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Experiment No.	2
Aim	To understand DDL and DML commands in MySQL.
Problem Statement	Write DDL commands to create a table with primary key , foreign key , and check constraints , and demonstrate altering the table to add , modify , or drop a column. Use DML commands to insert values into the table, update specific records, and delete records.
DDL Command	<pre>mysql> create database BMS; Query OK, 1 row affected (0.01 sec) mysql> use BMS; Database changed</pre> <p>Database created with the name BMS and use command is used with database name to perform operations on the database.</p> <pre>mysql> create table Donor(-> id int primary key, -> firstname varchar(20) not null, -> lastname varchar(20) not null, -> contact varchar(11), -> email varchar(550) unique, -> bloodgroup varchar(30), -> Age integer check(Age >= 18), -> healthstatus varchar(20) ->); Query OK, 0 rows affected (0.04 sec) mysql> desc Donor; +-----+-----+-----+-----+-----+-----+ Field Type Null Key Default Extra +-----+-----+-----+-----+-----+-----+ id int NO PRI NULL firstname varchar(20) NO NULL lastname varchar(20) NO NULL contact varchar(11) YES NULL email varchar(550) YES UNI NULL bloodgroup varchar(30) YES NULL Age int YES NULL healthstatus varchar(20) YES NULL +-----+-----+-----+-----+-----+-----+ 8 rows in set (0.01 sec)</pre> <p>The Donor table is created with a primary key, unique email, and not null constraints on `firstName` and `lastName`. It includes a check constraint on `Age` (must be ≥ 18) and stores other details like contact, blood group, and health status.</p>

```
mysql> create table Blood(
-> id int primary key,
-> bloodgroup varchar(20) not null,
-> quantity integer,
-> expiry_date date,
-> bloodStatus varchar(10)
-> );
```

Query OK, 0 rows affected (0.03 sec)

```
mysql> desc Blood;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	
bloodgroup	varchar(20)	NO		NULL	
quantity	int	YES		NULL	
expiry_date	date	YES		NULL	
bloodStatus	varchar(10)	YES		NULL	

5 rows in set (0.00 sec)

The **Blood** table is created to store information about blood units. It includes attributes such as id (the primary key), bloodgroup, quantity, expiry_date, and bloodStatus. This table helps manage the inventory of blood units and track their availability and condition.

```
mysql> create table Donne(
-> id int primary key,
-> firstname varchar(10) not null,
-> lastname varchar(10) not null,
-> contact varchar(20),
-> email varchar(30) unique,
-> bloodgroup varchar(10),
-> healthstatus varchar(15),
-> request_id varchar(10),
-> request_date date
-> );
```

Query OK, 0 rows affected (0.03 sec)

```
mysql> desc donne;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	
firstname	varchar(10)	NO		NULL	
lastname	varchar(10)	NO		NULL	
contact	varchar(20)	YES		NULL	
email	varchar(30)	YES	UNI	NULL	
bloodgroup	varchar(10)	YES		NULL	
healthstatus	varchar(15)	YES		NULL	
request_id	varchar(10)	YES		NULL	
request_date	date	YES		NULL	

9 rows in set (0.00 sec)

The **Donne** table is designed to hold details about donors. It consists of attributes including id (the primary key), firstName, lastName, contact, email (which is unique), bloodgroup, request_id, request date and healthstatus. This structure ensures that each donor's information is recorded accurately for future reference.

```
mysql> CREATE TABLE Blood_Donation (
->   id INT PRIMARY KEY,
->   donar_id INT(20),
->   blood_id INT(20),
->   donee_id INT(20),
->   donation_date DATE,
->   receive_date DATE,
->   FOREIGN KEY (donar_id) REFERENCES Donor(id),
->   FOREIGN KEY (blood_id) REFERENCES Blood(id),
->   FOREIGN KEY (donee_id) REFERENCES Donne(id)
-> );
Query OK, 0 rows affected, 3 warnings (0.04 sec)

mysql> desc Blood_Donation;
+-----+-----+-----+-----+-----+-----+
| Field      | Type | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id         | int  | NO   | PRI | NULL    |       |
| donar_id   | int  | YES  | MUL | NULL    |       |
| blood_id   | int  | YES  | MUL | NULL    |       |
| donee_id   | int  | YES  | MUL | NULL    |       |
| donation_date | date | YES  |     | NULL    |       |
| receive_date | date | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)
```

The **Blood_Donation** table serves to link donations to their respective donors and blood units. It contains foreign keys referencing the id from the **Donor** table, id from the **Blood** table, and id from the **Donne** table, along with a donation_date. This table maintains the relationships between donors and the blood they donate, facilitating effective tracking of donation events.

