

SQL

DDL (Data Definition Language)

CREATE TABLE:-

The screenshot shows the SQL Developer interface. The 'Query Builder' tab is active, displaying the following SQL code:

```
1 CREATE TABLE Sunstudio
2 (
3   Employee_ID INT NOT NULL ,
4   First_Name VARCHAR2(10) NOT NULL,
5   Last_Name VARCHAR2(10) NOT NULL,
6   E_mail VARCHAR2(30),
7   Phone_Number VARCHAR2(15),
8   Job_ID NUMBER(20) NOT NULL,
9   Salary NUMBER(10, 2),
10  Gender CHAR(1)
11 );
12
13 SELECT * FROM SUNSTUDIO;
```

Below the code editor, the 'Script Output' and 'Query Result' tabs are visible. The 'Query Result' tab shows the table structure with the following columns:

EMPLOYEE...	FIRST_NA...	LAST_NAME	E_MAIL	PHONE_N...	JOB_ID	SALARY	GENDER
-------------	-------------	-----------	--------	------------	--------	--------	--------

ALTER

ADD (add new column):-

The screenshot shows the SQL Developer interface. The 'Query Builder' tab is active, displaying the following SQL code:

```
1 ALTER TABLE SUNSTUDIO
2 ADD HIRE_DT DATE;
3
4 SELECT * FROM SUNSTUDIO;
```

Below the code editor, the 'Script Output' and 'Query Result' tabs are visible. The 'Query Result' tab shows the table structure with the following columns:

EMPLOYEE...	NAME	E_MAIL	PHONE_N...	JOB_ID	SALARY	GENDER	D_ID	HIRE_DT
-------------	------	--------	------------	--------	--------	--------	------	---------

MODIFY(modify column):-

The screenshot shows the SQL Developer interface. The 'Worksheet' tab is active, displaying the following SQL code:

```
21  
22 ALTER TABLE SUNSTUDIO  
23 MODIFY HIRE_DATE VARCHAR2(10);  
24  
25  
26 SELECT * FROM SUNSTUDIO;  
27
```

The 'Query Result' tab is also visible, showing the results of the query. The status bar indicates 'All Rows Fetched: 0 in 0.013 seconds'. The column headers are: EMPLOYEE_ID, FIRST_NAME, LAST_NAME, E_MAIL, PHONE_NUMBER, JOB_ID, SALARY, GENDER, and HIRE_DATE.

RENAME(rename column heading):-

The screenshot shows the SQL Developer interface. The 'Worksheet' tab is active, displaying the following SQL code:

```
26 ALTER TABLE SUNSTUDIO  
27 RENAME COLUMN HIRE_DATE TO H_DATE;  
28  
29 SELECT * FROM SUNSTUDIO;  
30
```

The 'Query Result' tab is also visible, showing the results of the query. The status bar indicates 'All Rows Fetched: 0 in 0.063 seconds'. The column headers are: EMPLOYEE_ID, FIRST_NAME, LAST_NAME, E_MAIL, PHONE_NUMBER, JOB_ID, SALARY, GENDER, and H_DATE.

DROP(to delete particular column):-

The screenshot shows the SQL Developer interface. The 'Worksheet' tab is active, displaying the following SQL code:

```
25 ALTER TABLE SUNSTUDIO  
26 DROP COLUMN H_DATE;  
27  
28 SELECT * FROM SUNSTUDIO;  
29  
30
```

The 'Query Result' tab is also visible, showing the results of the query. The status bar indicates 'All Rows Fetched: 0 in 0.007 seconds'. The column headers are: EMPLOYEE_ID, FIRST_NAME, LAST_NAME, E_MAIL, PHONE_NUMBER, JOB_ID, SALARY, and GENDER.

RENAME(rename table name):-

```
28
29 RENAME SUNSTUDIO TO SUN;
30
31 SELECT * FROM SUN;
32
33
```

Script Output x Query Result x

SQL | All Rows Fetched: 0 in 0.019 seconds

EMPLOYEE...	FIRST_NA...	LAST_NAME	E_MAIL	PHONE_N...	JOB_ID	SALARY	GENDER
-------------	-------------	-----------	--------	------------	--------	--------	--------

TRUNCATE(delete the entire data):-

```
32 TRUNCATE TABLE SUN;
33
34 SELECT * FROM SUN;
35
```

