-04	1004	104
1005	1200	2024-09-05	1005	105
1006	800	2024-09-06	1006	106
1008	-	2024-09-07	1001	101

7 rows returned in 0.00 seconds

Language: en-us

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## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
INSERT INTO OrderTable1 VALUES(1002, 1500.00, '2024-09-02', 1002, 102)
INSERT INTO OrderTable1 VALUES(1003, 750.00, '2024-09-03', 1003, 103)
INSERT INTO OrderTable1 VALUES(1004, 300.00, '2024-09-04', 1004, 104)
INSERT INTO OrderTable1 VALUES(1005, 1200.00, '2024-09-05', 1005, 105)
INSERT INTO OrderTable1 VALUES(1006, 800.00, '2024-09-06', 1006, 106);
select * from OrderTable1
INSERT INTO OrderTable1 VALUES(1007, 550.00, '2024-09-07', 1050, 107);
INSERT INTO OrderTable1 VALUES(1007, 550.00, '2024-09-07', 1007, 190);
INSERT INTO OrderTable1 VALUES(1008, NULL, '2024-09-07', 1001, 101);
[INSERT INTO OrderTable1 VALUES(1009, 1500.00, NULL, 1002, 102);]
```

The Results window shows the following data:

ORDER_NO	AMOUNT	ODATE	CNUM	SNUM
1001	500	2024-09-01	1001	101
1002	1500	2024-09-02	1002	102
1003	750	2024-09-03	1003	103
1004	300	2024-09-04	1004	104
1005	1200	2024-09-05	1005	105
1006	800	2024-09-06	1006	106
1008	-	2024-09-07	1001	101
1009	1500	-	1002	102

8 rows returned in 0.00 seconds

## 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.

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following commands:

```
INSERT INTO OrderTable1 VALUES(1002, 1500.00, '2024-09-02', 1002, 102)
INSERT INTO OrderTable1 VALUES(1003, 750.00, '2024-09-03', 1003, 103)
INSERT INTO OrderTable1 VALUES(1004, 300.00, '2024-09-04', 1004, 104)
INSERT INTO OrderTable1 VALUES(1005, 1200.00, '2024-09-05', 1005, 105)
INSERT INTO OrderTable1 VALUES(1006, 800.00, '2024-09-06', 1006, 106);
select * from OrderTable1
INSERT INTO OrderTable1 VALUES(1007, 550.00, '2024-09-07', 1050, 107);
INSERT INTO OrderTable1 VALUES(1007, 550.00, '2024-09-07', 1007, 190);
INSERT INTO OrderTable1 VALUES(1008, NULL, '2024-09-07', 1001, 101);
INSERT INTO OrderTable1 VALUES(1009, 1500.00, NULL, 1002, 102);
select * from OrderTable1
```

The Results window shows the following data:

ORDER_NO	AMOUNT	ODATE	CNUM	SNUM
1001	500	2024-09-01	1001	101
1002	1500	2024-09-02	1002	102
1003	750	2024-09-03	1003	103
1004	300	2024-09-04	1004	104
1005	1200	2024-09-05	1005	105
1006	800	2024-09-06	1006	106
1008	-	2024-09-07	1001	101
1009	1500	-	1002	102

8 rows returned in 0.01 seconds

#### 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:

The screenshot shows the Oracle Database Express Edition interface. The SQL Command window contains the following code:

```

CREATE TABLE Sales_order (
  client_no NUMBER(4),
  Dely_addr VARCHAR2(25),
  Salesman_no NUMBER(4),
  Dely_type CHAR(1) DEFAULT 'F' CHECK (Dely_type IN ('P', 'F')),
  Order_status VARCHAR2(20) CHECK (Order_status IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled')),
  CONSTRAINT fk_client FOREIGN KEY (client_no) REFERENCES customer(cnum),
  CONSTRAINT fk_salesman FOREIGN KEY (Salesman_no) REFERENCES Salespeople(snum)
);
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Dely_type, Order_status)
VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1001', '123 Main St', '101', 'P', 'In Process');
select * from Sales_order
  
```

The Results window shows the following data:

ORDER_NO	ORDER_DATE	CLIENT_NO	DELY_ADDR	SALESMAN_NO	DELY_TYPE	ORDER_STATUS
O10001	08-SEP-24	1001	123 Main St	101	P	In Process

1 rows returned in 0.02 seconds

## Test the Primary Key Constraint:

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit Display | 10

Save Run