Alter Command:

```
mysql> alter table Donor
-> add Column gender varchar(15);
Query OK, 0 rows affected (0.04 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Donor;
+-----+-----+-----+-----+-----+-----+
| Field      | Type      | Null | Key | Default | Extra |
+-----+-----+-----+-----+-----+-----+
| id         | int       | NO   | PRI | NULL    |       |
| firstname  | varchar(20) | NO   |     | NULL    |       |
| lastname   | varchar(20) | NO   |     | NULL    |       |
| contact    | varchar(11) | YES  |     | NULL    |       |
| email      | varchar(550) | YES  |     | NULL    |       |
| bloodgroup | varchar(30) | YES  |     | NULL    |       |
| Age        | int       | YES  |     | NULL    |       |
| healthstatus | varchar(20) | YES  |     | NULL    |       |
| gender     | varchar(15) | YES  |     | NULL    |       |
+-----+-----+-----+-----+-----+-----+
9 rows in set (0.00 sec)
```

The command adds a new column named **gender** of type **varchar(15)** to the existing **Donor** table, allowing the storage of gender information for each donor.

```
mysql> alter table Donor
-> modify column gender varchar(15) not null;
Query OK, 0 rows affected (0.07 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Donor;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	
firstname	varchar(20)	NO		NULL	
lastname	varchar(20)	NO		NULL	
contact	varchar(11)	YES		NULL	
email	varchar(550)	YES	UNI	NULL	
bloodgroup	varchar(30)	YES		NULL	
Age	int	YES		NULL	
healthstatus	varchar(20)	YES		NULL	
gender	varchar(15)	NO		NULL	

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

The gender column is modified with not null so it will not accept null values for further insert operation.

```
mysql> alter table Donor
-> drop column gender;
Query OK, 0 rows affected (0.03 sec)
Records: 0 Duplicates: 0 Warnings: 0

mysql> desc Donor;
```

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI	NULL	
firstname	varchar(20)	NO		NULL	
lastname	varchar(20)	NO		NULL	
contact	varchar(11)	YES		NULL	
email	varchar(550)	YES	UNI	NULL	
bloodgroup	varchar(30)	YES		NULL	
Age	int	YES		NULL	
healthstatus	varchar(20)	YES		NULL	

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

Gender column is dropped using alter command.

```
mysql> truncate table bloodManager;
Query OK, 0 rows affected (0.04 sec)
```

Truncate command used.

```
mysql> drop table bloodManager;
Query OK, 0 rows affected (0.02 sec)
```

Drop Command used.

DML Command

```
mysql> INSERT INTO Donor(id, firstname, lastname, contact, email, bloodgroup, Age, healthstatus)
-> VALUES
-> (101, 'Sujal', 'Dingankar', '7798802841', 'sujal.dingankar@spit.ac.in', 'O+', 20, 'Healthy'),
-> (102, 'Shreeya', 'Nemade', '7698231082', 'shreeya.nemade@spit.ac.in', 'A+', 19, 'Healthy'),
-> (103, 'Harsha', 'Surwase', '5612798561', 'harsha.surwase@spit.ac.in', 'B+', 19, 'Healthy'),
-> (104, 'Avinash', 'Patil', '1234598745', 'avinash.patil@spit.ac.in', 'AB+', 20, 'Healthy'),
-> (105, 'Shruti', 'Bhuvad', '455612345', 'shruti.bhuvad@spit.ac.in', 'A+', 21, 'Healthy');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Donor;
+----+-----+-----+-----+-----+-----+-----+-----+
| id | firstname | lastname | contact | email | bloodgroup | Age | healthstatus |
+----+-----+-----+-----+-----+-----+-----+-----+
| 101 | Sujal | Dingankar | 7798802841 | sujal.dingankar@spit.ac.in | O+ | 20 | Healthy |
| 102 | Shreeya | Nemade | 7698231082 | shreeya.nemade@spit.ac.in | A+ | 19 | Healthy |
| 103 | Harsha | Surwase | 5612798561 | harsha.surwase@spit.ac.in | B+ | 19 | Healthy |
| 104 | Avinash | Patil | 1234598745 | avinash.patil@spit.ac.in | AB+ | 20 | Healthy |
| 105 | Shruti | Bhuvad | 455612345 | shruti.bhuvad@spit.ac.in | A+ | 21 | Healthy |
+----+-----+-----+-----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