Script Output x Query Result x

SQL | All Rows Fetched: 0 in 0.002 seconds

EMPLOYEE...	FIRST_NA...	LAST_NAME	E_MAIL	PHONE_N...	JOB_ID	SALARY	GENDER
-------------	-------------	-----------	--------	------------	--------	--------	--------

DROP(delete the entire table):-

```
31 DROP TABLE SUN;
32
33 SELECT * FROM SUN;
34
```

Script Output x Query Result x

SQL | Executing:SELECT *FROM SUN in 0 seconds

ORA-00942: table or view does not exist

<https://docs.oracle.com/error-help/db/ora-00942/00942.00000> - "table or view%s does not exist"

Cause: The specified table or view did not exist, or a synonym pointed to a table or view that did not exist. To find existing user tables and views, query the ALL_TABLES and ALL_VIEWS data dictionary views. Certain privileges may be required to access the table. If an application returned this message, then the table that the application tried to access did not exist in the database, or the application did not have access to it.

Action: Check each of the following

- The spelling of the table or view name is correct.
- The referenced table or view name does exist.

DML (Data Manipulation Language)

INSERT (insert new data):-

```
44
45 SELECT * FROM SUN;
46
47 INSERT INTO SUN
48 VALUES (100, 'RAGU', 'taran@gmail.com', 8775544566, 10000, 'M');
49
50 INSERT INTO SUN
51 VALUES (102, 'SIDHARTH', 'sidharth5@gmail.com', 8956342176, 20000, 'M');
52
53 INSERT INTO SUN
54 VALUES (103, 'BARRY', 'barry6@gmail.com', 6789436521, 30000, 'M');
55
56 INSERT INTO SUN
57 VALUES (104, 'SATHYA', 'sathya8@gmail.com', 9864657878, 40000, 'F');
58
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.004 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_N...	SALARY	GENDER	
1	100	RAGU	taran@gmail...	8775544566	10000	M	
2	102	SIDHARTH	sidharth5@g...	8956342176	20000	M	
3	103	BARRY	barry6@gmai...	6789436521	30000	M	
4	104	SATHYA	sathya8@gma...	9864657878	40000	F	

UPDATE(rename in already exist data):-

```
57 SELECT * FROM SUN;
58
59 UPDATE SUN
60 SET NAME = 'HEMA',
61 GENDER = 'F'
62 WHERE EMPLOYEE_ID = 102;
63
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.004 seconds





	EMPLOYEE_ID	NAME	E_MAIL	PHONE_N...	SALARY	GENDER
1	100	RAGU	taran@gmail...	8775544566	10000	M
2	102	HEMA	sidharth5@g...	8956342176	20000	F
3	103	BARRY	barry6@gmai...	6789436521	30000	M
4	104	SATHYA	sathya8@gma...	9864657878	40000	F

DELETE(delete entire row):-

```
65 DELETE
66 FROM SUN
67 WHERE EMPLOYEE_ID = 104;
68
69 SELECT * FROM SUN;
70
```

Script Output x

Query Result x

    SQL | All Rows Fetched: 3 in 0.004 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_N...	SALARY	GENDER	
1	100	RAGU	taran@gmail...	8775544566	10000	M	
2	102	HEMA	sidharth5@g...	8956342176	20000	F	
3	103	BARRY	barry6@gmai...	6789436521	30000	M	

TCL (Transaction Control Language)

COMMIT(permanent save):-

65	DELETE
66	FROM SUN
67	WHERE EMPLOYEE_ID = 104;
68	
69	SELECT * FROM SUN;
70	COMMIT;

Script Output x	Query Result x
Task completed in 0.067 seconds	
0 rows deleted.	
0 rows deleted.	
1 row deleted.	
Commit complete.	

ROLL BACK(correction check):-

```
62
63 SELECT * FROM SUN;
64
65 DELETE
66 FROM SUN
67 WHERE EMPLOYEE_ID = 104;
68
69 SELECT * FROM SUN;
70 ROLL BACK;
71
```

Query Result x Script Output x

Task completed in 0.048 seconds

Rollback complete.

SAVE POINT(temporary save):-

```
57 SAVEPOINT A;
58 UPDATE SUN
59 SET NAME = 'HEMA',
60 GENDER = 'F'
61 WHERE EMPLOYEE_ID = 102;
62 SAVEPOINT B;
63 DELETE
64 FROM SUN
65 WHERE EMPLOYEE_ID = 104;
66 SAVEPOINT C;
67 SELECT * FROM SUN;
68 ROLL BACK TO A;
69
70
```

Script Output x

Task completed in 0.057 seconds

Savepoint created.