```
CREATE TABLE Customer (
  Client_no NUMBER(4),
  Dely_addr VARCHAR2(25),
  Salesman_no NUMBER(4),
  Dely_type CHAR(1) DEFAULT 'F' CHECK (Dely_type IN ('P', 'F')),
  Order_status VARCHAR2(20) CHECK (Order_status IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled')),
  CONSTRAINT fk_client FOREIGN KEY (Client_no) REFERENCES Customer(Cnum),
  CONSTRAINT fk_salesman FOREIGN KEY (Salesman_no) REFERENCES Salespeople(Snum)
);
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Dely_type, Order_status)
VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1001', '123 Main St', '101', 'P', 'In Process');
select * from Sales_order;
INSERT INTO Sales_order VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1002', '456 Elm St', '102', 'F', 'Fulfilled');
```

Results Explain Describe Saved SQL History

ORA-00001: unique constraint (23DIT056.SYS\_C004512) violated

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## Test the Foreign Key Constraints:

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit Display | 10

Save Run

```
Salesman_no NUMBER(4),
Dely_type CHAR(1) DEFAULT 'F' CHECK (Dely_type IN ('P', 'F')),
Order_status VARCHAR2(20) CHECK (Order_status IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled')),
CONSTRAINT fk_client FOREIGN KEY (Client_no) REFERENCES Customer(Cnum),
CONSTRAINT fk_salesman FOREIGN KEY (Salesman_no) REFERENCES Salespeople(Snum)
);
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Dely_type, Order_status)
VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1001', '123 Main St', '101', 'P', 'In Process');
select * from Sales_order;
INSERT INTO Sales_order VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1002', '456 Elm St', '102', 'F', 'Fulfilled');
INSERT INTO Sales_order VALUES ('010002', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '2002', '789 Oak St', '190', 'F', 'Backorder');
```

Results Explain Describe Saved SQL History

ORA-02291: integrity constraint (23DIT056.FK\_SALESMAN) violated - parent key not found

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## Test the Check Constraints:

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit Display | 10

Save Run

```
Dely_type CHAR(1) DEFAULT 'F' CHECK (Dely_type IN ('P', 'F')),
Order_status VARCHAR2(20) CHECK (Order_status IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled')),
CONSTRAINT fk_client FOREIGN KEY (Client_no) REFERENCES Customer(Cnum),
CONSTRAINT fk_salesman FOREIGN KEY (Salesman_no) REFERENCES Salespeople(Snum)
);
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Dely_type, Order_status)
VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1001', '123 Main St', '101', 'P', 'In Process');
select * from Sales_order;
INSERT INTO Sales_order VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1002', '456 Elm St', '102', 'F', 'Fulfilled');
INSERT INTO Sales_order VALUES ('010002', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '2002', '789 Oak St', '190', 'F', 'Backorder');
INSERT INTO Sales_order VALUES ('X10002', TO_DATE('2024-09-06', 'YYYY-MM-DD'), '1003', '789 Oak St', '103', 'X', 'Unknown');
```

Results Explain Describe Saved SQL History

ORA-02290: check constraint (23DIT056.SYS\_C004511) violated

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## Test the Default Constraint:

ORACLE Database Express Edition

User: 23DIT066

Home > SQL > SQL Commands

Autocommit Display: 10

Save Run

