

**Part A**

**Aim:** SQL commands:

- i) Create table
- ii) View structure of table
- iii) Alter table for adding/deleting columns and modifying columns
- iv) Insert data into table
- v) View data in the table (for all records, specific attributes and specific records )
- vi) To Update records
- vii) Delete records
- viii) To eliminate duplicate rows when using a select statement
- ix) Drop table

**Prerequisite:** Oracle.

**Outcome:** Table is created and records are inserted and viewed.

**Theory:**

**SQL CREATE TABLE Syntax**

```
CREATE TABLE table_name
(
column_name1 data_type(size) constraints,
column_name2 data_type(size) constraints,
column_name3 data_type(size) constraints,
....
);
```

**SQL INSERT INTO Syntax**

It is possible to write the INSERT INTO statement in two forms.

The first form does not specify the column names where the data will be inserted, only their values:

```
INSERT INTO table_name
VALUES (value1,value2,value3,...);
```

The second form specifies both the column names and the values to be inserted:

```
INSERT INTO table_name (column1,column2,column3,...)
VALUES (value1,value2,value3,...);
```

**SQL SELECT Syntax**

```
SELECT column_name(s) FROM table_name;
```

and

```
SELECT * FROM table_name;
```

and

**SELECT** *column\_name(s)* **FROM** *table\_name* **WHERE** *condition*

### **SQL DELETE Syntax**

**DELETE FROM** *table\_name* **WHERE** *condition*;

### **SQL UPDATE Syntax**

**UPDATE** *table\_name*  
**SET** *column1 = value1, column2 = value2, ...*  
**WHERE** *condition*;

#### **Procedure:**

1. Formulate the query for given problem.
2. Write the SQL query with proper input.
3. Execute the query.

#### **Practice Exercise:**

S.no	Query statement
1	(a) Create an Account with the following attributes acctno - Account Number – Integer bal – Balance – Integer  (b) Add column acctHolderName attribute with type Number (c) Change column acctHolderName type to varchar (d) Delete column acctHolderName
2	Create the Depositor table with th following attributes custname – Customer Name – varchar custID – Customer ID – Integer
3	Create the Loan table with the following attributes loan_no_loan number – Integer br_name – Branch name – varchar amount –loan amount – float
4	Create the Borrower with the following attributes custname – Customer Name – varchar loan_no – loan number – Integer