Savepoint created.

Rollback complete.

RESTRICTION

ROW LEVEL RESTRICTION (select to from):-

71	SELECT * FROM SUN;
72	
73	SELECT NAME,
74	SALARY
75	FROM SUN;
76	

Script Output x		Query Result x	
SQL All Rows Fetched: 3 in 0.043 seconds			
	NAME	SALARY	
1	RAGU	10000	
2	HEMA	20000	
3	BARRY	30000	

COLUMN LEVEL RESTRICTION (where clause):-

71	SELECT * FROM SUN;
72	
73	SELECT NAME,
74	SALARY
75	FROM SUN
76	WHERE SALARY >= 20000;
77	

Script Output x		Query Result x	
SQL All Rows Fetched: 2 in 0.006 seconds			
	NAME	SALARY	
1	HEMA	20000	
2	BARRY	30000	

ARITHMETIC EXPRESSION (+, -, *, /):-

78	SELECT EMPLOYEE_ID, SALARY, SALARY+1000
79	FROM SUN;
80	
81	

Script Output x		Query Result x	
SQL All Rows Fetched: 3 in 0.037 seconds			
	EMPLOYEE_ID	SALARY	SALARY+1000
1	100	10000	11000
2	102	20000	21000
3	103	30000	31000

ALIAS:- (rename column name)

81	SELECT
82	EMPLOYEE_ID, SALARY, SALARY+1000 AS BONUS
83	FROM SUN;
84	
85	

Script Output x		Query Result x	
SQL All Rows Fetched: 3 in 0.006 seconds			
	EMPLOYEE_ID	SALARY	BONUS
1	100	10000	11000
2	102	20000	21000
3	103	30000	31000

PIPELINE STATEMENT (space between sentence):-

```
select
Name ||q>('s Salary is  ')|| salary as combine
from sun;
```

Query Result x

SQL | All Rows Fetched: 3 in 0.019 seconds

COMBINE
1 RAGU's Salary is 10000
2 HEMA's Salary is 20000
3 BARRY's Salary is 30000

COMMENT LINE:- (Single line comment, Multi line comment)

```
83
84 SELECT * FROM SUN;
85
86 select
87 employee_id,
88 name,
89 E_mail,
90 phone_number,
91 --salary
92 gender
93 from sun;
94
```

Query Result x

SQL | All Rows Fetched: 3 in 0.015 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	GENDER
1	100	RAGU	taran@gmail.com	8775544566	M
2	102	HEMA	sidharth5@gmail.com	8956342176	F
3	103	BARRY	barry6@gmail.com	6789436521	M

84	SELECT * FROM SUN;
85	
86	select
87	employee_id,
88	name
89	/*
90	E_mail
91	phone_number
92	salary
93	gender
94	*/
95	from sun;

Query Result x	
SQL All Rows Fetched: 3 in 0.007 seconds	
EMPLOYEE_ID	NAME
1	100 RAGU
2	102 HEMA
3	103 BARRY

DUAL TABLE (special one-row, one-column table):-

97	select * from sun;
98	
99	select
100	'salary ' 'Package' as Sun
101	from dual;
102	
103	select 10000+100 as bonus from dual;
104	

Query Result x	
SQL All Rows Fetched: 1 in 0.006 seconds	
BONUS	
1	10100

COMPARISON OPERATOR (compare data):-

105	
106	<code>select * from sun</code>
107	<code>where salary < 20000;</code>
108	
109	<code>select * from sun</code>
110	<code>where salary <= 20000;</code>
111	
112	

Query Result x						
SQL All Rows Fetched: 2 in 0.019 seconds						
	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	100	RAGU	taran@gmail.com	8775544566	10000	M
2	102	HEMA	sidharth5@gmail.com	8956342176	20000	F

BETWEEN.... AND.... (find between values):-

112	<code>select * from Sun</code>
113	<code>where salary between 20000 and 30000;</code>
114	
115	

Query Result x						
SQL All Rows Fetched: 2 in 0.007 seconds						
	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	102	HEMA	sidharth5@gmail.com	8956342176	20000	F
2	103	BARRY	barry6@gmail.com	6789436521	30000	M

NOT BETWEEN... AND ...(not consider values):-

112	<code>select * from Sun</code>
113	<code>where salary not between 20000 and 30000;</code>
114	
115	