```
DELTY_TYPE CHAR(1) DEFAULT 'F' CHECK (DELTY_TYPE IN ('P', 'F')),
ORDER_STATUS VARCHAR2(20) CHECK (ORDER_STATUS IN ('In Process', 'Fulfilled', 'Backorder', 'Cancelled')),
CONSTRAINT FK_CLIENT FOREIGN KEY (CLIENT_NO) REFERENCES Customer(Cnum),
CONSTRAINT FK_Salesman FOREIGN KEY (Salesman_no) REFERENCES Salespeople(Snum)
);
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Dely_type, Order_status)
VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1001', '123 Main St', '101', 'P', 'In Process');
select * from Sales_order;
INSERT INTO Sales_order VALUES ('010001', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1002', '456 Elm St', '102', 'F', 'Fulfilled');
INSERT INTO Sales_order VALUES ('010002', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '2002', '789 Oak St', '190', 'F', 'Backorder');
INSERT INTO Sales_order VALUES ('X10002', TO_DATE('2024-09-06', 'YYYY-MM-DD'), '1003', '789 Oak St', '103', 'X', 'Unknown');
INSERT INTO Sales_order (Order_no, Order_date, Client_no, Dely_addr, Salesman_no, Order_status)
VALUES ('010003', TO_DATE('2024-09-08', 'YYYY-MM-DD'), '1003', '456 Elm St', '103', 'In Process');
```

Results Explain Describe Saved SQL History

ORDER_NO	ORDER_DATE	CLIENT_NO	DELY_ADDR	SALESMAN_NO	DELY_TYPE	ORDER_STATUS
O10001	08-SEP-24	1001	123 Main St	101	P	In Process
O10003	08-SEP-24	1003	456 Elm St	103	F	In Process

2 rows returned in 0.00 seconds CSV Export

Language: en-us Application Express 2.1.0.00.39 Copyright © 1999, 2006, Oracle. All rights reserved.

## 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

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```

City VARCHAR2(20),
Pincode VARCHAR2(8),
State VARCHAR2(20),
Sal_amt NUMBER(8,2) CONSTRAINT no_sal_amt NOT NULL CONSTRAINT chk_sal_amt CHECK (Sal_amt > 0),
Ytd_sales NUMBER(6,2) CONSTRAINT no_ytd_sales NOT NULL CONSTRAINT chk_ytd_sales CHECK (Ytd_sales > 0),
Tgt_sales NUMBER(6,2) CONSTRAINT no_tgt_sales NOT NULL,
CONSTRAINT chk_salesman_no CHECK (SUBSTR(Salesman_no, 1, 1) = 'S')
);

INSERT INTO salesman_master (Salesman_no, Salesman_name, Address, City, Pincode, State, Sal_amt, Ytd_sales, Tgt_sales)
VALUES ('S001', 'John Doe', '123 Main St', 'New York', '10001', 'NY', 5000.00, 2500.00, 1000.00);
INSERT INTO salesman_master VALUES ('S002', 'Jane Smith', '456 Elm St', 'Los Angeles', '90001', 'CA', 6000.00, 3000.00, 1200.00);
select * from salesman_master

```

Results Explain Describe Saved SQL History

SALESMAN_NO	SALESMAN_NAME	ADDRESS	CITY	PINCODE	STATE	SAL_AMT	YTD_SALES	TGT_SALES
S001	John Doe	123 Main St	New York	10001	NY	5000	2500	1000
S002	Jane Smith	456 Elm St	Los Angeles	90001	CA	6000	3000	1200

2 rows returned in 0.02 seconds CSV Export

Application Express 2.1.0.00.39  
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**Not Null Constraints:**

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit Display 10 Save Run

```

Pincode VARCHAR2(8),
State VARCHAR2(20),
Sal_amt NUMBER(8,2) CONSTRAINT no_sal_amt NOT NULL CONSTRAINT chk_sal_amt CHECK (Sal_amt > 0),
Ytd_sales NUMBER(6,2) CONSTRAINT no_ytd_sales NOT NULL CONSTRAINT chk_ytd_sales CHECK (Ytd_sales > 0),
Tgt_sales NUMBER(6,2) CONSTRAINT no_tgt_sales NOT NULL,
CONSTRAINT chk_salesman_no CHECK (SUBSTR(Salesman_no, 1, 1) = 'S')
);

INSERT INTO salesman_master (Salesman_no, Salesman_name, Address, City, Pincode, State, Sal_amt, Ytd_sales, Tgt_sales)
VALUES ('S001', 'John Doe', '123 Main St', 'New York', '10001', 'NY', 5000.00, 2500.00, 1000.00);
INSERT INTO salesman_master VALUES ('S002', 'Jane Smith', '456 Elm St', 'Los Angeles', '90001', 'CA', 6000.00, 3000.00, 1200.00);
select * from salesman_master
insert into salesman_master values ('S003', 'Emily White', '789 Oak St', 'Chicago', '60601', 'IL', NULL, 2000.00, 9000.00);

```

Results Explain Describe Saved SQL History

ORA-01400: cannot insert NULL into ("23DIT056"."SALESMAN\_MASTER"."SAL\_AMT")

0.00 seconds

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## Check Constraints:

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: Display 10

Save Run

```

-- Create table and constraints
CREATE TABLE salesman_master (
    salesman_no VARCHAR2(20),
    salesman_name VARCHAR2(100),
    address VARCHAR2(100),
    city VARCHAR2(20),
    pincode VARCHAR2(10),
    state VARCHAR2(20),
    sal_amt NUMBER(8,2) CONSTRAINT nn_sal_amt NOT NULL CONSTRAINT chk_sal_amt CHECK (sal_amt > 0),
    ytd_sales NUMBER(6,2) CONSTRAINT nn_ytd_sales NOT NULL CONSTRAINT chk_ytd_sales CHECK (ytd_sales > 0),
    tgt_sales NUMBER(6,2) CONSTRAINT nn_tgt_sales NOT NULL,
    CONSTRAINT chk_salesman_no CHECK (SUBSTR(salesman_no, 1, 1) = 'S')
);

-- Insert data
INSERT INTO salesman_master (salesman_no, salesman_name, address, city, pincode, state, sal_amt, ytd_sales, tgt_sales)
VALUES ('S001', 'John Doe', '123 Main St', 'New York', '10001', 'NY', 5000.00, 2500.00, 1000.00);
INSERT INTO salesman_master VALUES ('S002', 'Jane Smith', '456 Elm St', 'Los Angeles', '90001', 'CA', 6000.00, 3000.00, 1200.00);
select * from salesman_master;
INSERT INTO salesman_master VALUES ('S003', 'Emily White', '789 Oak St', 'Chicago', '60601', 'IL', NULL, 2000.00, 9000.00);
INSERT INTO salesman_master VALUES ('S004', 'Michael Brown', '321 Maple St', 'Houston', '77001', 'TX', 0, 1500.00, 7500.00);

```

Results Explain Describe Saved SQL History

ORA-02290: check constraint (23DIT056.CHK\_SAL\_AMT) violated

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## Unique Constraints:

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: Display 10

Save Run

```

-- Create table and constraints
CREATE TABLE salesman_master (
    salesman_no VARCHAR2(20),
    salesman_name VARCHAR2(100),
    address VARCHAR2(100),
    city VARCHAR2(20),
    pincode VARCHAR2(10),
    state VARCHAR2(20),
    sal_amt NUMBER(8,2) CONSTRAINT nn_sal_amt NOT NULL CONSTRAINT chk_sal_amt CHECK (sal_amt > 0),
    ytd_sales NUMBER(6,2) CONSTRAINT nn_ytd_sales NOT NULL CONSTRAINT chk_ytd_sales CHECK (ytd_sales > 0),
    tgt_sales NUMBER(6,2) CONSTRAINT nn_tgt_sales NOT NULL,
    CONSTRAINT chk_salesman_no CHECK (SUBSTR(salesman_no, 1, 1) = 'S')
);

-- Insert data
INSERT INTO salesman_master (salesman_no, salesman_name, address, city, pincode, state, sal_amt, ytd_sales, tgt_sales)
VALUES ('S001', 'John Doe', '123 Main St', 'New York', '10001', 'NY', 5000.00, 2500.00, 1000.00);
INSERT INTO salesman_master VALUES ('S002', 'Jane Smith', '456 Elm St', 'Los Angeles', '90001', 'CA', 6000.00, 3000.00, 1200.00);
select * from salesman_master;
INSERT INTO salesman_master VALUES ('S003', 'Emily White', '789 Oak St', 'Chicago', '60601', 'IL', NULL, 2000.00, 9000.00);
INSERT INTO salesman_master VALUES ('S004', 'Michael Brown', '321 Maple St', 'Houston', '77001', 'TX', 0, 1500.00, 7500.00);
INSERT INTO salesman_master VALUES ('S008', 'John Doe', '303 Sixth St', 'Chicago', '60602', 'IL', 5300.00, 3100.00, 1230.00);

```

Results Explain Describe Saved SQL History

ORA-00001: unique constraint (23DIT056.PK\_SALESMAN) violated

0.00 seconds

Language: en-us

Application Express 2.1.0.00.39  
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## 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

ORACLE Database Express Edition

User: 23DIT056

Home > SQL > SQL Commands

Autocommit: ☒ Display: 10

Save Run

```

CREATE TABLE Client_master (
  Client_no VARCHAR2(6) PRIMARY KEY CHECK (Client_no LIKE 'C%'),
  Name VARCHAR2(20) NOT NULL,
  Address VARCHAR2(30),
  City VARCHAR2(15),
  Pincode NUMBER(8),
  State VARCHAR2(15),
  Bal_due NUMBER(10,2) DEFAULT 0.00
);

INSERT INTO Client_master (Client_no, Name, Address, City, Pincode, State, Bal_due)
VALUES ('C12345', 'John Doe', '123 Main St', 'Somewhere', 12345678, 'State1', 1500.00);

select * from Client_master
  
```

Results Explain Describe Saved SQL History

CLIENT_NO	NAME	ADDRESS	CITY	PINCODE	STATE	BAL_DUE
C12345	John Doe	123 Main St	Somewhere	12345678	State1	1500

1 rows returned in 0.00 seconds [CSV Export](#)

Language: en-us

Application Express 2.1.0.00.39  
Copyright © 1999, 2006, Oracle. All rights reserved.



