DATABASE SYSTEMS

ADVANCED DDL

By Sana Faiz
Sana.faiz.muet83@gmail.com

DATA DEFINITION LANGUAGES (DDL)

- Data Definition Commands are used to create & modify db objects.
- The DDL statements are a subset of SQL statements used to create, modify, or remove database structures.
- Changes made by DDL commands are permanent and can not be rolled back.
- Following are the commands included in this category:

1. CREATE

2. ALTER

3. DROP4. RENAME

5. TRUNCATE

ALTER TABLE

- This command is used to make structural changes to a table.
- Changes include adding a column to a table ,deleting a column from a table, or changing the size & datatype of the column.

SYNTAX:

```
ALTER TABLE  table-name
ADD|MODFIY |DROP COLUMN (Column-name);
```

ADDING A COLUMN TO AN EXISTING TABLE

```
CREATE TABLE SW_Students ( St_id Number(5) , S_Name varchar2(15) , S_dob date )
```

- The new column will be added next to the last available column of the existing table.

SYNTAX:

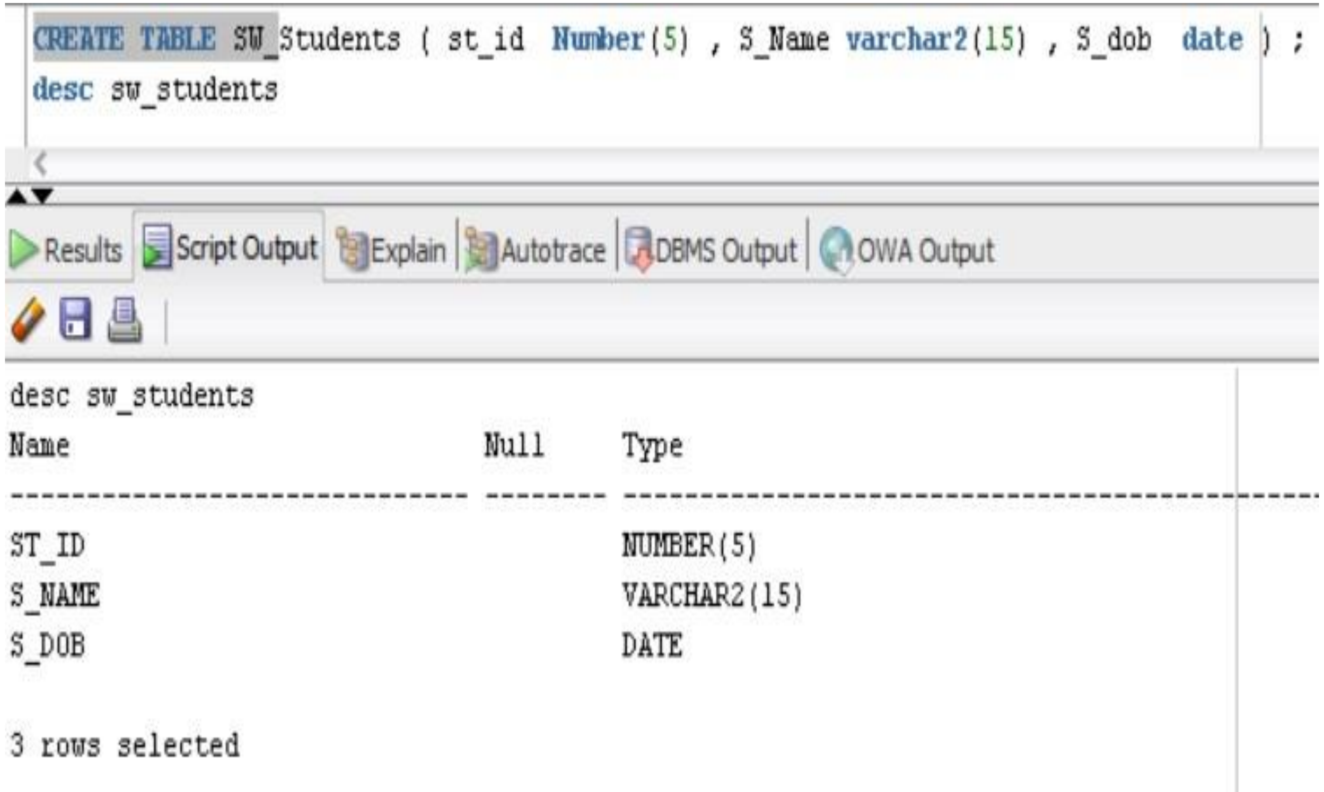
1. ALTER TABLE table_name ADD (column_name Datatype [default]);

2. ALTER TABLE table_name ADD (column_definition, column_definition, ...);

EXAMPLE A :

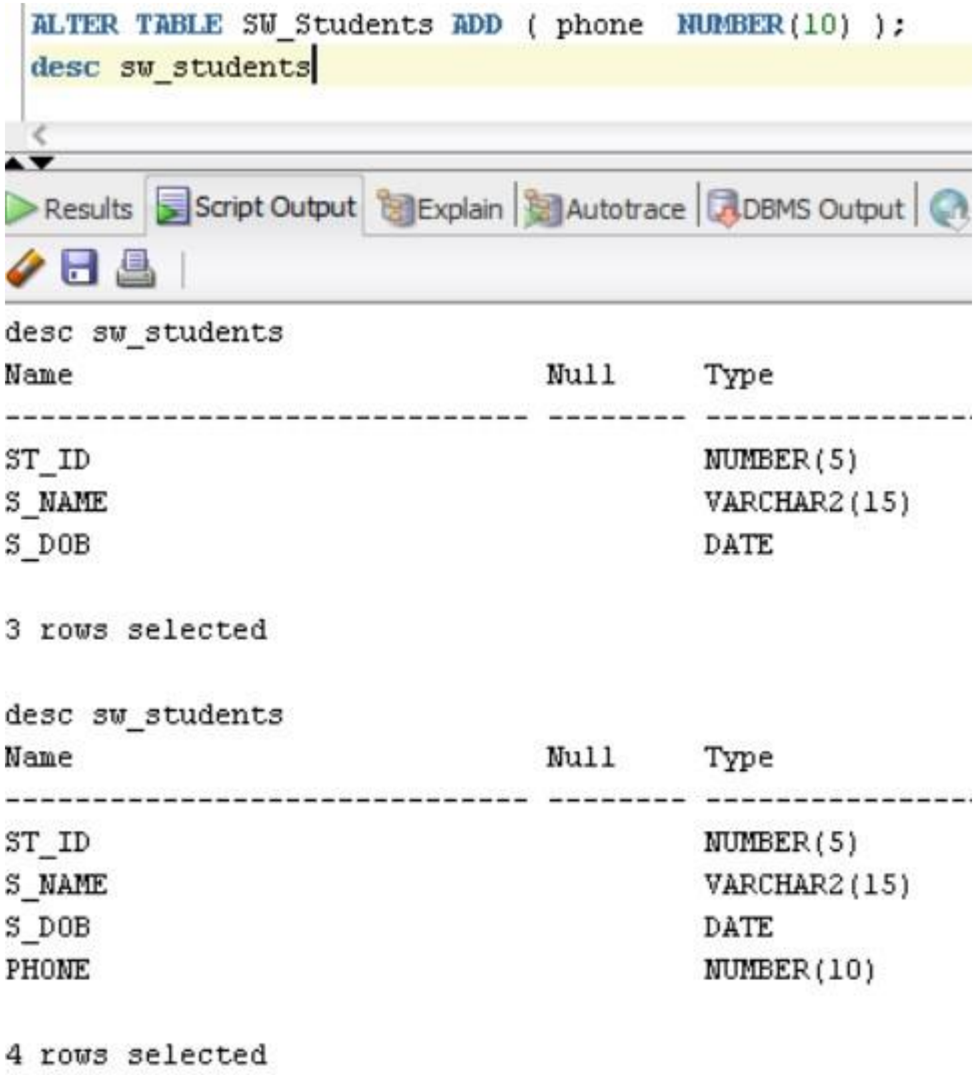
```
ALTER TABLE SW_Students ADD ( phone NUMBER(10) );
```

ADDING SINGLE COLUMN



```
CREATE TABLE SW_Students ( st_id  Number(5) , S_Name varchar2(15) , S_dob  date ) ;
desc sw_students
```

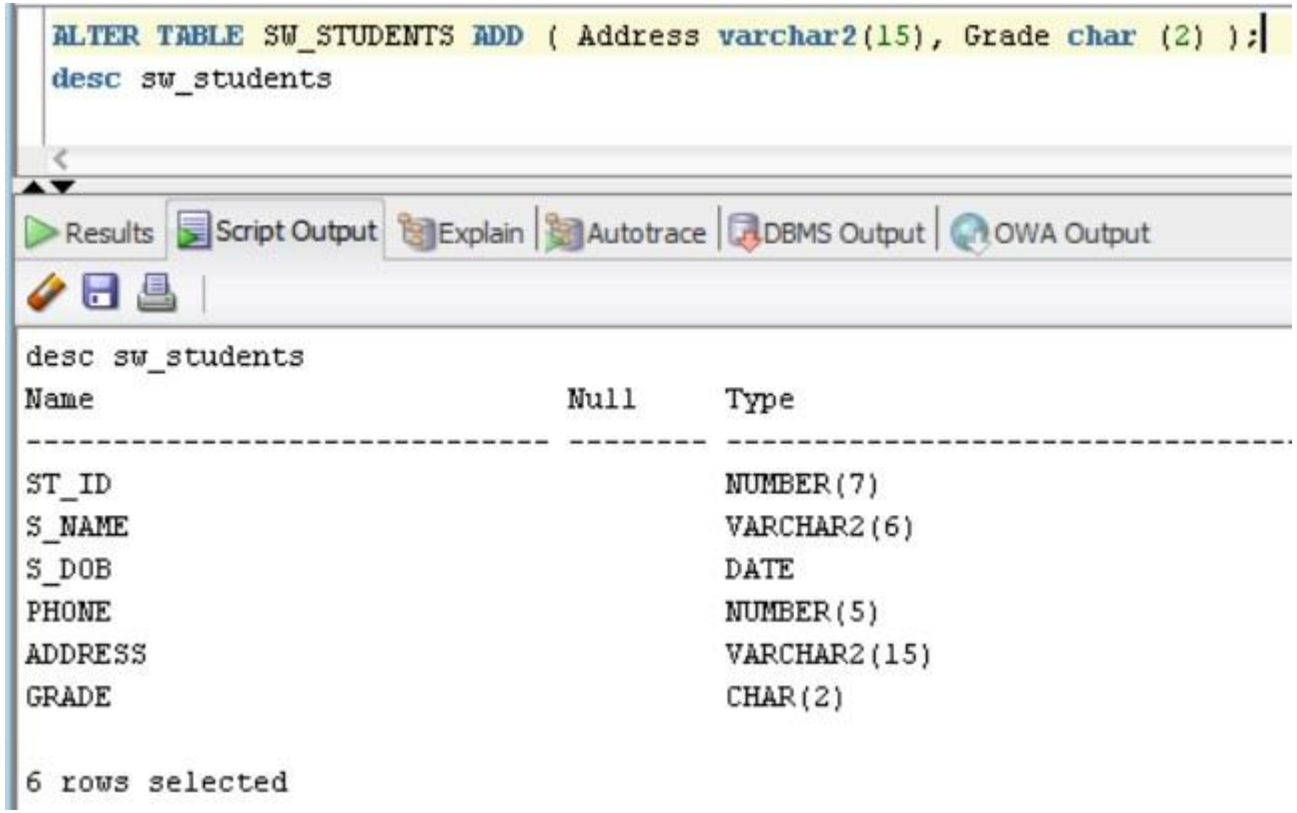
```
desc sw_students
Name                           Null     Type
------------------------------ -------- ---------------------------------------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE

3 rows selected
```



```
ALTER TABLE SW_Students ADD ( phone  NUMBER(10) );
desc sw_students
```

```
desc sw_students
Name                           Null     Type
------------------------------ -------- ---------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE

3 rows selected

desc sw_students
Name                           Null     Type
------------------------------ -------- ---------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(10)

4 rows selected
```

ADDING MULTIPLE COLUMNS



```
ALTER TABLE SW_STUDENTS ADD ( Address varchar2(15), Grade char (2) );
desc sw_students
```

```
desc sw_students
Name                           Null     Type
------------------------------ -------- ---------------------------------
ST_ID                                   NUMBER(7)
S_NAME                                  VARCHAR2(6)
S_DOB                                   DATE
PHONE                                   NUMBER(5)
ADDRESS                                 VARCHAR2(15)
GRADE                                   CHAR(2)

6 rows selected
```

ALTER TABLE MODIFY

SYNTAX:

```
ALTER TABLE  table-name
ADD|MODFIY |DROP COLUMN (Column-name);
```

- Used to modify the description of the existing columns.
- Can change datatype or add/change default values.

CHANGING COLUMN DEFINITION OF AN EXISTING COLUMN

ALLOWABLE CHANGES

1. **If the column has only null values or no data at all ,then the size of the column can be decreased. However, size can be increased under all circumstances.**
2. **Datatype Change:**

   char to varchar or varchar to char (possible in some cases) Number to character (possible in some cases)

   Default values (can be changed but affects only future data)

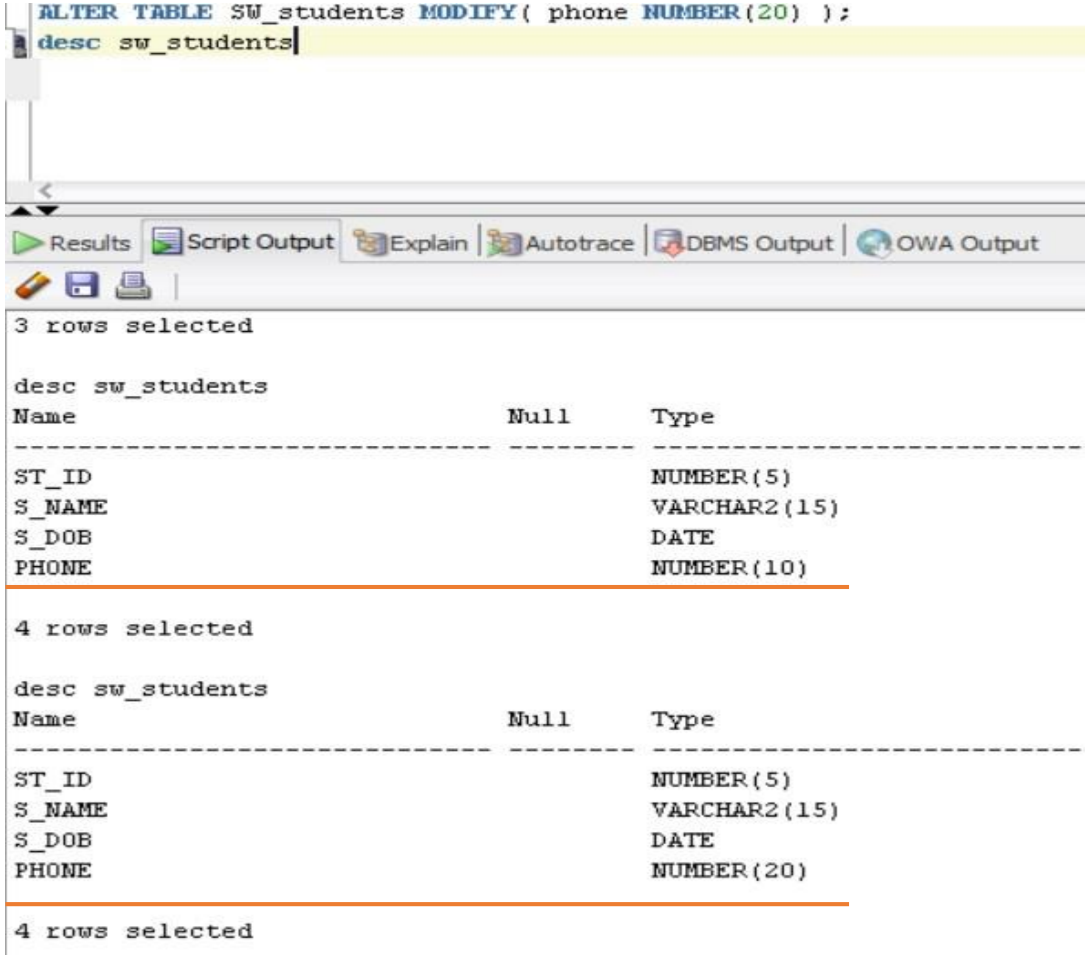
SYNTAX:

ALTER TABLE table-name MODIFY (column-name datatype [default]) ;

EXAMPLE B:

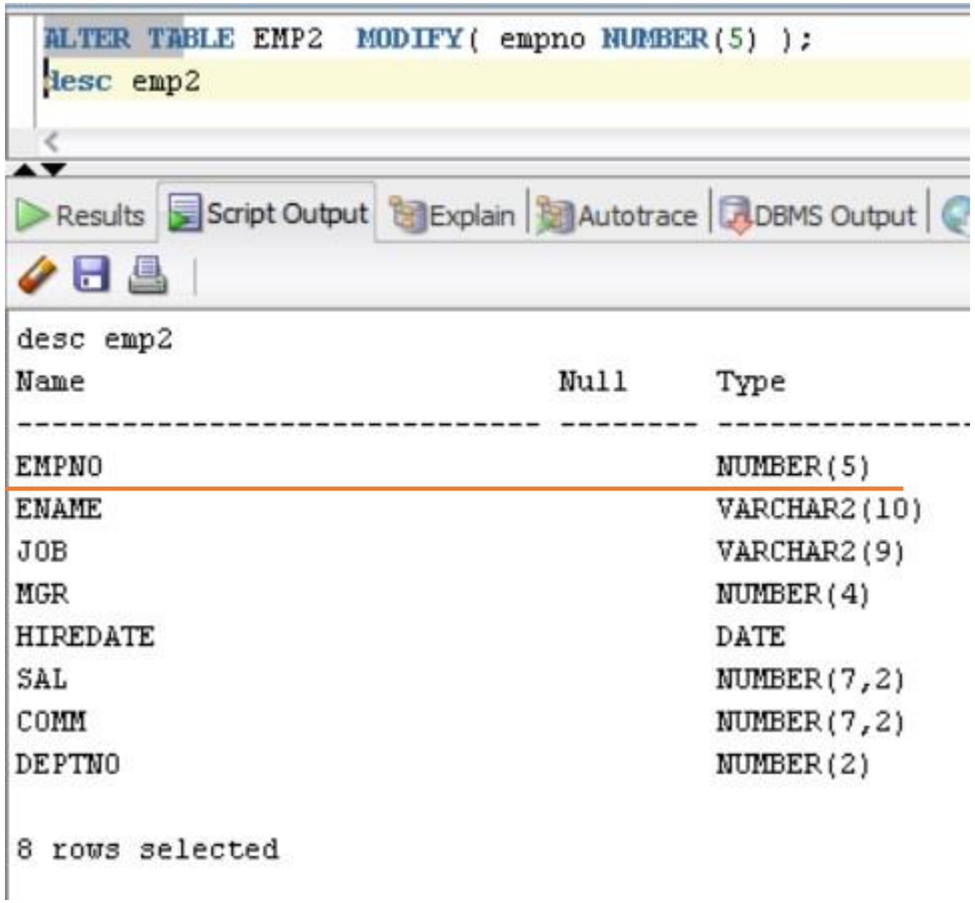
ALTER TABLE SW_students MODIFY(phone NUMBER(20));

CHANGING DATATYPE SIZE (INCREASE)



```
ALTER TABLE SW_students MODIFY( phone NUMBER(20) );
desc sw_students
```