5	Create Department Table with following columns and constraints: <table><tr><th>Column name</th><th>Type &amp; Size</th></tr><tr><td>Dept_no</td><td>numeric(2)</td></tr><tr><td>Dname</td><td>varchar(15)</td></tr><tr><td>Location</td><td>varchar(12)</td></tr></table>	Column name	Type & Size	Dept_no	numeric(2)	Dname	varchar(15)	Location	varchar(12)																																														
Column name	Type & Size																																																						
Dept_no	numeric(2)																																																						
Dname	varchar(15)																																																						
Location	varchar(12)																																																						
6	Create Emp table with following columns and constraints: <table><tr><th>Column name</th><th>Type &amp; Size</th></tr><tr><td>Emp_no</td><td>numeric(4)</td></tr><tr><td>Ename</td><td>varchar(20)</td></tr><tr><td>Gender</td><td>char(1)</td></tr><tr><td>Job</td><td>varchar(12)</td></tr><tr><td>Mgr</td><td>numeric(4)</td></tr><tr><td>Hiredate</td><td>date</td></tr><tr><td>Salary</td><td>numeric(8)</td></tr><tr><td>Comm</td><td>numeric(8)</td></tr><tr><td>Dept_no</td><td>numeric(2)</td></tr></table>	Column name	Type & Size	Emp_no	numeric(4)	Ename	varchar(20)	Gender	char(1)	Job	varchar(12)	Mgr	numeric(4)	Hiredate	date	Salary	numeric(8)	Comm	numeric(8)	Dept_no	numeric(2)																																		
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Dept_no	numeric(2)																																																						
7	Insert following data into Department table: <table><tr><th>Dept_no</th><th>Dname</th><th>Location</th></tr><tr><td>10</td><td>ACCOUNTING</td><td>NEW YORK</td></tr><tr><td>20</td><td>RESEARCH</td><td>DALLAS</td></tr><tr><td>30</td><td>SALES</td><td>CHICAGO</td></tr><tr><td>40</td><td>MARKETING</td><td>BOSTON</td></tr></table>	Dept_no	Dname	Location	10	ACCOUNTING	NEW YORK	20	RESEARCH	DALLAS	30	SALES	CHICAGO	40	MARKETING	BOSTON																																							
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30	SALES	CHICAGO																																																					
40	MARKETING	BOSTON																																																					
8	Insert following data into Emp table: <table><tr><th>E_n o</th><th>Enam e</th><th>Gende r</th><th>Job</th><th>Mgr</th><th>Hiredate</th><th>Salar y</th><th>Com m</th><th>Dept_no</th></tr><tr><td>736 9</td><td>Smith</td><td>M</td><td>CLERK</td><td>790 2</td><td>17-DEC-80</td><td>8000</td><td>-</td><td>20</td></tr><tr><td>749 9</td><td>Allen</td><td>F</td><td>SALESMAN</td><td>769 8</td><td>20-FEB-81</td><td>1600 0</td><td>3000</td><td>30</td></tr><tr><td>752 1</td><td>Ward</td><td>M</td><td>SALESMAN</td><td>769 8</td><td>22-FEB-81</td><td>1250 0</td><td>5000</td><td>30</td></tr><tr><td>756 6</td><td>Jones</td><td>F</td><td>MANAGER</td><td>783 9</td><td>02-APR-81</td><td>2975 0</td><td>-</td><td>20</td></tr><tr><td>765 4</td><td>Marti n</td><td>M</td><td>SALESMAN</td><td>769 8</td><td>28-SEP-81</td><td>1250 0</td><td>14000</td><td>30</td></tr></table>	E_n o	Enam e	Gende r	Job	Mgr	Hiredate	Salar y	Com m	Dept_no	736 9	Smith	M	CLERK	790 2	17-DEC-80	8000	-	20	749 9	Allen	F	SALESMAN	769 8	20-FEB-81	1600 0	3000	30	752 1	Ward	M	SALESMAN	769 8	22-FEB-81	1250 0	5000	30	756 6	Jones	F	MANAGER	783 9	02-APR-81	2975 0	-	20	765 4	Marti n	M	SALESMAN	769 8	28-SEP-81	1250 0	14000	30
E_n o	Enam e	Gende r	Job	Mgr	Hiredate	Salar y	Com m	Dept_no																																															
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765 4	Marti n	M	SALESMAN	769 8	28-SEP-81	1250 0	14000	30																																															

	7698	Blake	M	MANAGER	7839	01-MAY-81	28500	-	30
	7782	Clark	M	MANAGER	7839	09-JUN-81	24500	-	10
	7788	Scott	M	ANALYST	7566	09-DEC-82	30000	-	20
	7839	King	M	PRESIDENT	-	17-NOV-81	50000	-	10
	7844	Turner	M	SALESMAN	7698	08-SEP-81	15000	-	30
	7876	Adams	M	CLERK	7788	12-JAN-83	11000	-	20
	7900	James	M	CLERK	7698	03-DEC-81	95000	-	30
	7902	Ford	M	ANALYST	7566	03-DEC-81	30000	-	20
	7934	Miller	F	CLERK	7782	23-JAN-82	13000	-	10
9	Display all the information of the EMP table?								
10	Display all the information of the Department table?								
11	Display name of all the departments?								
12	Display all department names along with location?								
13	Display name and salary of all female employees.								
14	Display name of all male employees in department no 20.								
15	Display name of all employees whose salary is more than 10000.								
16	Display information of all clerks.								
17	Display Employee no. and name of all male who are getting salary less than 20000.								
18	Display information of all employees working in Dept. no. 20.								
19	Display unique Jobs from EMP table?								
20	Display the structure of all tables.								