This INSERT command adds five records to the Donor table, each representing a unique donor with attributes such as ID, first name, last name, contact number, email address, blood group, age and health status, all adhering to the specified data types and constraints.

```
mysql> Insert into Blood(id, bloodgroup, quantity, expiry_date, bloodstatus) Values
-> (101, 'A+', 50, '2024-10-13', 'Available'),
-> (102, 'B+', 100, '2024-10-09', 'Available'),
-> (103, 'AB+', 150, '2024-10-15', 'Expired'),
-> (104, 'O+', 170, '2024-10-20', 'Available'),
-> (105, 'A+', 60, '2024-10-14', 'Available');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Blood;
+----+-----+-----+-----+-----+
| id | bloodgroup | quantity | expiry_date | bloodStatus |
+----+-----+-----+-----+-----+
| 101 | A+ | 50 | 2024-10-13 | Available |
| 102 | B+ | 100 | 2024-10-09 | Available |
| 103 | AB+ | 150 | 2024-10-15 | Expired |
| 104 | O+ | 170 | 2024-10-20 | Available |
| 105 | A+ | 60 | 2024-10-14 | Available |
+----+-----+-----+-----+-----+
5 rows in set (0.00 sec)
```

This INSERT command adds five records to the Blood table, detailing various blood units with attributes including ID, blood group, quantity, expiry date, and availability status.

```
mysql> Insert into Donne(id, firstname,lastname, contact, email, bloodgroup, healthstatus, request_id, request_date)
-> Values
-> (101,'Shubham','Bhuvad','7798521123','shubham.bhuvad@spit.ac.in','A+','Healthy','R001','2024-10-05'),
-> (102,'Sanjay','Kadam','4568912345','sanjay.bhuvad@spit.ac.in','AB+','Healthy','R002','2024-10-06'),
-> (103,'Harshvardan','Nemade','777894561','harshavardan.nemade@spit.ac.in','O+','Healthy','R003','2024-10-14'),
-> (104,'Soham','Bhojane','564781234','soham.bhojane@spit.ac.in','A+','Healthy','R004','2024-10-20'),
-> (105,'Pratiksha','Kunke','8895421463','pratiksha.kunke@spit.ac.in','B+','Healthy','R005','2024-10-18');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from Donne;
```

id	firstname	lastname	contact	email	bloodgroup	healthstatus	request_id	request_date
101	Shubham	Bhuvad	7798521123	shubham.bhuvad@spit.ac.in	A+	Healthy	R001	2024-10-05
102	Sanjay	Kadam	4568912345	sanjay.bhuvad@spit.ac.in	AB+	Healthy	R002	2024-10-06
103	Harshvardan	Nemade	777894561	harshavardan.nemade@spit.ac.in	O+	Healthy	R003	2024-10-14
104	Soham	Bhojane	564781234	soham.bhojane@spit.ac.in	A+	Healthy	R004	2024-10-20
105	Pratiksha	Kunke	8895421463	pratiksha.kunke@spit.ac.in	B+	Healthy	R005	2024-10-18

5 rows in set (0.00 sec)