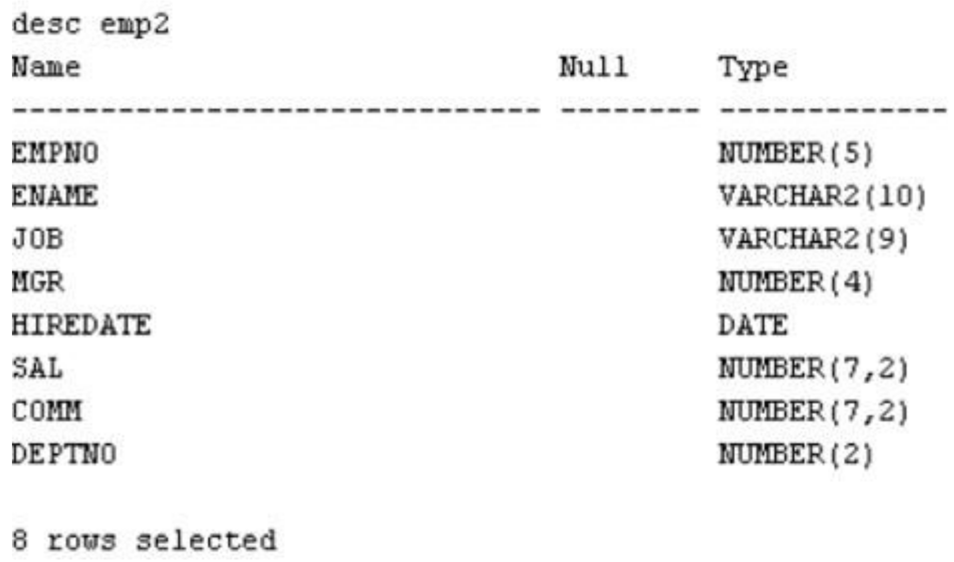
```
3 rows selected

desc sw_students
Name                           Null     Type
------------------------------ -------- --------------------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(10)

4 rows selected

desc sw_students
Name                           Null     Type
------------------------------ -------- --------------------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(20)

4 rows selected
```



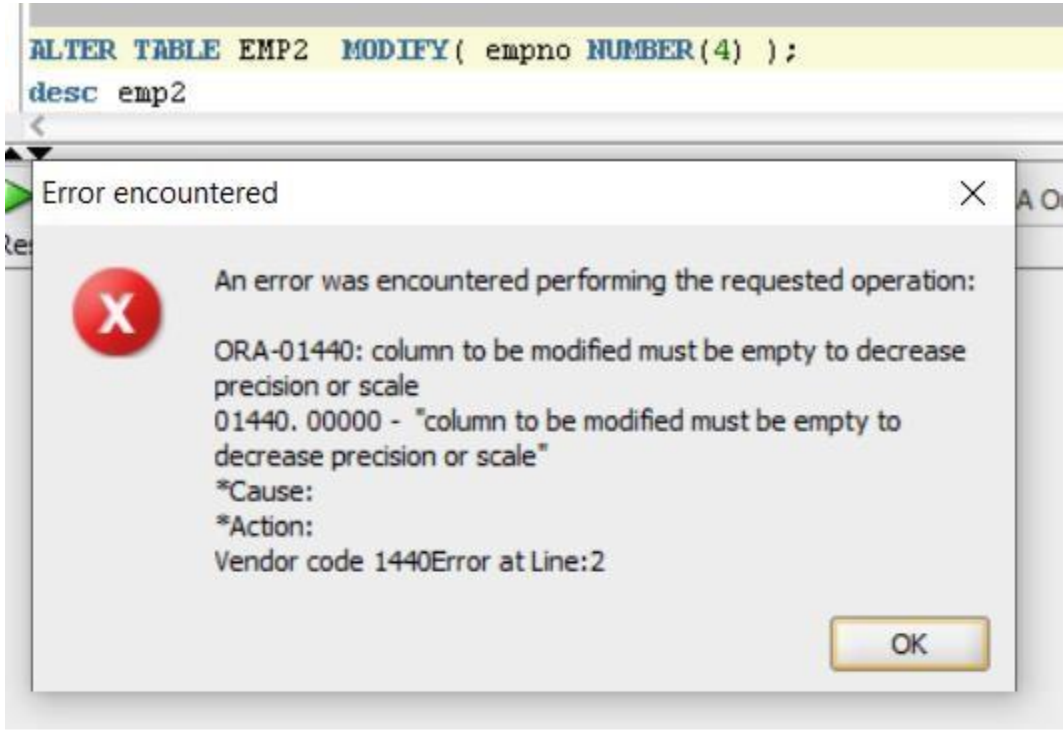
```
ALTER TABLE EMP2  MODIFY( empno NUMBER(5) );
desc emp2
```

```
desc emp2
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     VARCHAR2(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

CHANGING DATATYPE SIZE (DECREASE)



```
desc emp2
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     VARCHAR2(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

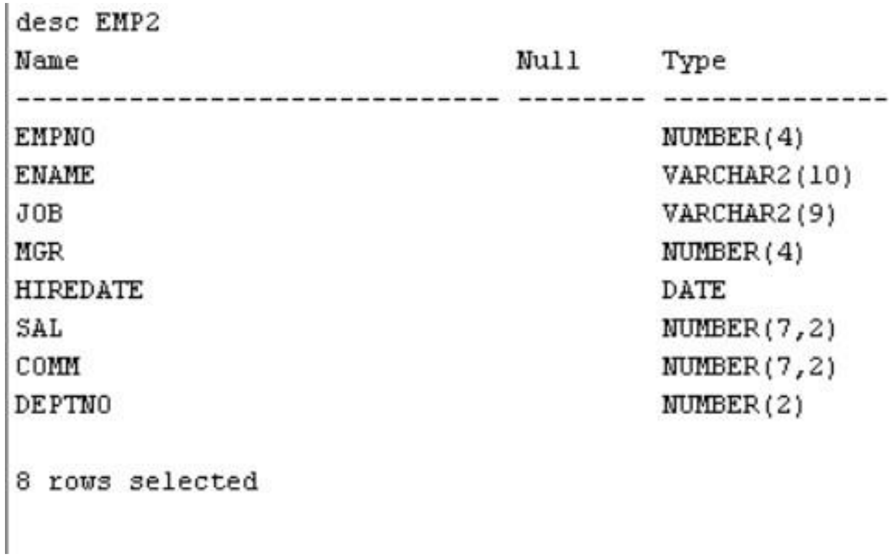


```
ALTER TABLE EMP2  MODIFY( empno NUMBER(4) );
desc emp2
```

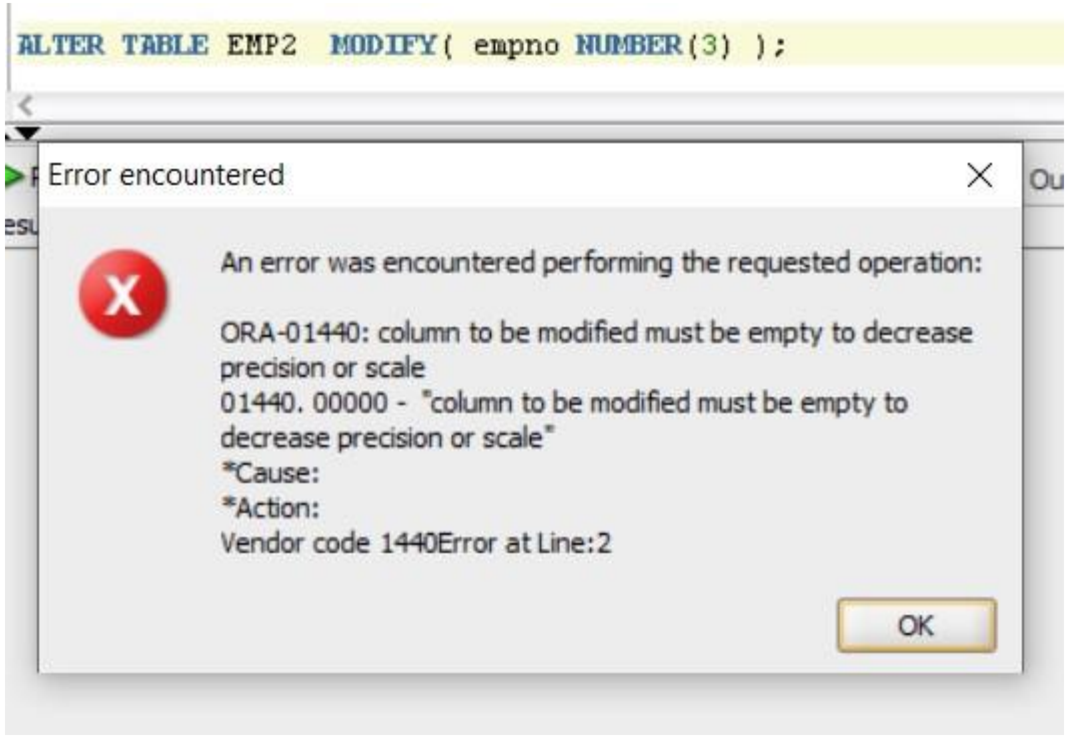
Error encountered

An error was encountered performing the requested operation:

ORA-01440: column to be modified must be empty to decrease precision or scale
01440. 00000 - "column to be modified must be empty to decrease precision or scale"
*Cause:
*Action:
Vendor code 1440Error at Line:2



```
desc EMP2
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                                   NUMBER(4)
ENAME                                   VARCHAR2(10)
JOB                                     VARCHAR2(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```



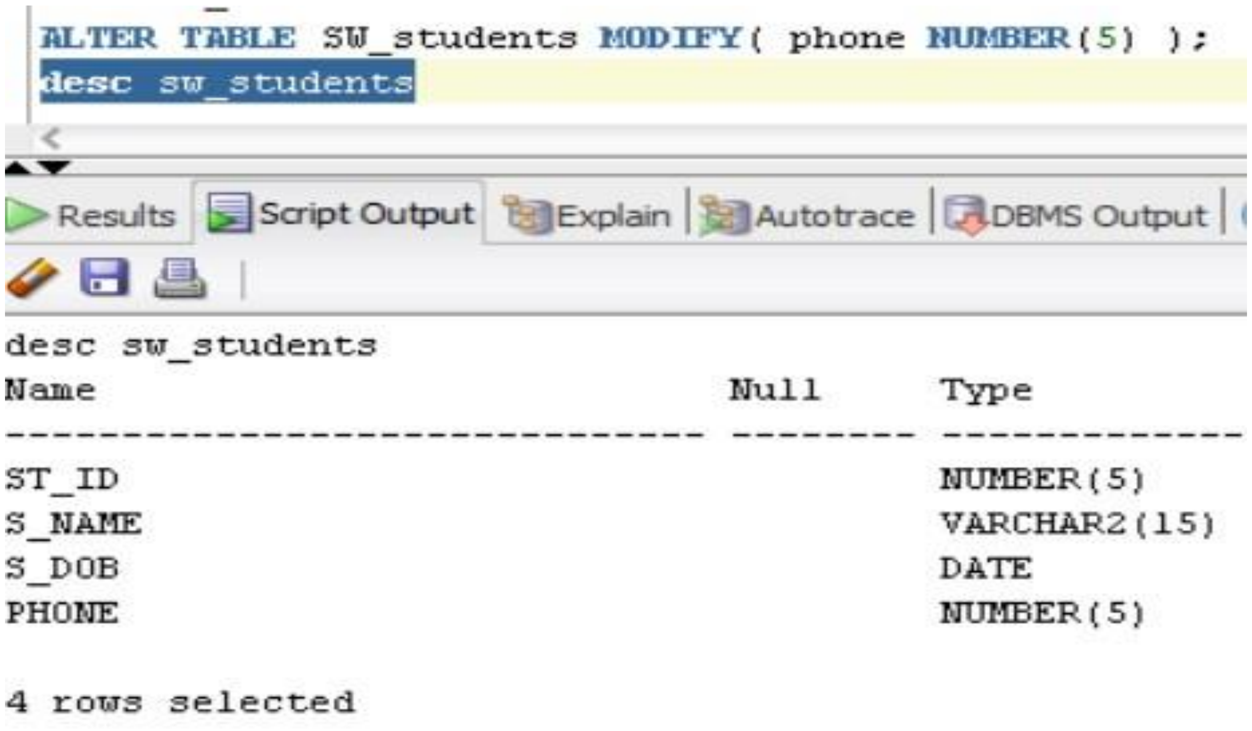
```
ALTER TABLE EMP2  MODIFY( empno NUMBER(3) );
```

Error encountered

An error was encountered performing the requested operation:

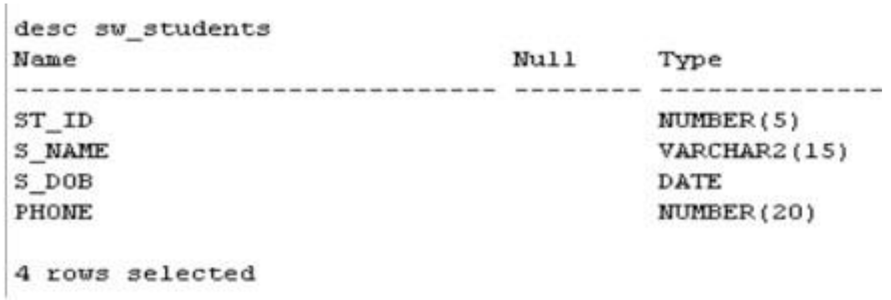
ORA-01440: column to be modified must be empty to decrease precision or scale
01440. 00000 - "column to be modified must be empty to decrease precision or scale"
*Cause:
*Action:
Vendor code 1440Error at Line:2

POPULATED TABLE



```
ALTER TABLE SW_students MODIFY( phone NUMBER(5) );
desc sw_students
```

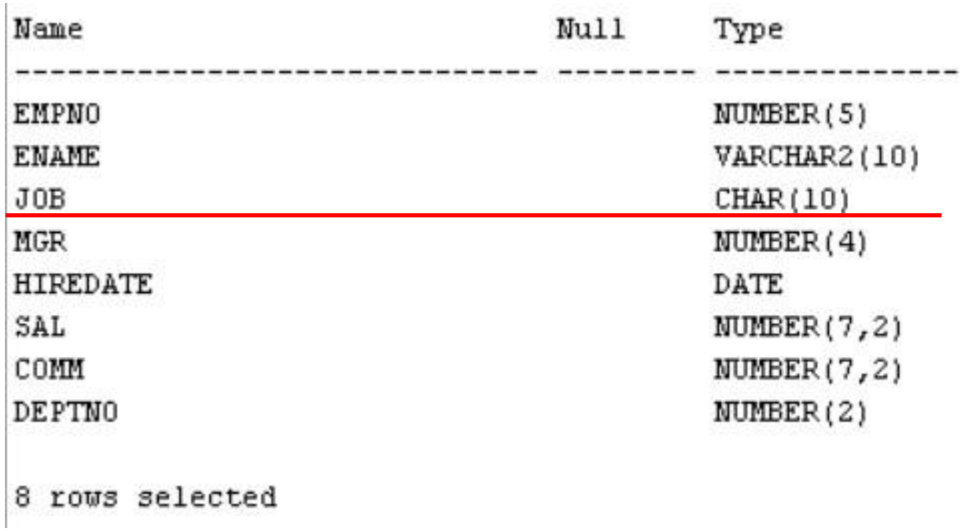
```
desc sw_students
Name                           Null     Type
------------------------------ -------- ------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(5)

4 rows selected
```



```
desc sw_students
Name                           Null     Type
------------------------------ -------- ------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(20)

4 rows selected
```

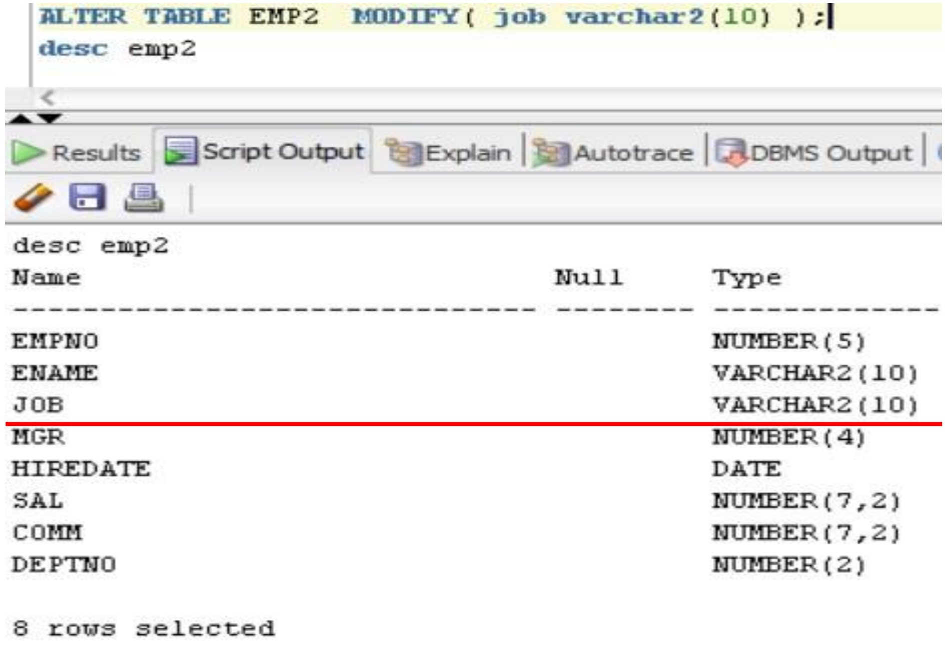
EMPTY TABLE

CHANGING COLUMN DATATYPE (CHAR to VARCHAR)



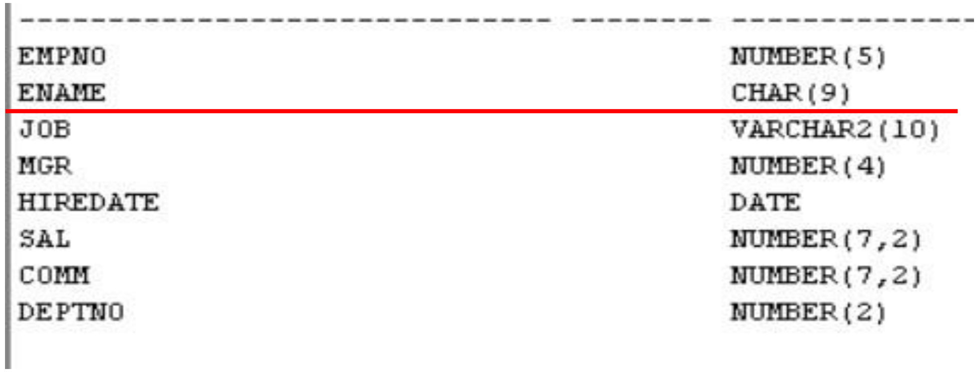
```
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     CHAR(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