Query Result x						
SQL All Rows Fetched: 1 in 0.008 seconds						
	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	100	RAGU	taran@gmail.com	8775544566	10000	M

IN OPERATOR (exact value):-

```
112 select * from Sun
113 where salary in (10000, 30000);
114
115
```

Query Result x

SQL | All Rows Fetched: 2 in 0.01 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	100	RAGU	taran@gmail.com	8775544566	10000	M
2	103	BARRY	barry6@gmail.com	6789436521	30000	M

NOT IN OPERATOR (not exact value):-

```
112 select * from Sun
113 where salary not in (10000, 30000);
114
115
```

Query Result x

SQL | All Rows Fetched: 1 in 0.03 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	102	HEMA	sidharth5@gmail.com	8956342176	20000	F

LIKE OPERATOR (pattern matching operator):-

```
115 select * from sun
116 where name like 'H_%A';
117
118
```

Query Result x

SQL | All Rows Fetched: 1 in 0.009 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	102	HEMA	sidharth5@gmail.com	8956342176	20000	F

ESCAPE OPERATOR (consider special character):-





115	select * from sun
116	where name like 'H_%A';
117	
118	

Query Result x						
SQL All Rows Fetched: 1 in 0.003 seconds						
	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER
1	102	HEMA	sidharth5@gmail.com	8956342176	20000	F

IS NULL (consider null):-

```
124
125 select * from sun
126 where bonus is null;
127
128
```

Script Output x Query Result x





    SQL | All Rows Fetched: 2 in 0.008 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER	BONUS
1	102	HEMA	sidharth5@gmail.com	8956342176	20000	F	(null)
2	103	BARRY	barry6@gmail.com	6789436521	30000	M	(null)

IS NOT NULL (not consider null):-

125 select * from sun
126 where bonus is not null;
127
128

Script Output x Query Result x

 SQL | All Rows Fetched: 1 in 0.005 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER	BONUS
1	100	RAGU	taran@gmail.com	8775544566	10000	M	100

LOGICAL OPERATOR

AND (each, every condition):-

```
128 select * from sun
129 where name = 'RAGU' AND
130 salary > 10000;
131
132
```

Script Output x Query Result x

SQL | All Rows Fetched: 0 in 0.004 seconds

EMPLOYEE...	NAME	E_MAIL	PHONE_N...	SALARY	GENDER	BONUS
-------------	------	--------	------------	--------	--------	-------

OR :- (anyone condition)

128 select * from sun
129 where name = 'RAGU' or
130 salary <= 20000;
131
132

Script Output x Query Result x

SQL | All Rows Fetched: 2 in 0.023 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER	BONUS
1	100	RAGU	taran@gmail.com	8775544566	10000	M	100
2	102	HEMA	sidharth5@gmail.com	8956342176	20000	F	(null)

NOT (Not consider):-

131

132

133

134

135

select * from sun

where NOT Name = 'HEMA';

Script Output x

Query Result x

SQL | All Rows Fetched: 2 in 0.01 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER	BONUS
1	100	RAGU	taran@gmail.com	8775544566	10000	M	100
2	103	BARRY	barry6@gmail.com	6789436521	30000	M	(null)

CONSTRAINTS

PRIMARY KEY, UNIQUE, NOT NULL, CHECK, FOREIGN KEY:-

```
1 CREATE TABLE Sunstudio
2 (
3   Employee_ID INT PRIMARY KEY,
4   Name VARCHAR2(10) NOT NULL,
5   E_mail VARCHAR2(30) UNIQUE,
6   Phone_Number VARCHAR2(15) UNIQUE NOT NULL,
7   Job_ID NUMBER(20) NOT NULL,
8   Salary NUMBER(10, 2) NOT NULL,
9   Gender CHAR(1) CHECK (Gender IN ('M', 'F')),
10  D_ID INT, CONSTRAINT FK_Department FOREIGN KEY (D_ID) REFERENCES Department(D_ID)
11 );
12
13 SELECT * FROM DEPARTMENT;
14
15 select * from sun;
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.004 seconds

	EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	SALARY	GENDER	BONUS
1	104	CHARU	charu7@gmail.com	7964375698	40000	F	(null)
2	100	RAGU	taran@gmail.com	8775544566	10000	M	100
3	102	HEMA	sidharth5@gmail.com	8956342176	20000	F	(null)
4	103	BARRY	barry6@gmail.com	6789436521	30000	M	(null)

PARENT TABLE (its used for reference in foreign key):-