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**Instructions:**

1. Write and execute the query in Oracle/SQL server.
2. Paste the snapshot of the output in input & output section.

## Part B

**Code:**

1)a)

```
mysql> create table Account(acctno int,bal int);  
Query OK, 0 rows affected (0.04 sec)
```

b)

```
mysql> alter table Account add (acctHolderName int);  
Query OK, 0 rows affected (0.05 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

c)

```
mysql> alter table Account modify acctHolderName varchar(50);  
Query OK, 0 rows affected (0.10 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

d)

```
mysql> alter table Account drop column acctHolderName;  
Query OK, 0 rows affected (0.08 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

2) a)

```
mysql> create table Depositor(custname varchar(50),custID int);  
Query OK, 0 rows affected (0.05 sec)
```

3)

```
mysql> create table Loan(loan_no int,br_name varchar(20),amount float);  
Query OK, 0 rows affected (0.05 sec)
```

4)

```
mysql> create table Borrower(custname varchar(30),loan_no int);  
Query OK, 0 rows affected (0.04 sec)
```

5)

```
mysql> create table Department(Dept_no int,Dname varchar(15),Location varchar(12));  
Query OK, 0 rows affected (0.05 sec)
```

6)

```
mysql> create table Emp(Emp_no int,Ename varchar(20),Gender char(1),Job varchar(12),Mgr int,Hiredate date,Salary int,Comm int,Dept_no int);  
Query OK, 0 rows affected (0.05 sec)
```

7)

```
mysql> insert into Department values(10,'ACCOUNTING','NEWYORK');  
Query OK, 1 row affected (0.02 sec)
```

```
mysql> insert into Department values(20,'RESEARCH','DALLAS');  
Query OK, 1 row affected (0.02 sec)
```

```
mysql> insert into Department values(30,'SALES','CHICAGO');  
Query OK, 1 row affected (0.01 sec)
```

```
mysql> insert into Department values(40,'MARKETING','BOSTON');  
Query OK, 1 row affected (0.01 sec)
```



8)

```

1  insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7369,'Smith','M','CLERK',7920,'1980-12-17',8000,20);
2  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7499,'Allen','F','SALESMAN',7698,'1981-02-20',16000,3000,30);
3  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7521,'Ward','M','SALESMAN',7698,'1981-02-22',12500,5000,30);
4  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7566,'Jones','F','MANAGER',7839,'1981-04-02',29750,20);
5  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7654,'Martin','M','SALESMAN',7698,'1981-09-28',12500,14000,30);
6  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7698,'Blake','M','MANAGER',7839,'1981-05-01',28500,30);
7  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7782,'clark','M','manager',7839,'1981-6-9',24500,10);
8  • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7788,'scott','M','analyst',7566,'1982-12-9',30000,20);
9  • insert into Emp(Emp_no,Ename,Gender,Job,Hiredate,Salary,Dept_no) values (7839,'king','M','president','1981-11-17',50000,10);
10 • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7844,'turner','M','salesman','7698','1981-10-8',15000,30);
11 • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7876,'adams','M','clerk','7788','1983-01-12',11000,20);
12 • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7900,'james','M','clerk','7698','1981-12-03',95000,30);
13 • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7902,'ford','M','analyst','7566','1981-12-03',30000,20);
14 • insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7934,'miller','F','clerk','7782','1982-01-23',13000,10);

```

✓	71	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7369,'Smith','M','CLERK',7920,'1980-12-17',8000,20);	1 row(s) affected
✓	72	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7499,'Allen','F','SALESMAN',7698,'1981-02-20',16000,3000,30);	1 row(s) affected
✓	73	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7521,'Ward','M','SALESMAN',7698,'1981-02-22',12500,5000,30);	1 row(s) affected
✓	74	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7566,'Jones','F','MANAGER',7839,'1981-04-02',29750,20);	1 row(s) affected
✓	75	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Comm,Dept_no) values(7654,'Martin','M','SALESMAN',7698,'1981-09-28',12500,14000,30);	1 row(s) affected
✓	76	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values(7698,'Blake','M','MANAGER',7839,'1981-05-01',28500,30);	1 row(s) affected
✓	77	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7782,'clark','M','manager',7839,'1981-6-9',24500,10);	1 row(s) affected
✓	78	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7788,'scott','M','analyst',7566,'1982-12-9',30000,20);	1 row(s) affected
✓	79	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Hiredate,Salary,Dept_no) values (7839,'king','M','president','1981-11-17',50000,10);	1 row(s) affected
✓	80	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7844,'turner','M','salesman','7698','1981-10-8',15000,30);	1 row(s) affected
✓	81	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7876,'adams','M','clerk','7788','1983-01-12',11000,20);	1 row(s) affected
✓	82	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7900,'james','M','clerk','7698','1981-12-03',95000,30);	1 row(s) affected
✓	83	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7902,'ford','M','analyst','7566','1981-12-03',30000,20);	1 row(s) affected
✓	84	21:21:12	insert into Emp(Emp_no,Ename,Gender,Job,Mgr,Hiredate,Salary,Dept_no) values (7934,'miller','F','clerk','7782','1982-01-23',13000,10);	1 row(s) affected

9)