SAME SIZE



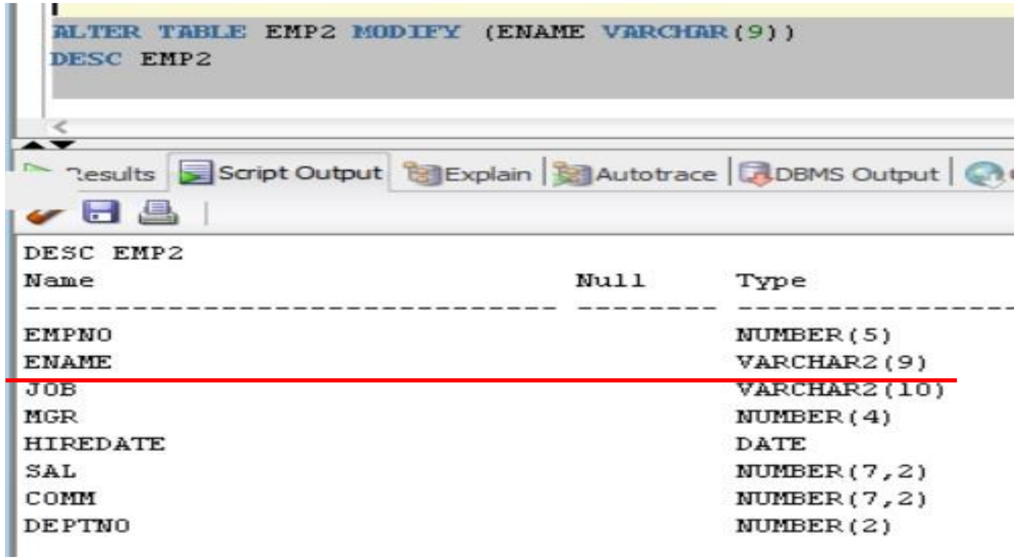
```
ALTER TABLE EMP2  MODIFY( job varchar2(10)  );
desc emp2
```

```
desc emp2
Name                           Null     Type
------------------------------ -------- -------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```



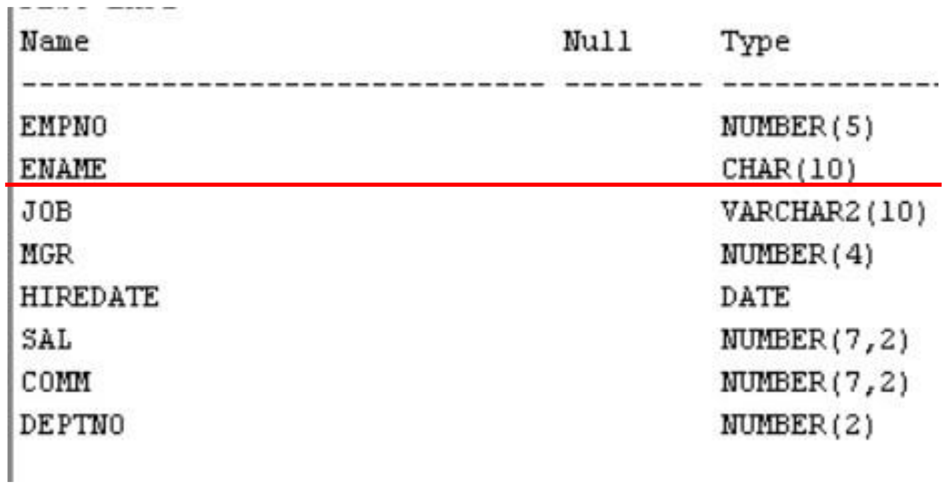
```
------------------------------ -------- -------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(9)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```

SAME SIZE



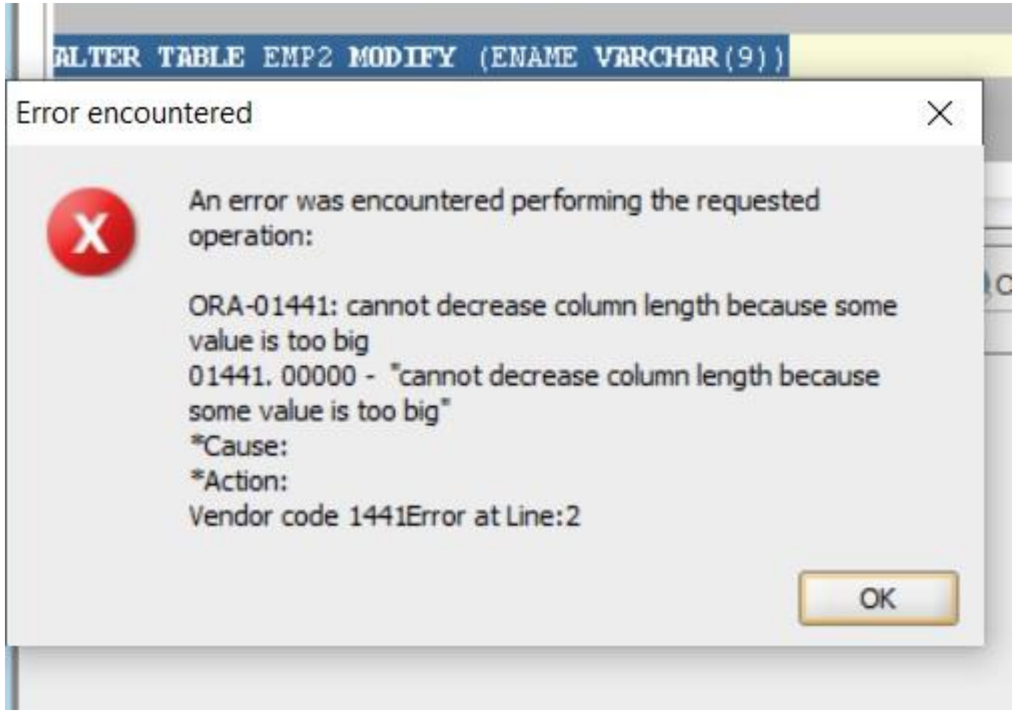
```
ALTER TABLE EMP2 MODIFY (ENAME VARCHAR(9))
DESC EMP2
```

```
DESC EMP2
Name                           Null     Type
------------------------------ -------- -------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(9)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```



```
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(10)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```

DECREASE SIZE



```
ALTER TABLE EMP2 MODIFY (ENAME VARCHAR(9))
```

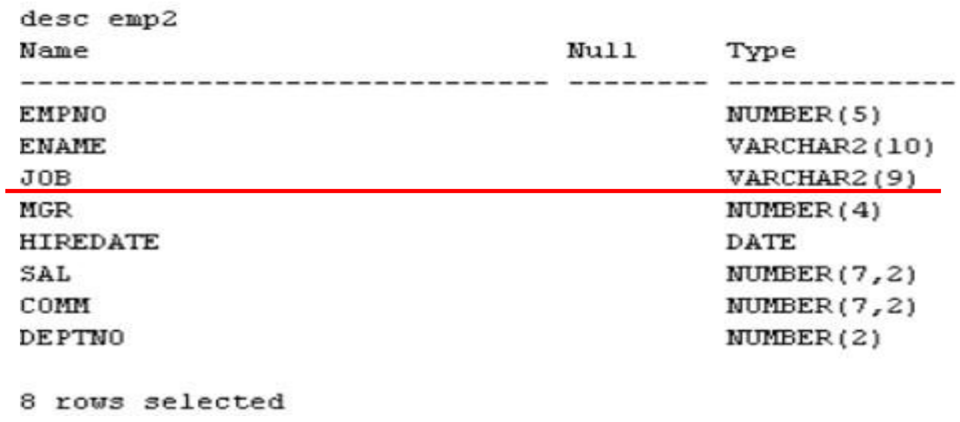
Error encountered

An error was encountered performing the requested operation:

ORA-01441: cannot decrease column length because some value is too big
01441. 00000 - "cannot decrease column length because some value is too big"
*Cause:
*Action:
Vendor code 1441Error at Line:2

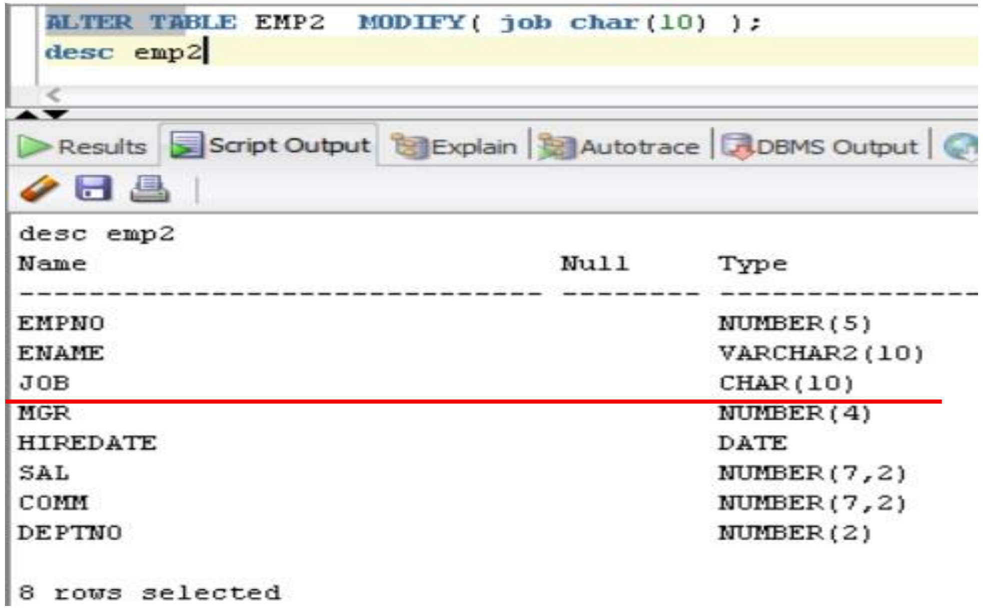
CHANGING COLUMN DATATYPE (VARCHAR to CHAR)

POSSIBLE CASES



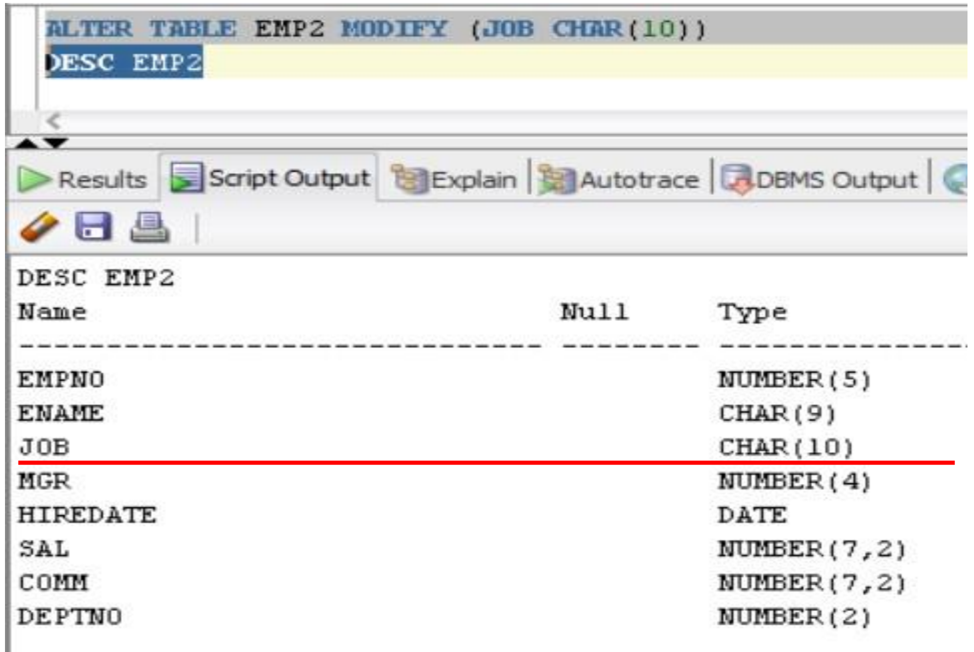
```
desc emp2
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     VARCHAR2(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

SIZE INCRESE



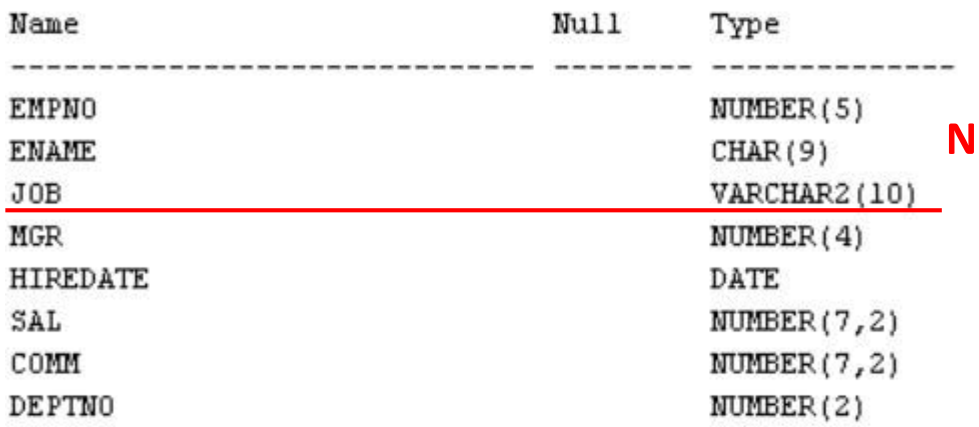
```
ALTER TABLE EMP2  MODIFY( job char(10) );
desc emp2
```

```
desc emp2
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(5)
ENAME                                   VARCHAR2(10)
JOB                                     CHAR(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```



```
ALTER TABLE EMP2 MODIFY (JOB CHAR(10))
DESC EMP2
```

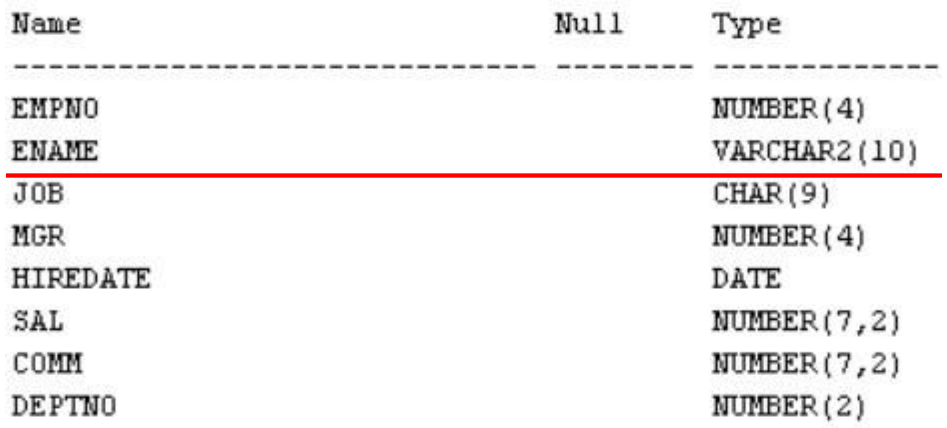
```
DESC EMP2
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(9)
JOB                                     CHAR(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```



```
Name                           Null     Type
------------------------------ -------- -------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(9)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```

NO CHANGE IN SIZE

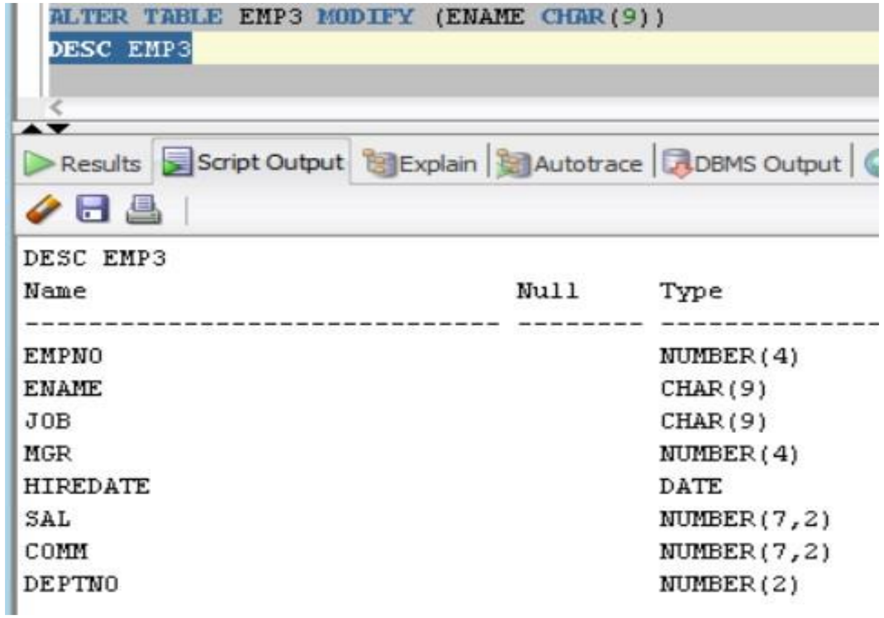
IF THE TABLE IS POPULATED



```
Name                           Null     Type
------------------------------ -------- ------------
EMPNO                                   NUMBER(4)
ENAME                                   VARCHAR2(10)
JOB                                     CHAR(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```

SIZE DESCREASE

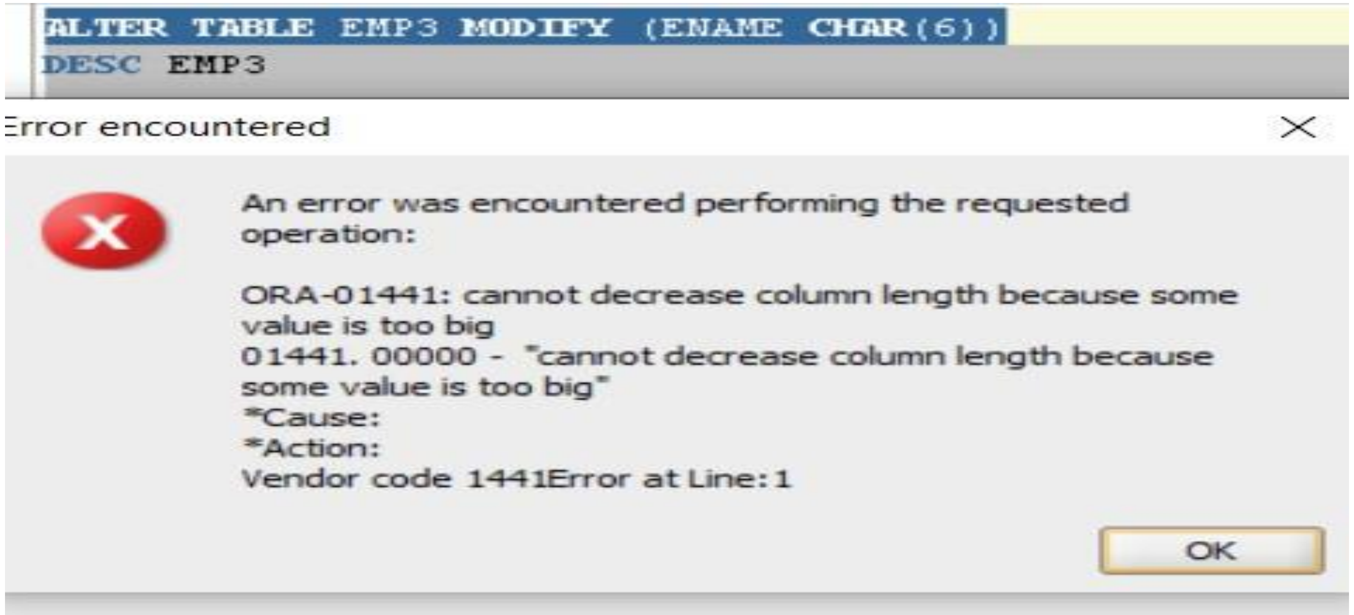
POSSIBLE CASE



```
ALTER TABLE EMP3 MODIFY (ENAME CHAR(9))
DESC EMP3
```

```
DESC EMP3
Name                           Null     Type
------------------------------ -------- -------------
EMPNO                                   NUMBER(4)
ENAME                                   CHAR(9)
JOB                                     CHAR(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```