```
1 Create table Department
2 (
3   ROLL_ID number(10) primary key,
4   D_NAME varchar2(20) not null,
5   D_ID number(10) unique not null
6 );
7 commit;
8
9 select * from Department;
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.009 seconds

	ROLL_ID	D_NAME	D_ID
1	1	ragu	10
2	2	IT	20
3	3	MARKETING	30
4	4	HR	40

INSERT (insert values through constraints):-

```
22
23 SELECT * FROM SUNSTUDIO;
24
25 INSERT INTO SUNSTUDIO
26 VALUES (100, 'RAGU', 'sidharth6@gmail.com', 7698765432, 2001, 30000, 'M', '10');
27
28 INSERT INTO SUNSTUDIO
29 VALUES (102, 'SIVA', 'siva56@gmail.com', 9876543209, 2002, 40000, 'M', '20');
30
31
```

Script Output x								Query Result x							
SQL All Rows Fetched: 2 in 0.003 seconds															
EMPLOYEE_ID	NAME	E_MAIL	PHONE_NUMBER	JOB_ID	SALARY	GENDER	D_ID								
1	100 RAGU	sidharth6@gmail.com	7698765432	2001	30000 M		10								
2	102 SIVA	siva56@gmail.com	9876543209	2002	40000 M		20								

FUNCTION

SINGLE ROW FUNCTION

1. CHARACTER FUNCTION :-

CASE MANIPULATION:- (UPPER, LOWER, INIT CAP)

Worksheet

Query Builder

1 SELECT * FROM SUN;

2 SELECT UPPER ('Ragul') FROM DUAL;

3 SELECT LOWER ('Ragul') FROM DUAL;

4 SELECT INITCAP ('Ragul') FROM DUAL;

5 SELECT NAME, UPPER (NAME), LOWER (NAME), INITCAP (NAME) FROM SUN;

Query Result x

SQL | All Rows Fetched: 4 in 0.003 seconds

	NAME	UPPER(NAME)	LOWER(NAME)	INITCAP(NAME)
1	CHARU	CHARU	charu	Charu
2	RAGU	RAGU	ragu	Ragu
3	HEMA	HEMA	hema	Hema
4	BARRY	BARRY	barry	Barry

CHARACTER MANIPULATION :-

(**LENGTH**) (consider number of characters)

10	SELECT
11	NAME, LENGTH (NAME)
12	FROM SUN;
13	

Script Output	Query Result
SQL All Rows Fetched: 4 in 0.011 seconds	
NAME	LENGTH(NAME)
1 CHARU	5
2 RAGU	4
3 HEMA	4
4 BARRY	5

(**SUBSTR**) (extract a substring from a string)

18	SELECT SUBSTR ('BARRY', 1, 7) FROM SUN; (--FROM TABLE)
19	SELECT SUBSTR ('HEMA', 2, 4) FROM DUAL; (--FROM DUAL)
20	

Script Output	Query Result
SQL All Rows Fetched: 4 in 0.004 seconds	
SUBSTR('BARRY',1,7)	
1 BARRY	
2 BARRY	
3 BARRY	
4 BARRY	

(INSTR) (checking particular position)

```
22 /
23
24 SELECT INSTR ('BARRY', 'R', 2, 4) FROM DUAL;
25 SELECT INSTR ('BARRY', 'R', 1, 2, 4) FROM SUN;
26
```

Script Output x Query Result x

SQL | Executing: SELECT INSTR ('BARRY', 'R', 1, 2, 4) FROM SUN in 0 seconds

ORA-00939: too many arguments for function

[https://docs.oracle.com/error-help/db/ora-00939/00939.00000- "too many arguments for function"](https://docs.oracle.com/error-help/db/ora-00939/00939.00000-\)

*Cause: The function was referenced with too many arguments.

*Action: Check the function syntax and specify only the required number of arguments.

Error at Line: 25 Column: 32

```
26 SELECT INSTR ('BARRY', 'R', 2, 4) FROM DUAL;
27 SELECT INSTR ('BARRY', 'R', -1, 1) FROM SUN;
28
```

Script Output x Query Result x

SQL | All Rows Fetched: 4 in 0.01 seconds

	INSTR('BARRY','R',-1,1)
1	4
2	4
3	4
4	4