```
mysql> select * from Emp;
```

Emp_no	Ename	Gender	Job	Mgr	Hiredate	Salary	Comm	Dept_no
7369	Smith	M	CLERK	7920	1980-12-17	8000	NULL	20
7499	Allen	F	SALESMAN	7698	1981-02-20	16000	3000	30
7521	Ward	M	SALESMAN	7698	1981-02-22	12500	5000	30
7566	Jones	F	MANAGER	7839	1981-04-02	29750	NULL	20
7654	Martin	M	SALESMAN	7698	1981-09-28	12500	14000	30
7698	Blake	M	MANAGER	7839	1981-05-01	28500	NULL	30
7782	clark	M	manager	7839	1981-06-09	24500	NULL	10
7788	scott	M	analyst	7566	1982-12-09	30000	NULL	20
7839	king	M	president	NULL	1981-11-17	50000	NULL	10
7844	turner	M	salesman	7698	1981-10-08	15000	NULL	30
7876	adams	M	clerk	7788	1983-01-12	11000	NULL	20
7900	james	M	clerk	7698	1981-12-03	95000	NULL	30
7902	ford	M	analyst	7566	1981-12-03	30000	NULL	20
7934	miller	F	clerk	7782	1982-01-23	13000	NULL	10

```
14 rows in set (0.00 sec)
```

10)

```
mysql> select * from Department;
```

Dept_no	Dname	Location
10	ACCOUNTING	NEWYORK
20	RESEARCH	DALLAS
30	SALES	CHICAGO
40	MARKETING	BOSTON

```
4 rows in set (0.01 sec)
```

11)

```
mysql> select Dname from Department;
```

Dname
ACCOUNTING
RESEARCH
SALES
MARKETING

```
4 rows in set (0.00 sec)
```

12)

```
mysql> select Dname,Location from Department;
+-----+-----+
| Dname      | Location |
+-----+-----+
| ACCOUNTING | NEWYORK  |
| RESEARCH   | DALLAS   |
| SALES       | CHICAGO  |
| MARKETING  | BOSTON   |
+-----+-----+
4 rows in set (0.00 sec)
```

13)

```
mysql> select Ename,Salary from Emp where Gender='F';
+-----+-----+
| Ename      | Salary |
+-----+-----+
| Allen      | 16000  |
| Jones      | 29750  |
| miller     | 13000  |
+-----+-----+
3 rows in set (0.00 sec)
```

14)

```
mysql> select Ename from Emp where Dept_no=20 and Gender='M';
+-----+
| Ename |
+-----+
| Smith |
| scott |
| adams |
| ford  |
+-----+
4 rows in set (0.00 sec)

mysql>
```

15)



```
mysql> select Ename from Emp where Salary>10000;
```

```
+-----+
| Ename |
+-----+
| Allen |
| Ward  |
| Jones |
| Martin|
| Blake |
| clark |
| scott |
| king  |
| turner|
| adams |
| james |
| ford  |
| miller|
+-----+
```

13 rows in set (0.01 sec)

16)

```
mysql> select * from Emp where Job='CLERK';
```

```
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| Emp_no | Ename | Gender | Job   | Mgr | Hiredate | Salary | Comm | Dept_no |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
| 7369   | Smith | M      | CLERK | 7920 | 1980-12-17 | 8000   | NULL | 20      |
| 7876   | adams | M      | clerk | 7788 | 1983-01-12 | 11000  | NULL | 20      |
| 7900   | james | M      | clerk | 7698 | 1981-12-03 | 95000  | NULL | 30      |
| 7934   | miller| F      | clerk | 7782 | 1982-01-23 | 13000  | NULL | 10      |
+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