NOT POSSIBLE



```
ALTER TABLE EMP3 MODIFY (ENAME CHAR(6))
DESC EMP3
```

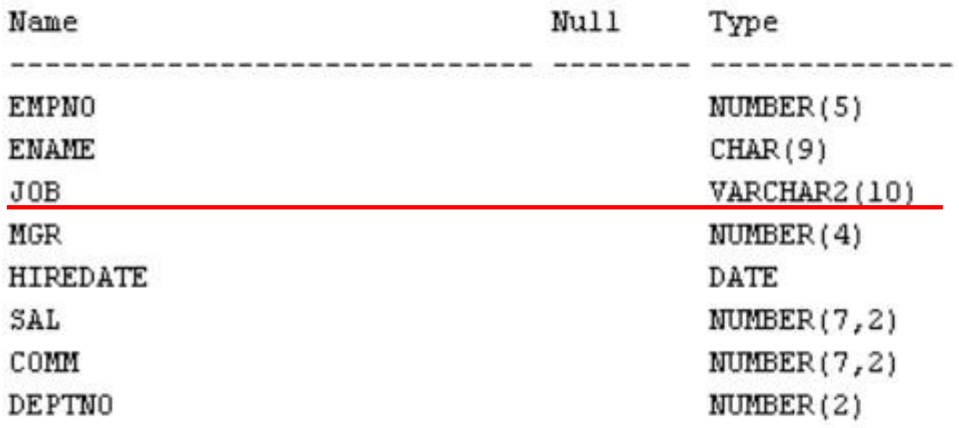
Error encountered

An error was encountered performing the requested operation:

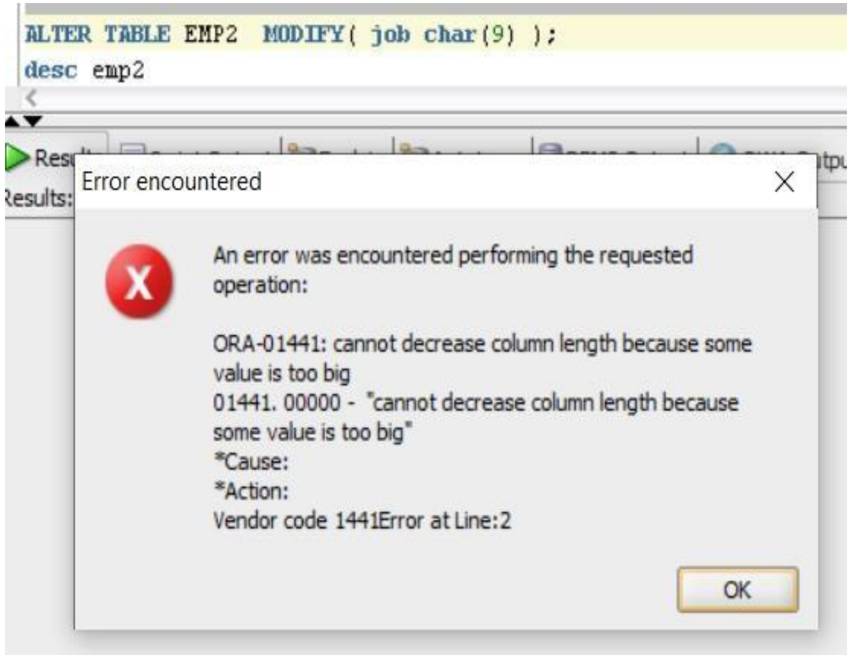
```
ORA-01441: cannot decrease column length because some value is too big
01441. 00000 -  "cannot decrease column length because some value is too big"
*Cause:
*Action:
Vendor code 1441Error at Line:1
```

IF THE TABLE IS POPULATED

NOT POSSIBLE



```
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(9)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)
```



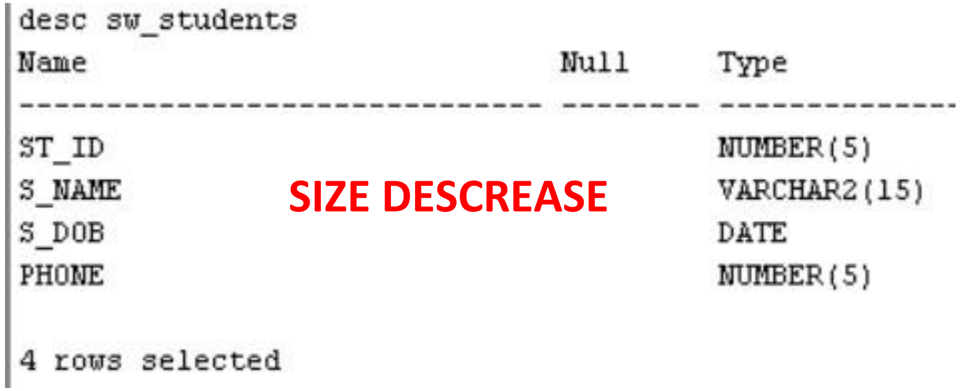
```
ALTER TABLE EMP2  MODIFY( job char(9) );
desc emp2
```

Error encountered

An error was encountered performing the requested operation:

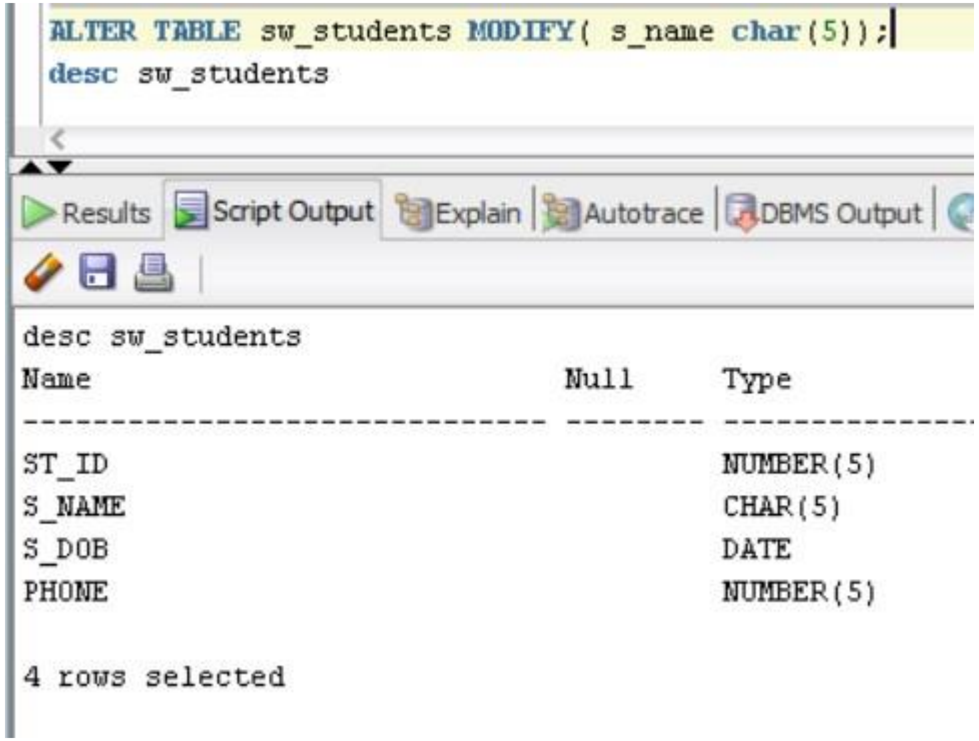
ORA-01441: cannot decrease column length because some value is too big
01441. 00000 - "cannot decrease column length because some value is too big"
*Cause:
*Action:
Vendor code 1441Error at Line:2

IF THE TABLE IS POPULATED



```
desc sw_students
Name                           Null     Type
------------------------------ -------- --------------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(15)
S_DOB                                   DATE
PHONE                                   NUMBER(5)

4 rows selected
```

SIZE DESCREASE

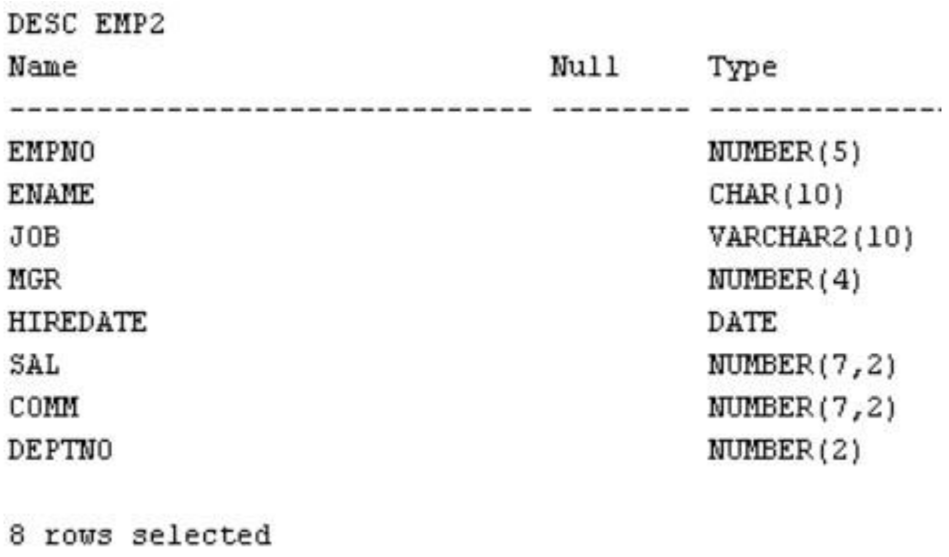


```
ALTER TABLE sw_students MODIFY( s_name char(5));
desc sw_students
```

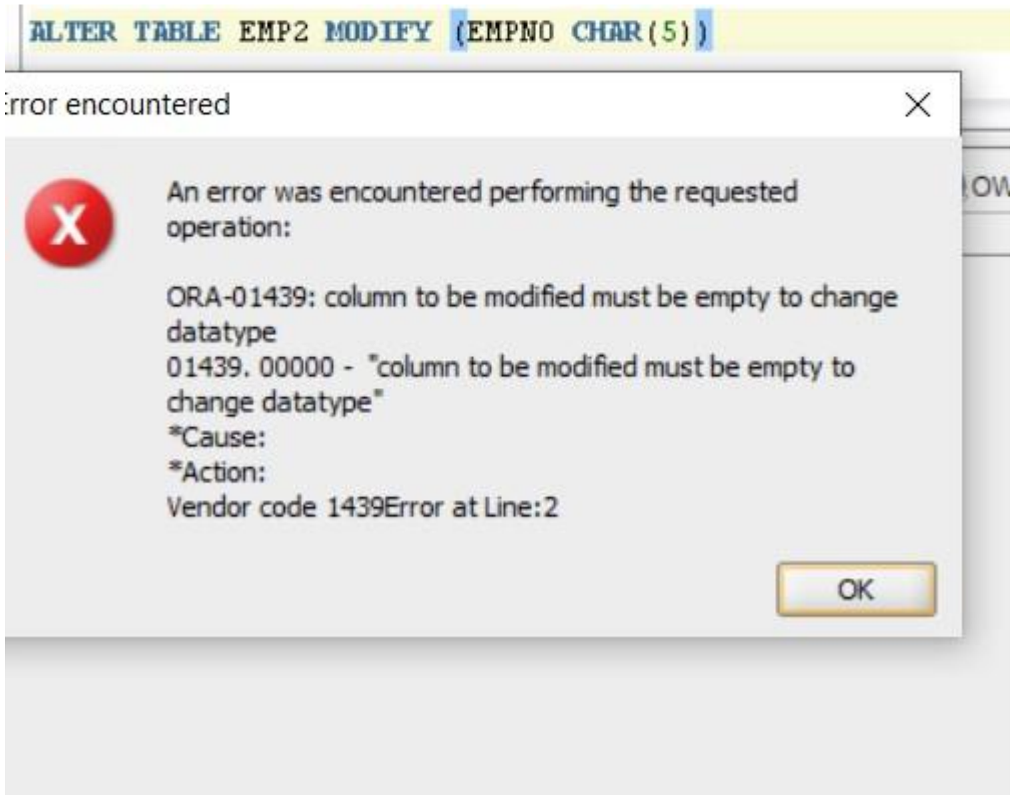
```
desc sw_students
Name                           Null     Type
------------------------------ -------- --------------
ST_ID                                   NUMBER(5)
S_NAME                                  CHAR(5)
S_DOB                                   DATE
PHONE                                   NUMBER(5)

4 rows selected
```

IF THE TABLE IS NOT POPULATED

NUMBER TO CHARACTER (POPULATED COLUMN)



```
DESC EMP2
Name                           Null     Type
------------------------------ -------- -------------
EMPNO                                   NUMBER(5)
ENAME                                   CHAR(10)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```



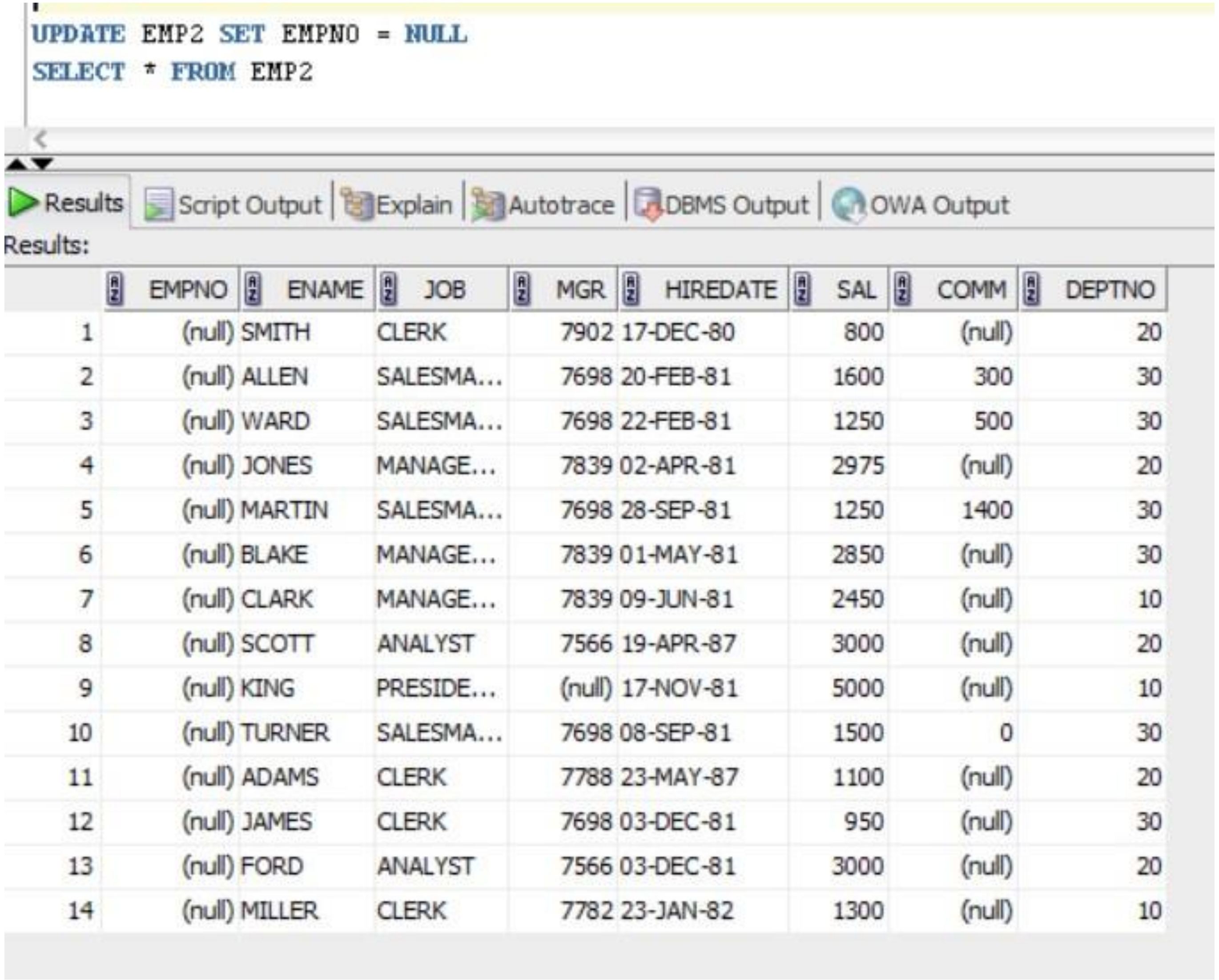
```
ALTER TABLE EMP2 MODIFY (EMPNO CHAR(5))
```

rror encountered

An error was encountered performing the requested operation:

ORA-01439: column to be modified must be empty to change datatype
01439. 00000 - "column to be modified must be empty to change datatype"
*Cause:
*Action:
Vendor code 1439Error at Line:2

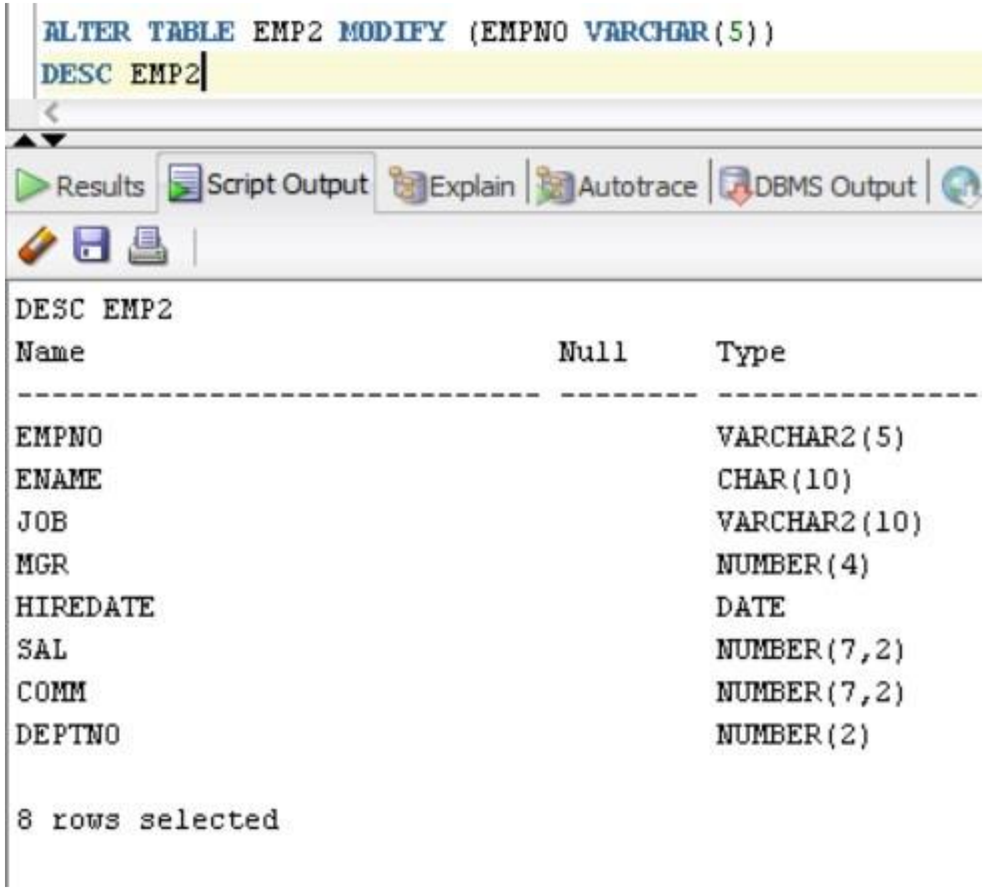
NUMBER TO CHAR/VARCHAR (EMPTY COLUMN)