## Primary Key Constraint:

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```
);  
INSERT INTO client_master (client_no, Name, Address, City, Pincode, State, Bal_due)  
VALUES ('C12345', 'John Doe', '123 Main St', 'Somewhere', 12345678, 'State1', 1500.00);  
select * from client_master  
INSERT INTO client_master VALUES ('C12346', NULL, '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);  
INSERT INTO client_master VALUES ('C12345', 'Smith Carl', '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);  
  
INSERT INTO client_master (client_no, Name, Address, City, Pincode, State, Bal_due)  
VALUES ('A65432', 'Jane Smith', '789 Oak St', 'Elsewhere', 23456789, 'State3', 3500.00);
```

The execution results show an error: **ORA-00001: unique constraint (23DIT056.SYS\_C004535) violated**. The execution time is 0.00 seconds. The footer indicates the application is Oracle Express 2.1.0.0.39, Copyright © 1999, 2006, Oracle. All rights reserved.

## Not Null Constraint:

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```
Name VARCHAR2(20) NOT NULL,  
Address VARCHAR2(30),  
City VARCHAR2(15),  
Pincode NUMBER(8),  
State VARCHAR2(15),  
Bal_due NUMBER(10,2) DEFAULT 0.00  
);  
INSERT INTO client_master (client_no, Name, Address, City, Pincode, State, Bal_due)  
VALUES ('C12345', 'John Doe', '123 Main St', 'Somewhere', 12345678, 'State1', 1500.00);  
select * from client_master  
INSERT INTO client_master VALUES ('C12346', NULL, '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);
```

The execution results show an error: **ORA-01400: cannot insert NULL into ("23DIT056"."CLIENT\_MASTER"."NAME")**. The execution time is 0.00 seconds. The footer indicates the application is Oracle Express 2.1.0.0.39, Copyright © 1999, 2006, Oracle. All rights reserved.

## Check Constraint:

The screenshot shows the Oracle Database Express Edition interface. The SQL Commands window contains the following code:

```
);  
INSERT INTO client_master (client_no, Name, Address, City, Pincode, State, Bal_due)  
VALUES ('C12345', 'John Doe', '123 Main St', 'Somewhere', 12345678, 'State1', 1500.00);  
select * from client_master  
INSERT INTO client_master VALUES ('C12346', NULL, '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);  
INSERT INTO client_master VALUES ('12345', 'Smith Carl', '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);  
  
INSERT INTO client_master (client_no, Name, Address, City, Pincode, State, Bal_due)  
VALUES ('A65432', 'Jane Smith', '789 Oak St', 'Elsewhere', 23456789, 'State3', 3500.00);
```

The execution results show an error: **ORA-02290: check constraint (23DIT056.SYS\_C004534) violated**. The execution time is 0.00 seconds. The footer indicates the application is Oracle Express 2.1.0.0.39, Copyright © 1999, 2006, Oracle. All rights reserved.

## Default Constraint:

The screenshot shows the Oracle Database Express Edition interface. The SQL Command window contains the following script:

```

Pincode NUMBER(8),
State VARCHAR2(15),
Bal_due NUMBER(10,2) DEFAULT 0.00
);

INSERT INTO Client_master (Client_no, Name, Address, City, Pincode, State, Bal_due)
VALUES ('C12345', 'John Doe', '123 Main St', 'Somewhere', 12345678, 'State1', 1500.00);
select * from client_master
INSERT INTO Client_master VALUES ('C12346', NULL, '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);
INSERT INTO Client_master VALUES ('C12345', 'Smith carl', '456 Elm St', 'Anywhere', 87654321, 'State2', 2500.00);
INSERT INTO Client_master (Client_no, Name, Address, City, Pincode, State) VALUES ('C12347', 'Alice Johnson', '101 Pine St', 'Somewhere', 34567890, 'State4');

```

The Results window shows the following data:

CLIENT_NO	NAME	ADDRESS	CITY	PINCODE	STATE	BAL_DUE
C12345	John Doe	123 Main St	Somewhere	12345678	State1	1500
C12346	Smith carl	456 Elm St	Anywhere	87654321	State2	2500
C12347	Alice Johnson	101 Pine St	Somewhere	34567890	State4	0

3 rows returned in 0.00 seconds [CSV Export](#)

## ➤ 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.