4 rows in set (0.00 sec)

17)

```
mysql> select Emp_no,Ename from Emp where Gender='M' and Salary<20000;
```

```
+-----+-----+
| Emp_no | Ename |
+-----+-----+
| 7369   | Smith |
| 7521   | Ward  |
| 7654   | Martin|
| 7844   | turner|
| 7876   | adams |
+-----+-----+
```

5 rows in set (0.00 sec)

18)

```
mysql> select * from Emp where Dept_no=20;
```

Emp_no	Ename	Gender	Job	Mgr	Hiredate	Salary	Comm	Dept_no
7369	Smith	M	CLERK	7920	1980-12-17	8000	NULL	20
7566	Jones	F	MANAGER	7839	1981-04-02	29750	NULL	20
7788	scott	M	analyst	7566	1982-12-09	30000	NULL	20
7876	adams	M	clerk	7788	1983-01-12	11000	NULL	20
7902	ford	M	analyst	7566	1981-12-03	30000	NULL	20

5 rows in set (0.00 sec)

19)

```
mysql> select distinct Job from Emp;
```

Job
CLERK
SALESMAN
MANAGER
analyst
president

5 rows in set (0.02 sec)

20)

```
mysql> desc Emp;
```

Field	Type	Null	Key	Default	Extra
Emp_no	int	YES		NULL	
Ename	varchar(20)	YES		NULL	
Gender	char(1)	YES		NULL	
Job	varchar(12)	YES		NULL	
Mgr	int	YES		NULL	
Hiredate	date	YES		NULL	
Salary	int	YES		NULL	
Comm	int	YES		NULL	
Dept_no	int	YES		NULL	

9 rows in set (0.03 sec)

```
mysql> desc Department;
```

Field	Type	Null	Key	Default	Extra
Dept_no	int	YES		NULL	
Dname	varchar(15)	YES		NULL	
Location	varchar(12)	YES		NULL	

3 rows in set (0.00 sec)

```
mysql> desc Borrower;
```

Field	Type	Null	Key	Default	Extra
custname	varchar(30)	YES		NULL	
loan_no	int	YES		NULL	

2 rows in set (0.00 sec)

```
mysql> desc Loan;
```

Field	Type	Null	Key	Default	Extra
loan_no	int	YES		NULL	
br_name	varchar(20)	YES		NULL	
amount	float	YES		NULL	

3 rows in set (0.00 sec)

```
mysql> desc Depositor;
```

Field	Type	Null	Key	Default	Extra
custname	varchar(50)	YES		NULL	
custID	int	YES		NULL	

2 rows in set (0.00 sec)

### Input & Output:

### Observation & Learning:

Learned and executed following SQL commands on database

Creating tables

View structure of table

Alter table for adding/deleting columns and modifying columns

Insert data into table

View data in the table (for all records, specific attributes and specific records )

To Update records

Delete records

To eliminate duplicate rows when using a select statement

Drop tables

**Conclusion:**

Learned and practiced DDL commands and recorded the outputs perfectly.

**Questions:**

1. What is DDL (Data Definition Language)?
2. How the strings are inserted into the table?
3. What happen if one attribute is not there in insertion list?
4. What happen if domain type of data inserted is different from that of column?
5. What happen if where clause is not given in query?
6. What are the various comparison operator used in condition part?

**Answers:**

1. A DDL is a language used to define data structures and modify data. For example, DDL commands can be used to add, remove, or modify tables within in a database.
2. By using Varchar(n) datatype,where n is the max length of a string ex: sname varchar(20)  
Using insert we can enter strings .Strings have to be enclosed in single quotes.  
Eg: insert into [tablename] values(1,'GVP');
3. Specify the attributes present and insert data into them only  
eg: insert into [tablename](variables,...) values (values,...);  
(or) simply insert NULL in that place INSERT Leads  
VALUES('name','cityName',null,'anotherValue');
4. Use MODIFY command with ALTER the datatype.  
ex:alter table [tablename] modify [attributename] [newdatatype];
5. Unnecessary tuples will also get selected
6. = (equal to)  
< > (not equal to)  
> (greater than)  
< (less than)  
>= (greater than or equal to)  
<= (less than or equal to)