```
UPDATE EMP2 SET EMPNO = NULL
SELECT * FROM EMP2
```

Results:

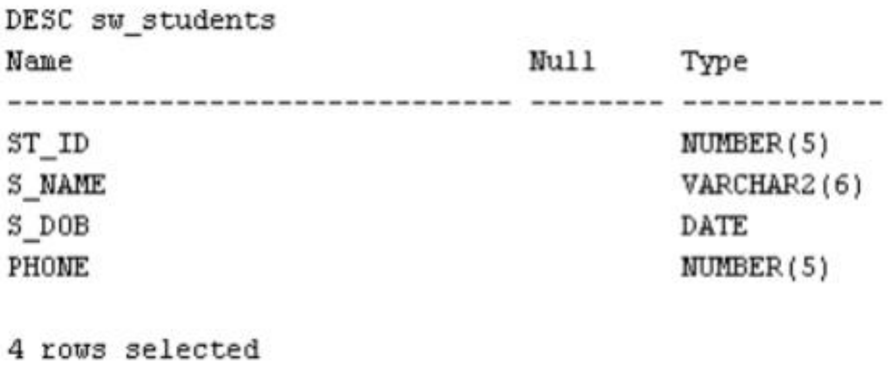
	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	(null)	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	(null)	ALLEN	SALESMA...	7698	20-FEB-81	1600	300	30
3	(null)	WARD	SALESMA...	7698	22-FEB-81	1250	500	30
4	(null)	JONES	MANAGE...	7839	02-APR-81	2975	(null)	20
5	(null)	MARTIN	SALESMA...	7698	28-SEP-81	1250	1400	30
6	(null)	BLAKE	MANAGE...	7839	01-MAY-81	2850	(null)	30
7	(null)	CLARK	MANAGE...	7839	09-JUN-81	2450	(null)	10
8	(null)	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	(null)	KING	PRESIDE...	(null)	17-NOV-81	5000	(null)	10
10	(null)	TURNER	SALESMA...	7698	08-SEP-81	1500	0	30
11	(null)	ADAMS	CLERK	7788	23-MAY-87	1100	(null)	20
12	(null)	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
13	(null)	FORD	ANALYST	7566	03-DEC-81	3000	(null)	20
14	(null)	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10



```
ALTER TABLE EMP2 MODIFY (EMPNO VARCHAR(5))
DESC EMP2
```

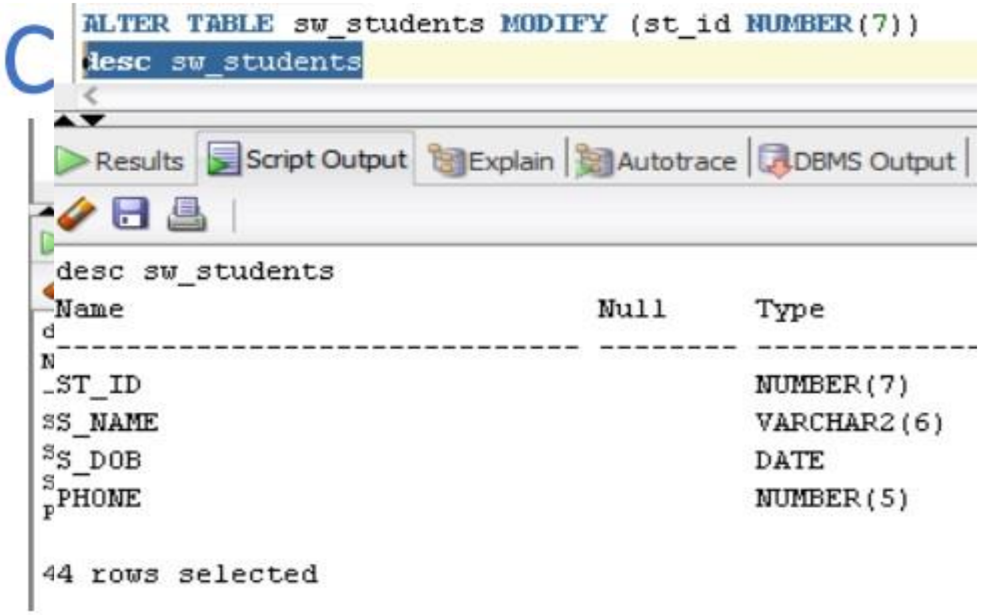
```
DESC EMP2
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                                   VARCHAR2(5)
ENAME                                   CHAR(10)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

UN POPULATED TABLE / C



```
DESC sw_students
Name                           Null     Type
------------------------------ -------- -----------
ST_ID                                   NUMBER(5)
S_NAME                                  VARCHAR2(6)
S_DOB                                   DATE
PHONE                                   NUMBER(5)

4 rows selected
```

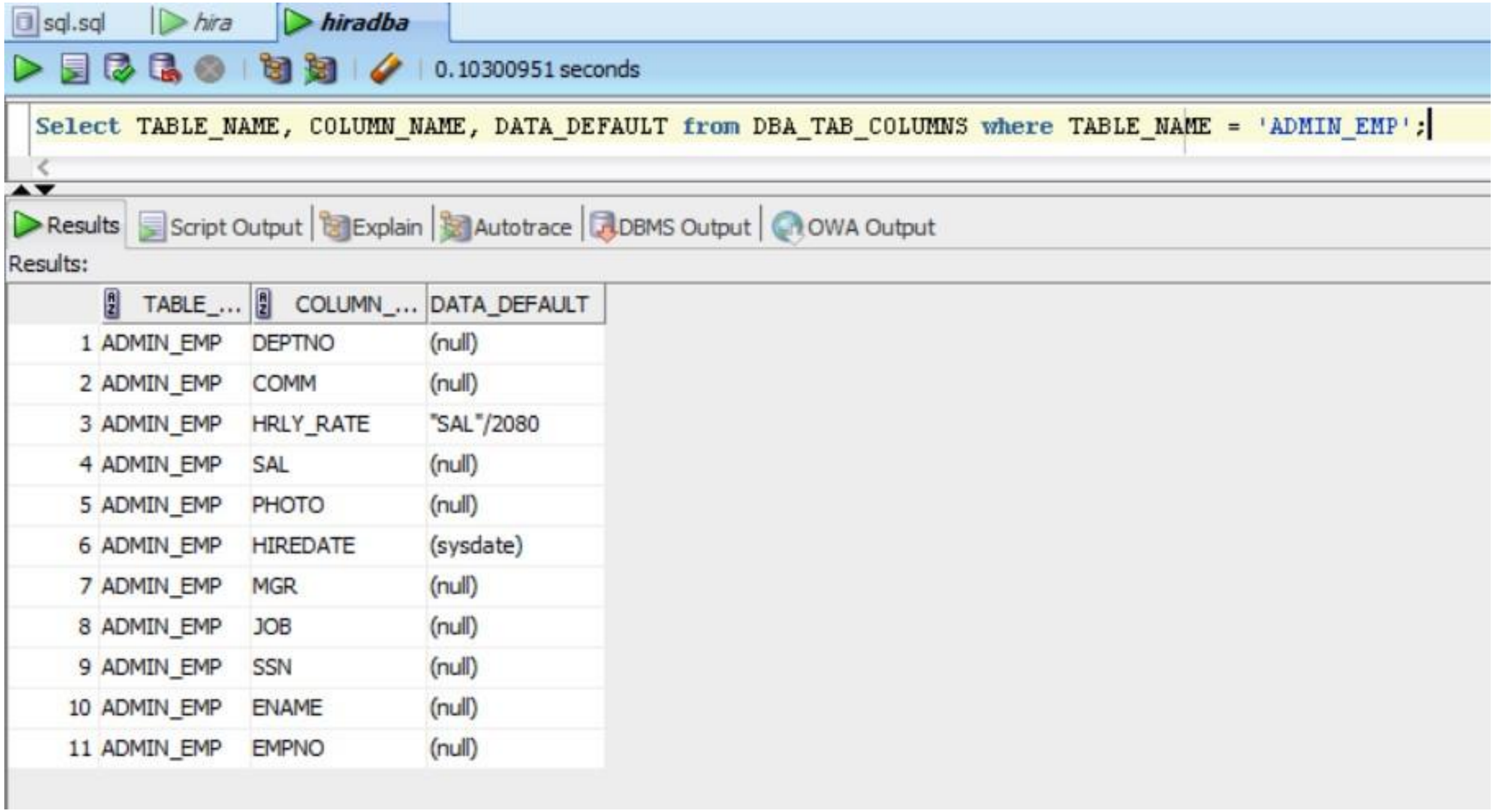
NUMBER TO CHAR



```
ALTER TABLE sw_students MODIFY (st_id NUMBER(7))
desc sw_students
```

```
desc sw_students
Name                           Null     Type
------------------------------ -------- ------------
ST_ID                                   NUMBER(7)
S_NAME                                  VARCHAR2(6)
S_DOB                                   DATE
PHONE                                   NUMBER(5)

44 rows selected
```

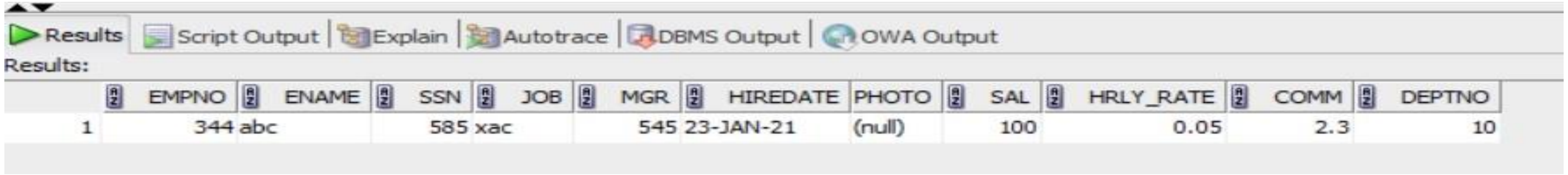
CHANGING DEFAULT VALUES



```
Select TABLE_NAME, COLUMN_NAME, DATA_DEFAULT from DBA_TAB_COLUMNS where TABLE_NAME = 'ADMIN_EMP';
```

Results:

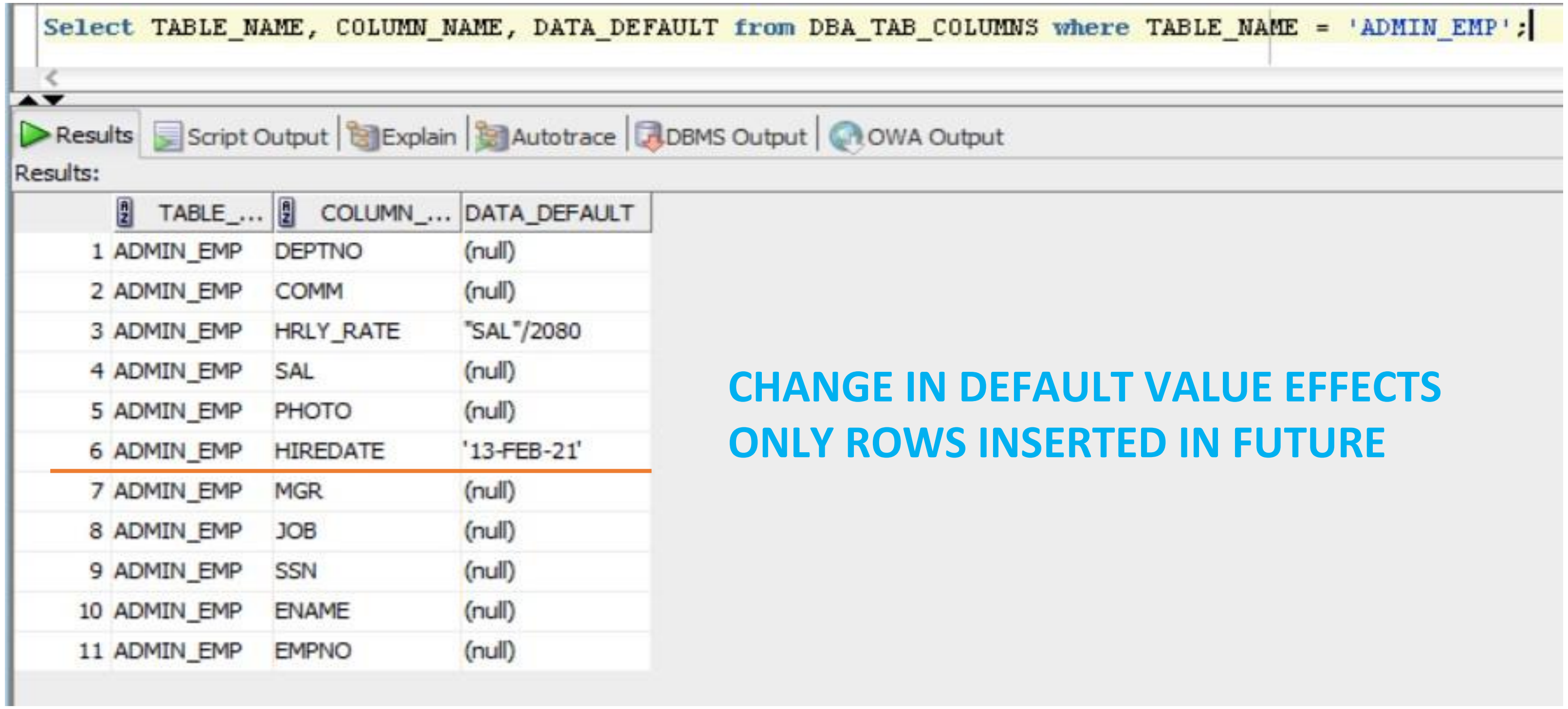
	TABLE_...	COLUMN_...	DATA_DEFAULT
1	ADMIN_EMP	DEPTNO	(null)
2	ADMIN_EMP	COMM	(null)
3	ADMIN_EMP	HRLY_RATE	"SAL"/2080
4	ADMIN_EMP	SAL	(null)
5	ADMIN_EMP	PHOTO	(null)
6	ADMIN_EMP	HIREDATE	(sysdate)
7	ADMIN_EMP	MGR	(null)
8	ADMIN_EMP	JOB	(null)
9	ADMIN_EMP	SSN	(null)
10	ADMIN_EMP	ENAME	(null)
11	ADMIN_EMP	EMPNO	(null)



Results:

	EMPNO	ENAME	SSN	JOB	MGR	HIREDATE	PHOTO	SAL	HRLY_RATE	COMM	DEPTNO
1	344	abc	585	xac	545	23-JAN-21	(null)	100	0.05	2.3	10

ALTER TABLE admin_emp MODIFY (hiredate DEFAULT '13-FEB-21');

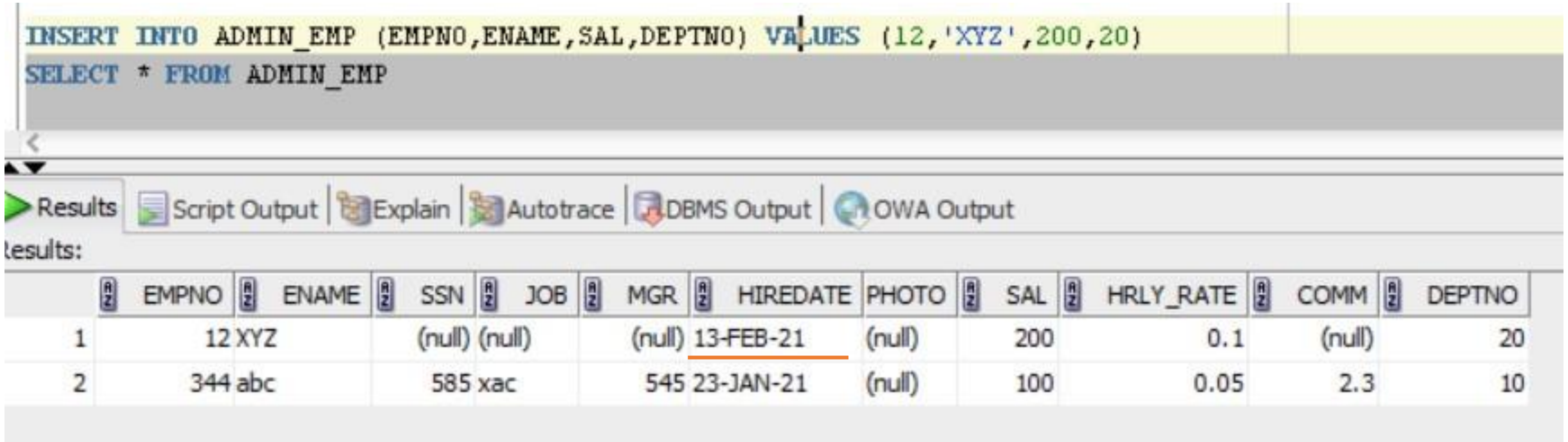


```
Select TABLE_NAME, COLUMN_NAME, DATA_DEFAULT from DBA_TAB_COLUMNS where TABLE_NAME = 'ADMIN_EMP';
```

Results:

	TABLE_...	COLUMN_...	DATA_DEFAULT
1	ADMIN_EMP	DEPTNO	(null)
2	ADMIN_EMP	COMM	(null)
3	ADMIN_EMP	HRLY_RATE	"SAL"/2080
4	ADMIN_EMP	SAL	(null)
5	ADMIN_EMP	PHOTO	(null)
6	ADMIN_EMP	HIREDATE	'13-FEB-21'
7	ADMIN_EMP	MGR	(null)
8	ADMIN_EMP	JOB	(null)
9	ADMIN_EMP	SSN	(null)
10	ADMIN_EMP	ENAME	(null)
11	ADMIN_EMP	EMPNO	(null)

CHANGE IN DEFAULT VALUE EFFECTS
ONLY ROWS INSERTED IN FUTURE



```
INSERT INTO ADMIN_EMP (EMPNO,ENAME,SAL,DEPTNO) VALUES (12,'XYZ',200,20)
SELECT * FROM ADMIN_EMP
```

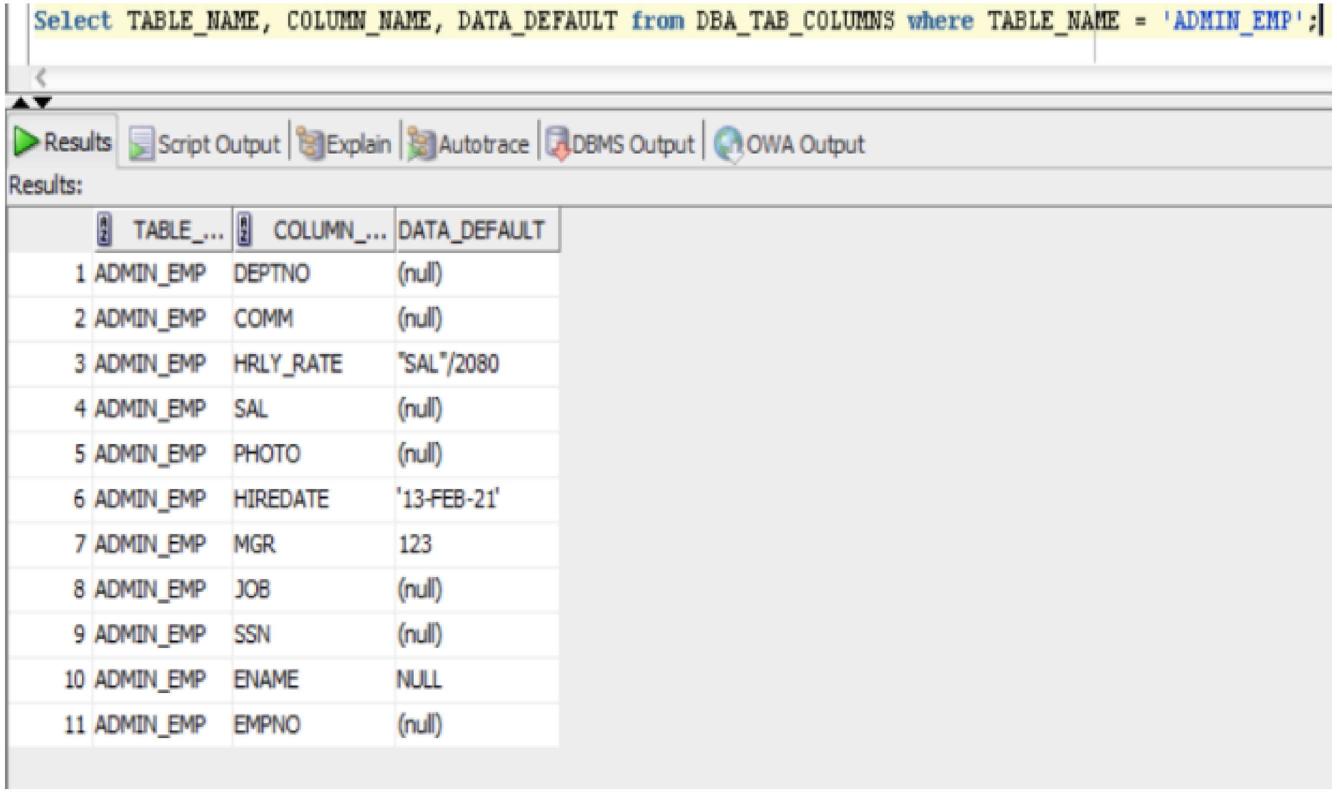
Results:

	EMPNO	ENAME	SSN	JOB	MGR	HIREDATE	PHOTO	SAL	HRLY_RATE	COMM	DEPTNO
1	12	XYZ	(null)	(null)	(null)	13-FEB-21	(null)	200	0.1	(null)	20
2	344	abc	585	xac	545	23-JAN-21	(null)	100	0.05	2.3	10

ADDING A DEFAULT VALUE THROUGH MODIFY

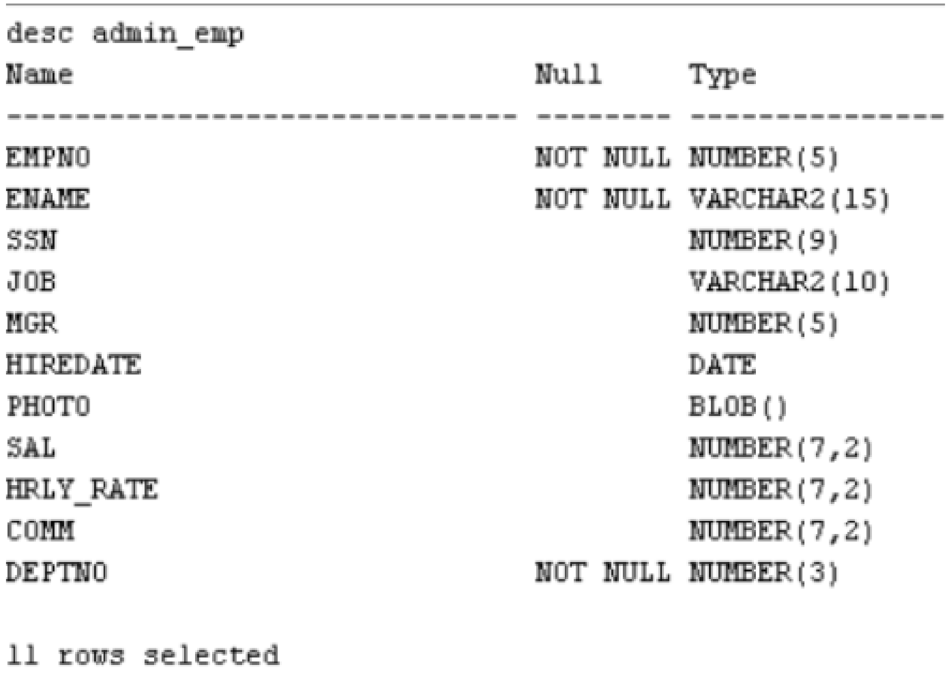
CREATE TABLE admin_emp (empno NUMBER(5) PRIMARY KEY, ename VARCHAR2(15) NOT NULL, ssn NUMBER(9), job VARCHAR2(10), mgr NUMBER(5), hiredate DATE DEFAULT (sysdate), photo BLOB, sal NUMBER(7,2), hrly_rate NUMBER(7,2) GENERATED ALWAYS AS (sal/2080), comm NUMBER(7,2), deptno NUMBER(3) NOT NULL) ;

ALTER TABLE admin_emp MODIFY (mgr DEFAULT 123)



```
Select TABLE_NAME, COLUMN_NAME, DATA_DEFAULT from DBA_TAB_COLUMNS where TABLE_NAME = 'ADMIN_EMP';
```

	TABLE_...	COLUMN_...	DATA_DEFAULT
1	ADMIN_EMP	DEPTNO	(null)
2	ADMIN_EMP	COMM	(null)
3	ADMIN_EMP	HRLY_RATE	"SAL"/2080
4	ADMIN_EMP	SAL	(null)
5	ADMIN_EMP	PHOTO	(null)
6	ADMIN_EMP	HIREDATE	'13-FEB-21'
7	ADMIN_EMP	MGR	123
8	ADMIN_EMP	JOB	(null)
9	ADMIN_EMP	SSN	(null)
10	ADMIN_EMP	ENAME	NULL
11	ADMIN_EMP	EMPNO	(null)



```
desc admin_emp
Name                           Null     Type
------------------------------ -------- --------------
EMPNO                          NOT NULL NUMBER(5)
ENAME                          NOT NULL VARCHAR2(15)
SSN                                     NUMBER(9)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(5)
HIREDATE                                DATE
PHOTO                                   BLOB()
SAL                                     NUMBER(7,2)
HRLY_RATE                               NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                         NOT NULL NUMBER(3)

11 rows selected
```

DELETING AN EXISTING COLUMN

- Used for deleting columns from a table.
- Last column of the table can not be deleted.
- Two kinds of delete operations are allowed:

1. Logical Delete / Soft Delete : You can mark a column as unused (logical delete).
2. Physical Delete/ Hard Delete: Delete column completely (physical delete).

LOGICAL DELETE:

- On large tables the process of physically removing a column can be very time and resource consuming. For this reason, it is useful to logically delete it.

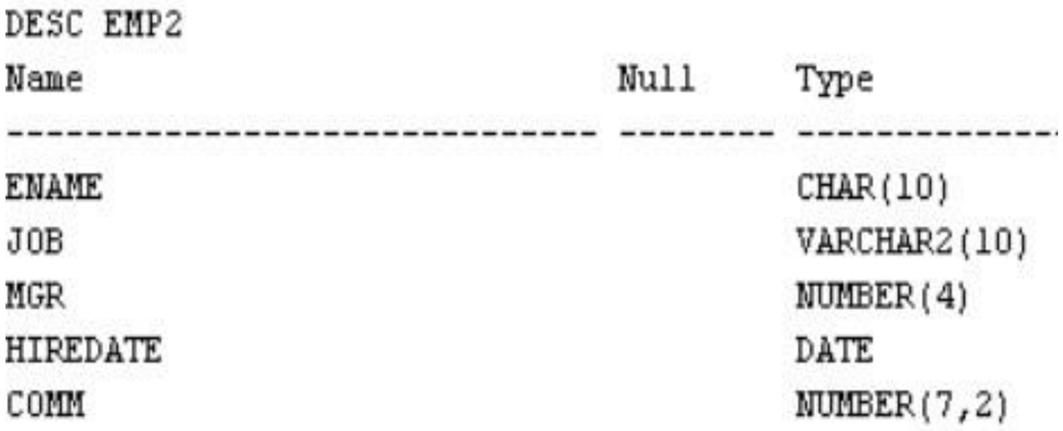
SYNTAX:

ALTER TABLE table_name SET UNUSED (column_name);   **SINGLE COLUMN** ALTER TABLE
table_name SET UNUSED (column_name1, column_name2); **MULTIPLE COLUMN**

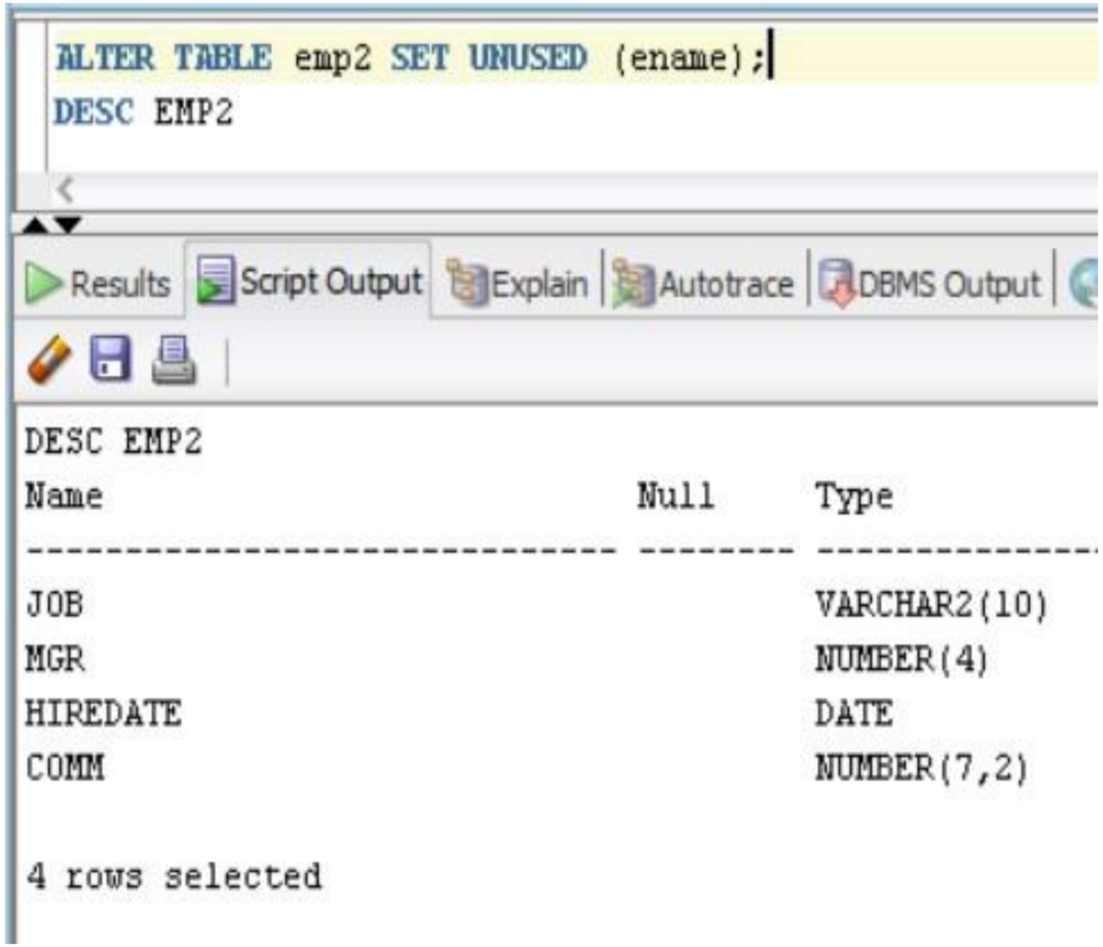
- Once this is done the columns will no longer be visible to the user.
- If at a later date you have time to physically delete the columns this can be done using the following:

SYNTAX:

ALTER TABLE table_name DROP UNUSED columns ;



```
DESC EMP2
Name                           Null     Type
------------------------------ -------- -------------
ENAME                                   CHAR(10)
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
COMM                                    NUMBER(7,2)
```



```
ALTER TABLE emp2 SET UNUSED (ename);
DESC EMP2
```

```
DESC EMP2
Name                           Null     Type
------------------------------ -------- -------------
JOB                                     VARCHAR2(10)
MGR                                     NUMBER(4)
HIREDATE                                DATE
COMM                                    NUMBER(7,2)

4 rows selected
```

ASSIGNMENT

TASK: Find out how can one recover a column and its data once its logically deleted. Elaborate the procedure both theoretically as well as practically (using queries).

RULES:

1. Make a new table and name it as **SW19**_yourrollnumber e.g., 24BASI_01.
2. Create the above table using the description of emp table i.e. make a copy of emp table but name it as described in Rule no 1.
3. Provide screenshots of executed queries with the outputs.
4. Document the queries in the exact sequence in which you executed them to perform the task.

SUBMISSION THROUGH MS FORMS

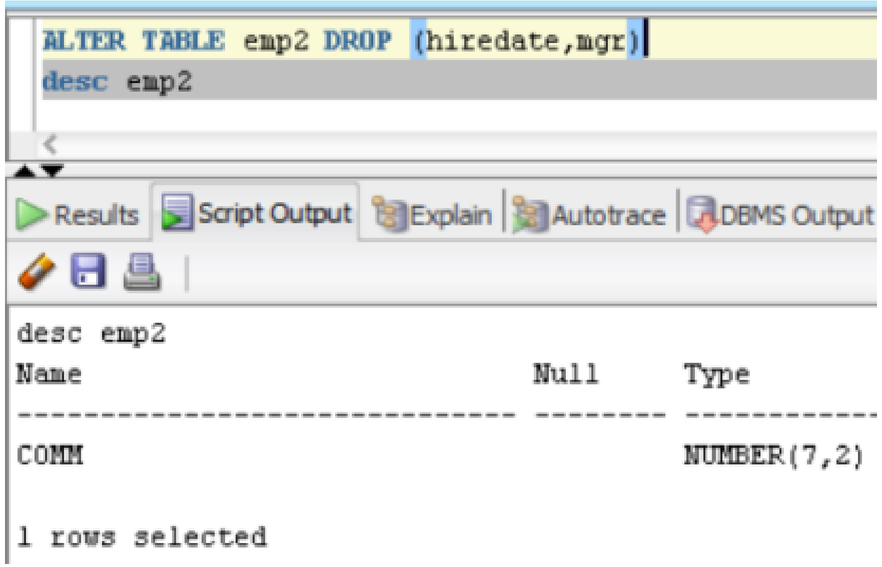
PHYSICAL DELETE

SYNTAX:

ALTER TABLE table-name DROP COLUMN column_name ; **SINGLE COLUMN**

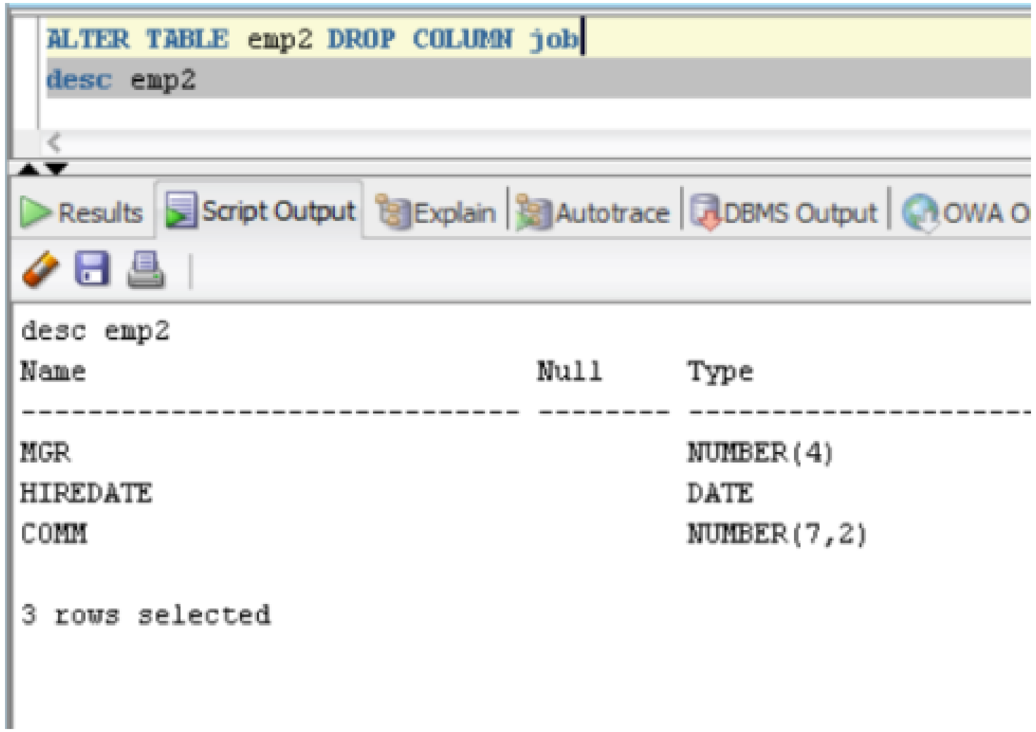
ALTER TABLE table-name DROP (col1,col2,col3); **MULTIPLE COLUMNS**

- Dropping a column from a table will cause all unused columns in that table to be dropped at the same time



```
ALTER TABLE emp2 DROP (hiredate,mgr)
desc emp2
```

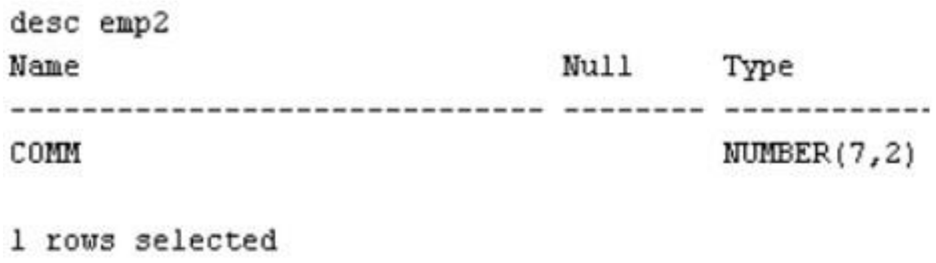
```
desc emp2
Name                           Null     Type
------------------------------ -------- -----------
COMM                                    NUMBER(7,2)

1 rows selected
```



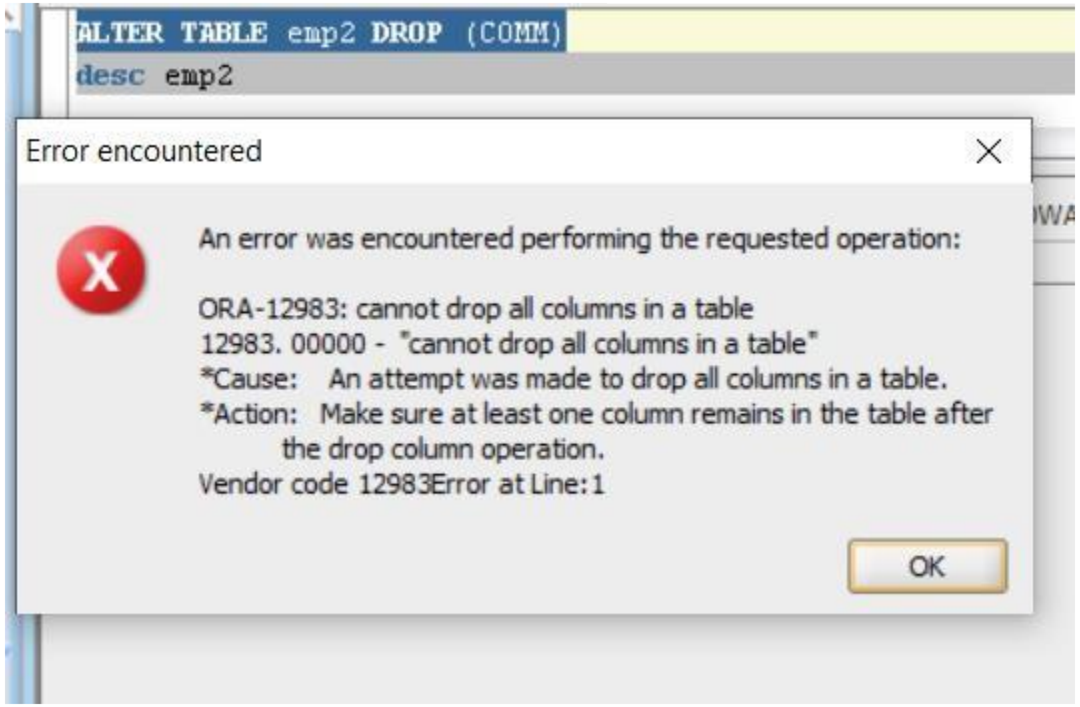
```
ALTER TABLE emp2 DROP COLUMN job
desc emp2
```

```
desc emp2
Name                           Null     Type
------------------------------ -------- --------------------
MGR                                     NUMBER(4)
HIREDATE                                DATE
COMM                                    NUMBER(7,2)

3 rows selected
```

DELETING LAST COLUMN OF THE TABLE



```
desc emp2
Name                           Null     Type
------------------------------ -------- ------------
COMM                                    NUMBER(7,2)

1 rows selected
```

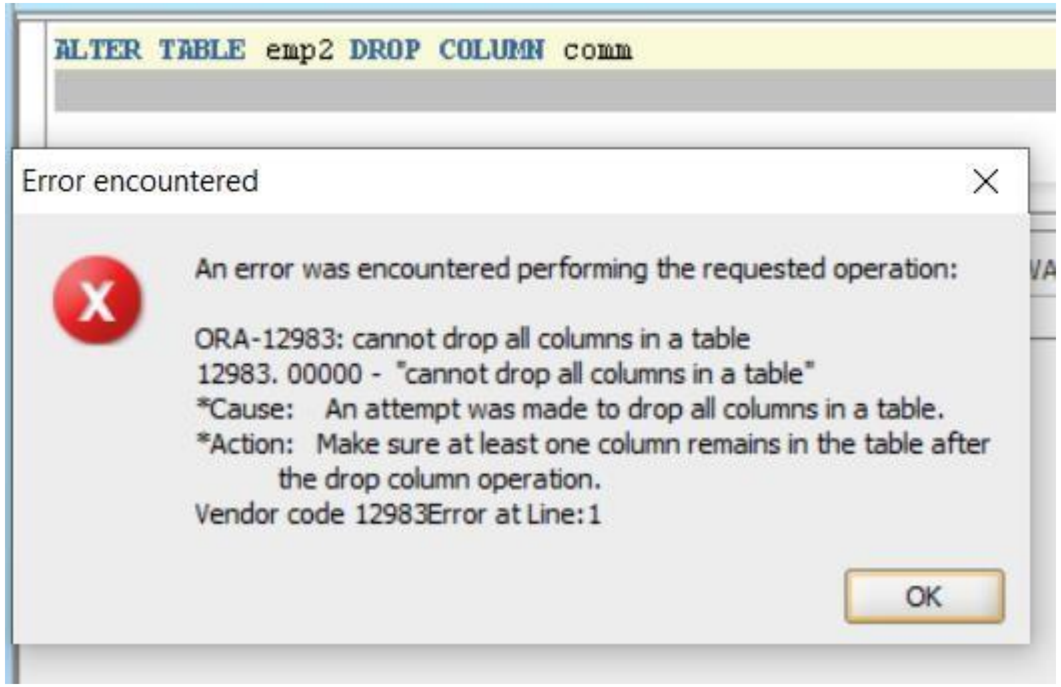


```
ALTER TABLE emp2 DROP (COMM)
desc emp2
```

Error encountered

An error was encountered performing the requested operation:

ORA-12983: cannot drop all columns in a table
12983. 00000 - "cannot drop all columns in a table"
*Cause: An attempt was made to drop all columns in a table.
*Action: Make sure at least one column remains in the table after
the drop column operation.
Vendor code 12983Error at Line:1



```
ALTER TABLE emp2 DROP COLUMN comm
```

Error encountered

An error was encountered performing the requested operation:

ORA-12983: cannot drop all columns in a table
12983. 00000 - "cannot drop all columns in a table"
*Cause: An attempt was made to drop all columns in a table.
*Action: Make sure at least one column remains in the table after
the drop column operation.
Vendor code 12983Error at Line:1

Last column of the table cannot be deleted

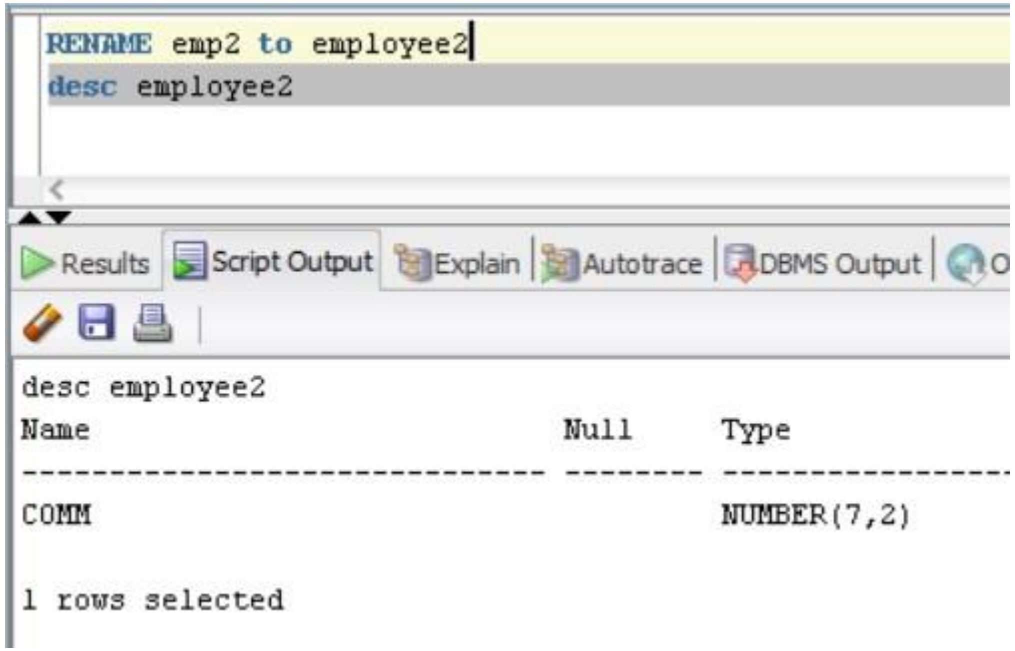
RENAMING A TABLE / COLUMN

1. Through RENAME command 2.

 Through ALTER TABLE command

SYNTAX:

RENAME old_table _name TO new_table_name



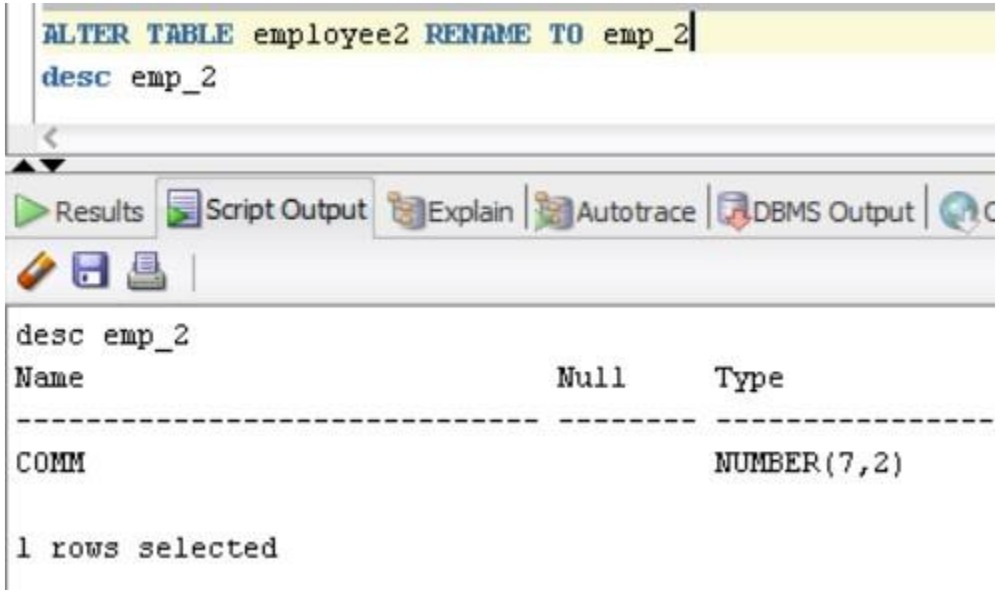
```
RENAME emp2 to employee2
desc employee2
```

```
desc employee2
Name                           Null     Type
------------------------------ -------- ----------------
COMM                                    NUMBER(7,2)

1 rows selected
```

SYNTAX:

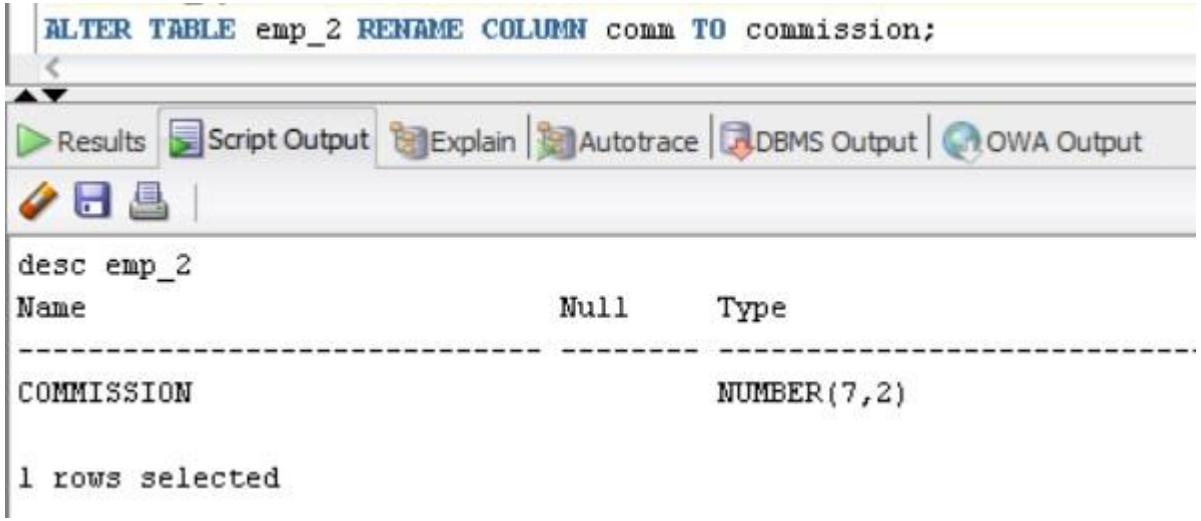
ALTER TABLE table_name **RENAME TO** new_table_name ;

ALTER TABLE table_name **RENAME COLUMN** old_name **TO** new_name ;



```
ALTER TABLE employee2 RENAME TO emp_2
desc emp_2
```

```
desc emp_2
Name                             Null     Type
-------------------------------- -------- ----------------
COMM                                      NUMBER(7,2)

1 rows selected
```



```
ALTER TABLE emp_2 RENAME COLUMN comm TO commission;
```

```
desc emp_2
Name                             Null     Type
-------------------------------- -------- ----------------------------
COMMISSION                                NUMBER(7,2)

1 rows selected
```

TRUNCATE COMMAND

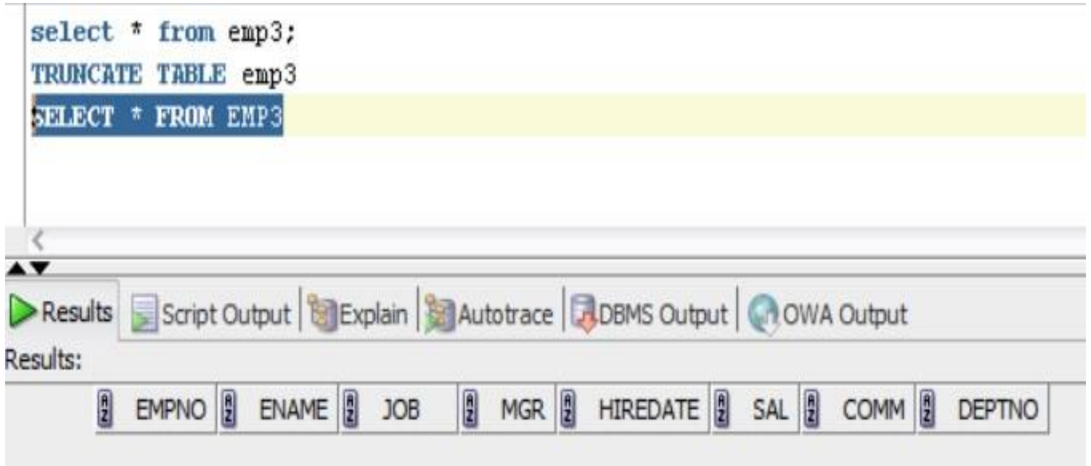
- Use the TRUNCATE TABLE statement to remove all rows from a table.
- Truncate only deletes rows & space occupied by rows. Structure of the table remains intact.
- After execution of the truncate command, if a DESC command is issued for the table then it shows the structure of the table.
- You cannot roll back a TRUNCATE TABLE statement, nor can you use a FLASHBACK TABLE statement to retrieve the contents of a table that has been truncated.
- Removing rows with the TRUNCATE TABLE statement can be more efficient than dropping and re-creating a table. Dropping and re-creating a table invalidates dependent objects of the table, requires you to regrant object privileges on the table, and requires you to re-create the indexes, integrity constraints, and triggers on the table. Truncating has none of these effects.
- Removing rows with the TRUNCATE TABLE statement can be faster than removing all rows with the DELETE statement, especially if the table has numerous triggers, indexes, and other dependencies.
- **You cannot truncate the parent table of an enabled foreign key constraint. You must disable the constraint before truncating the table. An exception is that you can truncate the table if the integrity constraint is self-referential.**

SYNTAX:

TRUNCATE TABLE table _ name ;

EXAMPLE:

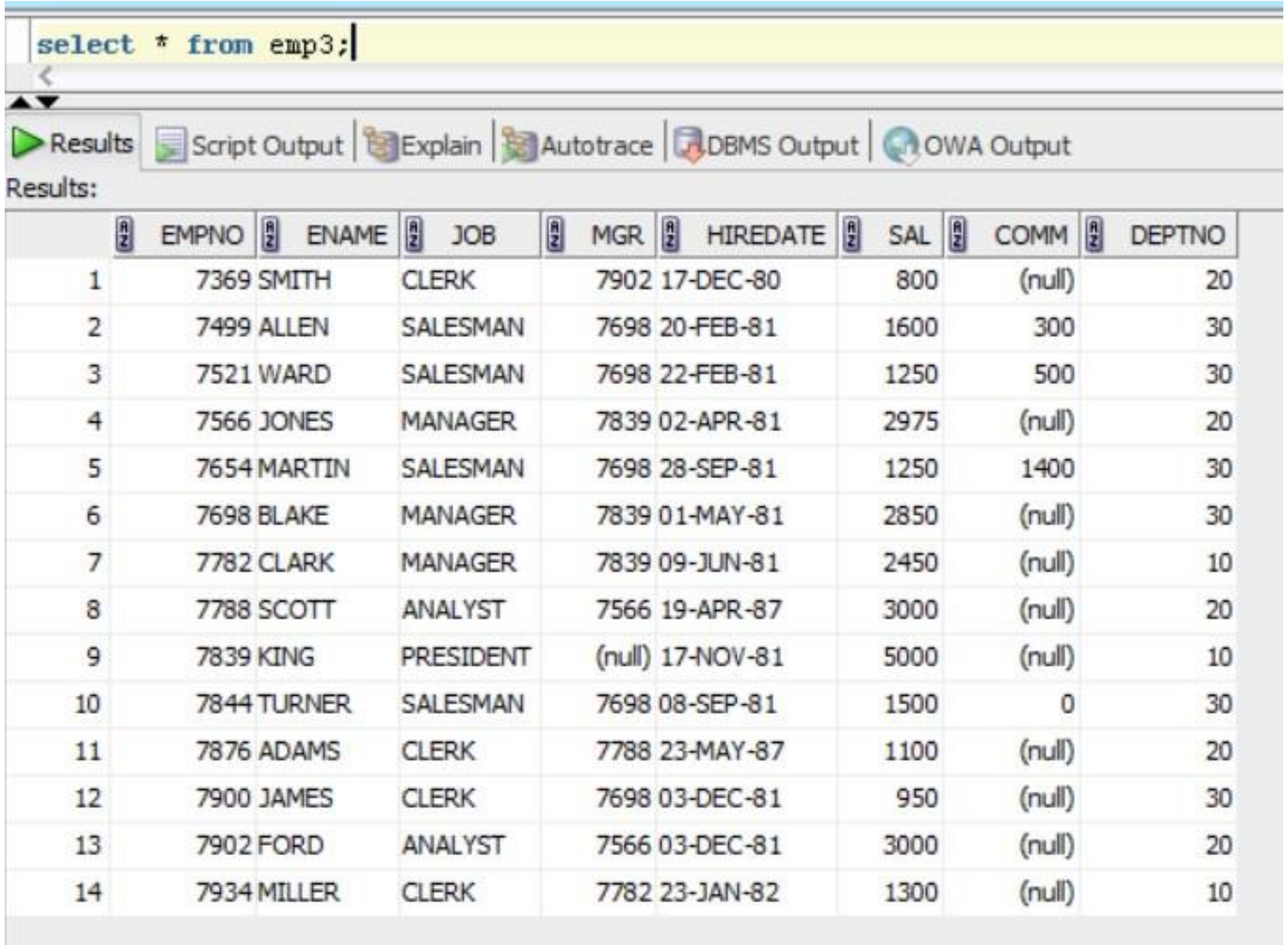
TRUNCATE TABLE emp3 ;



```
select * from emp3;
TRUNCATE TABLE emp3
SELECT * FROM EMP3
```

Results:

EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO

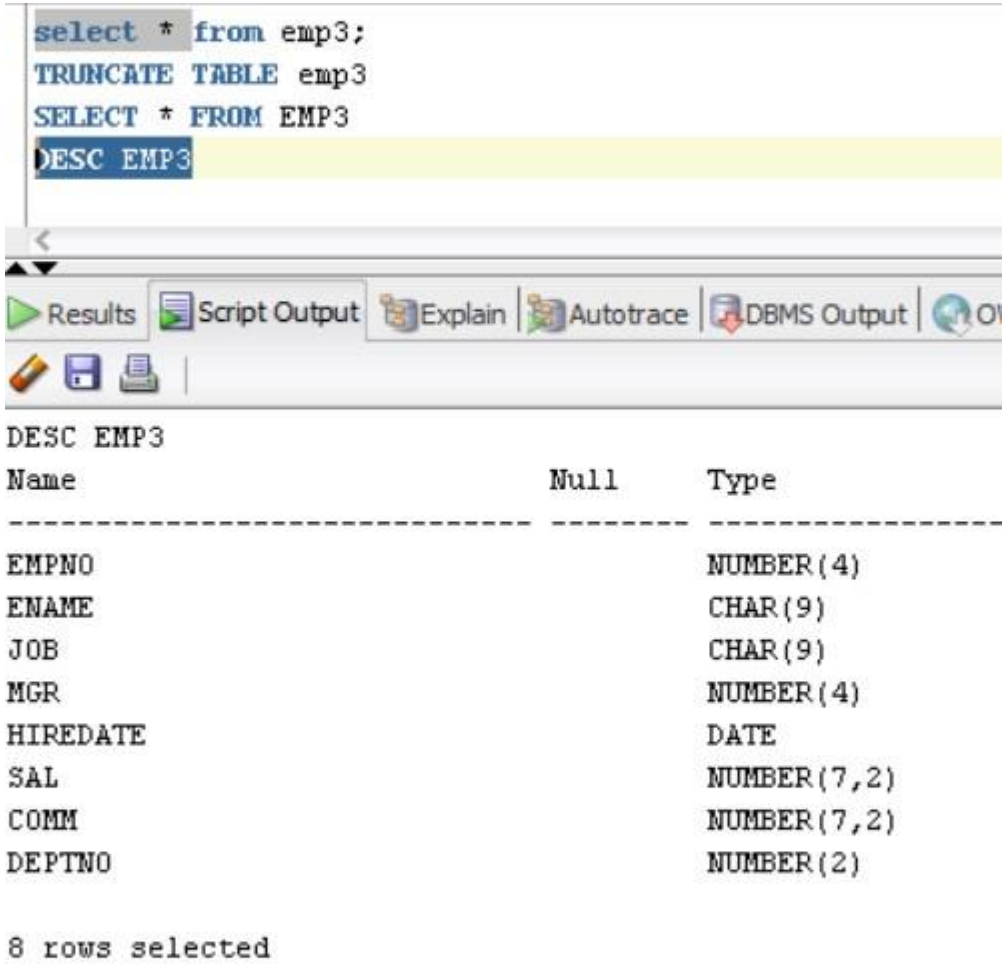


```
select * from emp3;
```

Results:

	EMPNO	ENAME	JOB	MGR	HIREDATE	SAL	COMM	DEPTNO
1	7369	SMITH	CLERK	7902	17-DEC-80	800	(null)	20
2	7499	ALLEN	SALESMAN	7698	20-FEB-81	1600	300	30
3	7521	WARD	SALESMAN	7698	22-FEB-81	1250	500	30
4	7566	JONES	MANAGER	7839	02-APR-81	2975	(null)	20
5	7654	MARTIN	SALESMAN	7698	28-SEP-81	1250	1400	30
6	7698	BLAKE	MANAGER	7839	01-MAY-81	2850	(null)	30
7	7782	CLARK	MANAGER	7839	09-JUN-81	2450	(null)	10
8	7788	SCOTT	ANALYST	7566	19-APR-87	3000	(null)	20
9	7839	KING	PRESIDENT	(null)	17-NOV-81	5000	(null)	10
10	7844	TURNER	SALESMAN	7698	08-SEP-81	1500	0	30
11	7876	ADAMS	CLERK	7788	23-MAY-87	1100	(null)	20
12	7900	JAMES	CLERK	7698	03-DEC-81	950	(null)	30
13	7902	FORD	ANALYST	7566	03-DEC-81	3000	(null)	20
14	7934	MILLER	CLERK	7782	23-JAN-82	1300	(null)	10

STRUCTURE OF THE TABLE REMAINS INTACT



```
select * from emp3;
TRUNCATE TABLE emp3
SELECT * FROM EMP3
DESC EMP3
```

```
DESC EMP3
Name                           Null     Type
------------------------------ -------- -----------------
EMPNO                                   NUMBER(4)
ENAME                                   CHAR(9)
JOB                                     CHAR(9)
MGR                                     NUMBER(4)
HIREDATE                                DATE
SAL                                     NUMBER(7,2)
COMM                                    NUMBER(7,2)
DEPTNO                                  NUMBER(2)

8 rows selected
```

DROP COMMAND

- DROP TABLE is used to move a table to the recycle bin or to remove the table and all its data from the database entirely.
- Unless you specify the PURGE clause, the DROP TABLE does not result in space being released back to the tablespace for use by other objects, and the space continues to count toward the user's space quota.
- When you drop a table, the table is moved to the recycle bin.
- Dropping a table invalidates dependent objects and removes object privileges on the table. If you want to re-create the table, then you must regrant object privileges on the table, re-create the indexes, integrity constraints, and triggers for the table. Truncating has none of these effects.
- If DESC command is initiated after a DROP TABLE command, then it does not show the structure of the table.
- Specify PURGE if you want to drop the table and release the space associated with it in a single step. If you specify PURGE, then the database does not place the table and its dependent objects into the recycle bin.

When a drop table command is issued, oracle db does the following :

1. Drops all rows from the table.

2. Drops all table indexes, as well as any triggers defined on the table, regardless of who created them or whose schema contains them.

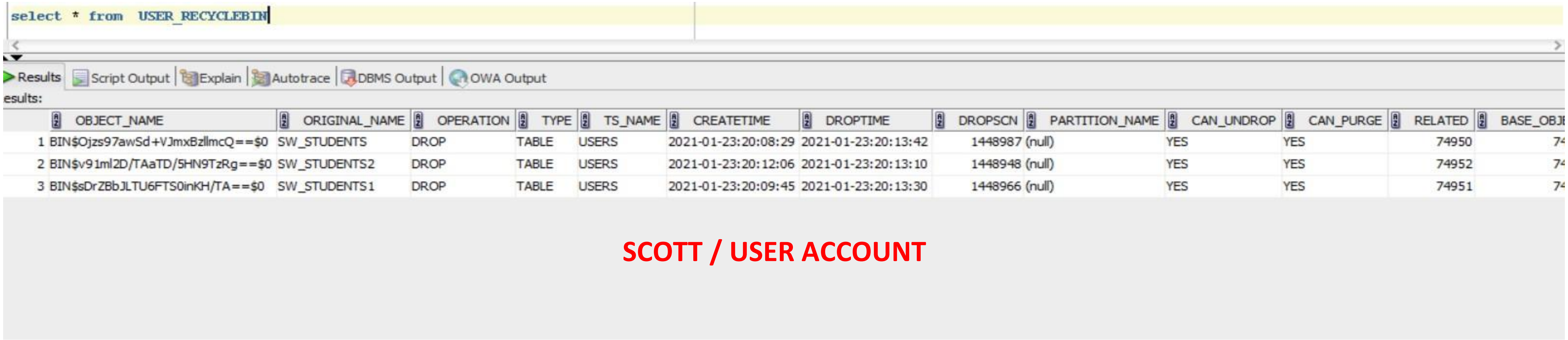
Note:

- Specify CASCADE CONSTRAINTS to drop all referential integrity constraints that refer to primary key in the dropped table. If you omit this clause, and such referential integrity constraints exist, then the database returns an error and does not drop the table.
- You cannot roll back a DROP TABLE statement with the PURGE clause, nor can you recover the table if you have dropped it with the PURGE clause.

SYNTAX:

DROP TABLE table_name [CASCADE CONSTRAINTS PURGE];

DROP   TABLE   sw_students ;

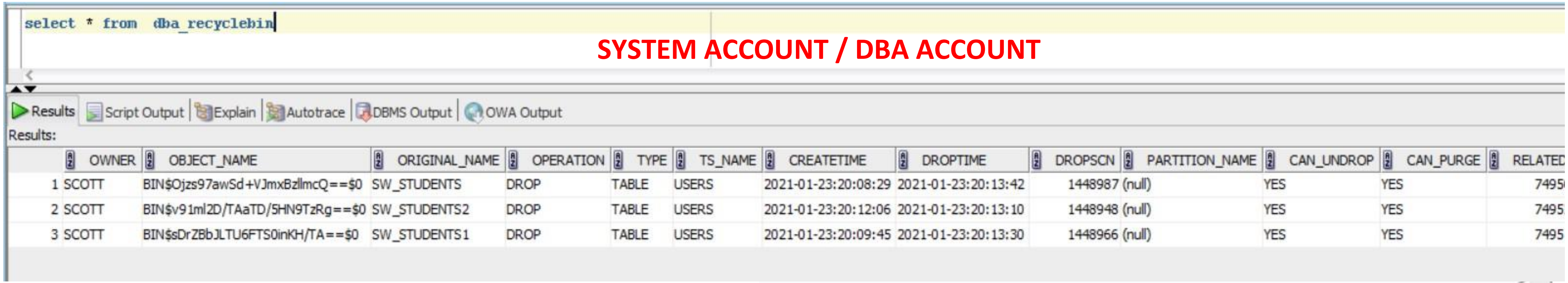


```
select * from  USER_RECYCLEBIN
```

esults:

	OBJECT_NAME	ORIGINAL_NAME	OPERATION	TYPE	TS_NAME	CREATETIME	DROPTIME	DROPSCN	PARTITION_NAME	CAN_UNDROP	CAN_PURGE	RELATED	BASE_OBJ
1	BIN$Ojzs97awSd+VJmxBzllmcQ==$0	SW_STUDENTS	DROP	TABLE	USERS	2021-01-23:20:08:29	2021-01-23:20:13:42	1448987	(null)	YES	YES	74950	74
2	BIN$v91ml2D/TAaTD/5HN9TzRg==$0	SW_STUDENTS2	DROP	TABLE	USERS	2021-01-23:20:12:06	2021-01-23:20:13:10	1448948	(null)	YES	YES	74952	74
3	BIN$sDrZBbJLTU6FTS0inKH/TA==$0	SW_STUDENTS1	DROP	TABLE	USERS	2021-01-23:20:09:45	2021-01-23:20:13:30	1448966	(null)	YES	YES	74951	74

SCOTT / USER ACCOUNT

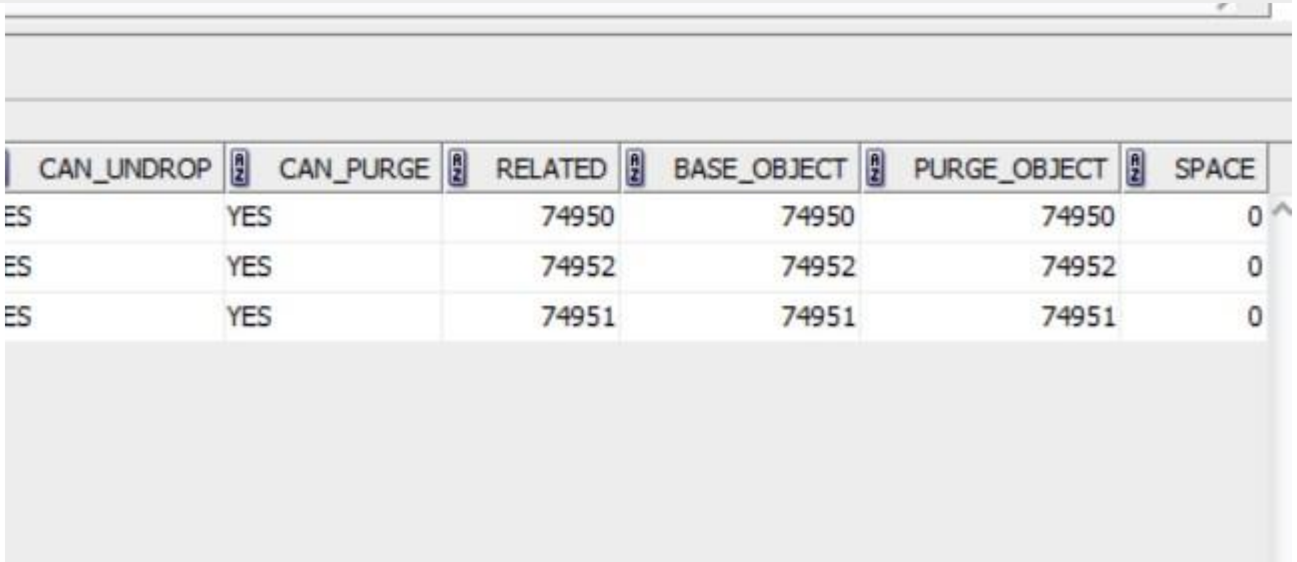


```
select * from  dba_recyclebin
```

SYSTEM ACCOUNT / DBA ACCOUNT

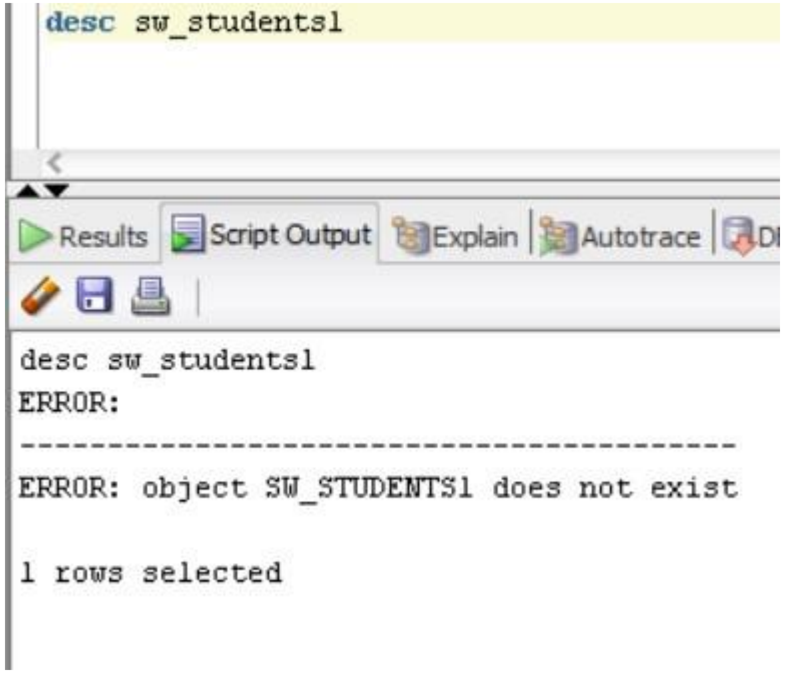
Results:

	OWNER	OBJECT_NAME	ORIGINAL_NAME	OPERATION	TYPE	TS_NAME	CREATETIME	DROPTIME	DROPSCN	PARTITION_NAME	CAN_UNDROP	CAN_PURGE	RELATED
1	SCOTT	BIN$Ojzs97awSd+VJmxBzllmcQ==$0	SW_STUDENTS	DROP	TABLE	USERS	2021-01-23:20:08:29	2021-01-23:20:13:42	1448987	(null)	YES	YES	7495
2	SCOTT	BIN$v91ml2D/TAaTD/5HN9TzRg==$0	SW_STUDENTS2	DROP	TABLE	USERS	2021-01-23:20:12:06	2021-01-23:20:13:10	1448948	(null)	YES	YES	7495
3	SCOTT	BIN$sDrZBbJLTU6FTS0inKH/TA==$0	SW_STUDENTS1	DROP	TABLE	USERS	2021-01-23:20:09:45	2021-01-23:20:13:30	1448966	(null)	YES	YES	7495



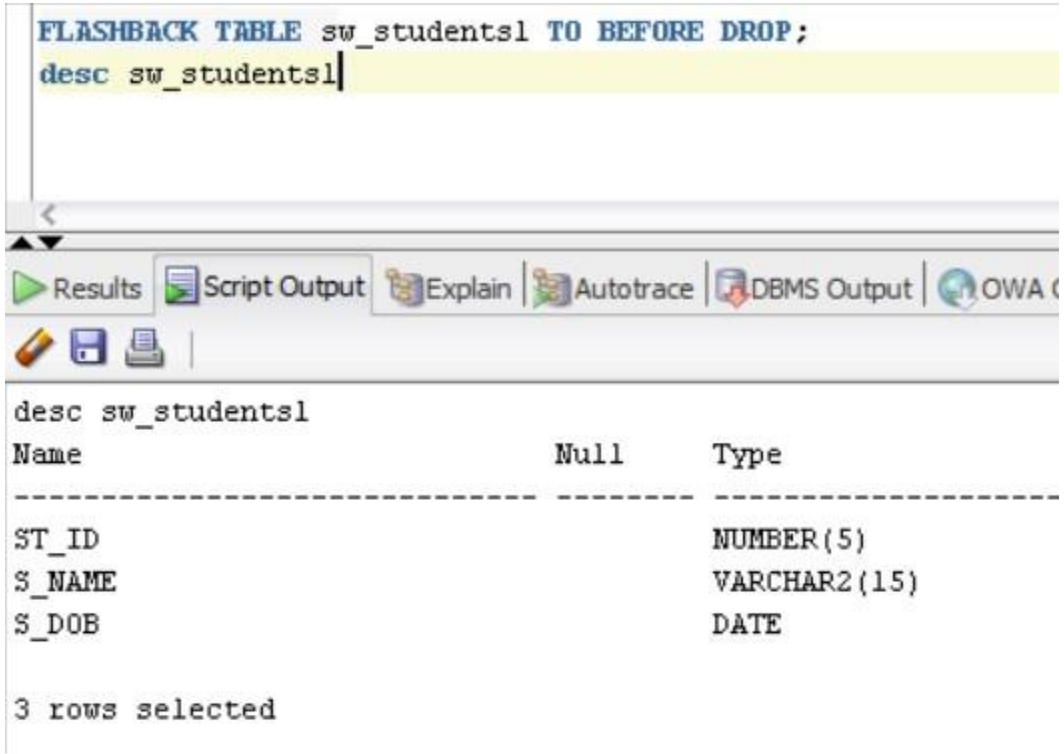
CAN_UNDROP	CAN_PURGE	RELATED	BASE_OBJECT	PURGE_OBJECT	SPACE
ES	YES	74950	74950	74950	0
ES	YES	74952	74952	74952	0
ES	YES	74951	74951	74951	0

FLASHBACK COMMAND



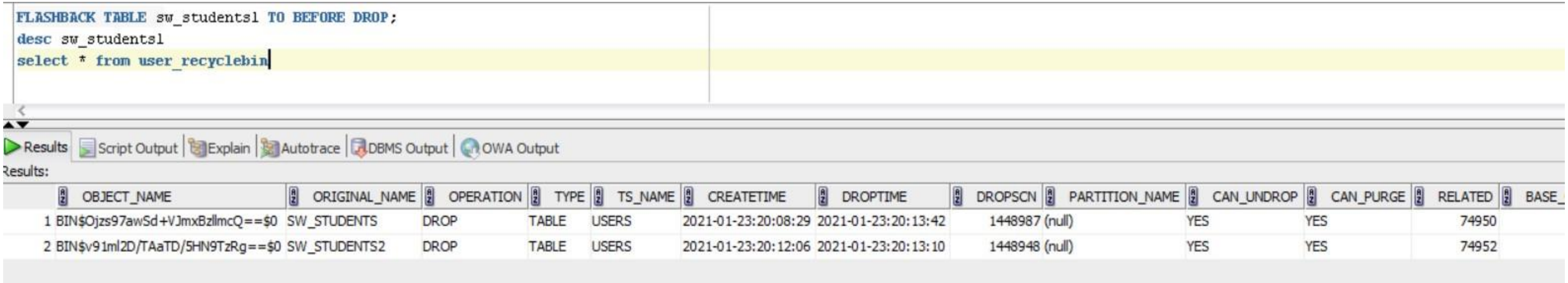
```
desc sw_students1
```

```
desc sw_students1
ERROR:
------------------------------------------
ERROR: object SW_STUDENTS1 does not exist

1 rows selected
```



```
FLASHBACK TABLE sw_students1 TO BEFORE DROP;
desc sw_students1
```

```
desc sw_students1
Name                          Null     Type
----------------------------- -------- --------------------
ST_ID                                  NUMBER(5)
S_NAME                                 VARCHAR2(15)
S_DOB                                  DATE

3 rows selected
```



```
FLASHBACK TABLE sw_students1 TO BEFORE DROP;
desc sw_students1
select * from user_recyclebin
```

Results:

	OBJECT_NAME	ORIGINAL_NAME	OPERATION	TYPE	TS_NAME	CREATETIME	DROPTIME	DROPSCN	PARTITION_NAME	CAN_UNDROP	CAN_PURGE	RELATED	BASE_
1	BIN$Ojzs97awSd+VJmxBzllmcQ==$0	SW_STUDENTS	DROP	TABLE	USERS	2021-01-23:20:08:29	2021-01-23:20:13:42	1448987	(null)	YES	YES	74950	
2	BIN$v91ml2D/TAaTD/5HN9TzRg==$0	SW_STUDENTS2	DROP	TABLE	USERS	2021-01-23:20:12:06	2021-01-23:20:13:10	1448948	(null)	YES	YES	74952	