This **INSERT** command adds five records to the **Donne** table, capturing essential details for each individual, including ID, first name, last name, contact number, email address, blood group, and health status.

```
mysql> Insert into blood_donation(id,donar_id, blood_id, donee_id, donation_date, receive_date)
-> Values
-> (01,101,101,101,'2024-10-01','2024-10-05'),
-> (02,102,102,NULL,'2024-10-15',NULL),
-> (03,103,103,NULL,'2024-10-20',NULL),
-> (04,104,104,104,'2024-10-16','2024-10-12'),
-> (05,105,105,105,'2024-10-24','2024-10-25');
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
```

```
mysql> select * from blood_donation;
```

id	donar_id	blood_id	donee_id	donation_date	receive_date
1	101	101	101	2024-10-01	2024-10-05
2	102	102	NULL	2024-10-15	NULL
3	103	103	NULL	2024-10-20	NULL
4	104	104	104	2024-10-16	2024-10-12
5	105	105	105	2024-10-24	2024-10-25

5 rows in set (0.00 sec)

This **INSERT** command adds five records to the **Blood_Donation** table, documenting donation events with details including the donation ID, donor ID, blood ID, individual ID, and the date of donation.

```
mysql> Select * from Donor;
```

id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus
101	Sujal	Dingankar	7798802841	suja1.dingankar@spit.ac.in	O+	20	Healthy
102	Shreeya	Nemade	7698231082	shreeya.nemade@spit.ac.in	A+	19	Healthy
103	Harsha	Surwase	5612798561	harsha.surwase@spit.ac.in	B+	19	Healthy
104	Avinash	Patil	1234598745	avinash.patil@spit.ac.in	AB+	20	Healthy
105	Shruti	Bhuvad	455612345	shruti.bhuvad@spit.ac.in	A+	21	Healthy

```
5 rows in set (0.00 sec)

mysql> update Donor set firstname = "Avi" where id = 104;
Query OK, 1 row affected (0.01 sec)
Rows matched: 1 Changed: 1 Warnings: 0

mysql> Select * from Donor;
```

id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus
101	Sujal	Dingankar	7798802841	suja1.dingankar@spit.ac.in	O+	20	Healthy
102	Shreeya	Nemade	7698231082	shreeya.nemade@spit.ac.in	A+	19	Healthy
103	Harsha	Surwase	5612798561	harsha.surwase@spit.ac.in	B+	19	Healthy
104	Avi	Patil	1234598745	avinash.patil@spit.ac.in	AB+	20	Healthy
105	Shruti	Bhuvad	455612345	shruti.bhuvad@spit.ac.in	A+	21	Healthy

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

This **UPDATE** command modifies the **firstName** of the donor with ID **104**, changing it to "Avi" in the **Donor** table.

```
mysql> Select * from Donor;
```

id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus
101	Sujal	Dingankar	7798802841	suja1.dingankar@spit.ac.in	O+	20	Healthy
102	Shreeya	Nemade	7698231082	shreeya.nemade@spit.ac.in	A+	19	Healthy
103	Harsha	Surwase	5612798561	harsha.surwase@spit.ac.in	B+	19	Healthy
104	Avi	Patil	1234598745	avinash.patil@spit.ac.in	AB+	20	Healthy
105	Shruti	Bhuvad	455612345	shruti.bhuvad@spit.ac.in	A+	21	Healthy

```
5 rows in set (0.00 sec)

mysql> update Donor
-> set age = 20
-> where email like '%spit.ac.in';
Query OK, 3 rows affected (0.01 sec)
Rows matched: 5 Changed: 3 Warnings: 0

mysql> Select * from Donor;
```

id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus
101	Sujal	Dingankar	7798802841	suja1.dingankar@spit.ac.in	O+	20	Healthy
102	Shreeya	Nemade	7698231082	shreeya.nemade@spit.ac.in	A+	20	Healthy
103	Harsha	Surwase	5612798561	harsha.surwase@spit.ac.in	B+	20	Healthy
104	Avi	Patil	1234598745	avinash.patil@spit.ac.in	AB+	20	Healthy
105	Shruti	Bhuvad	455612345	shruti.bhuvad@spit.ac.in	A+	20	Healthy

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

This **UPDATE** command sets the **age** to **20** for all donors in the **Donor** table whose email addresses end with **@spit.ac.in**.

	<pre>mysql> DELETE FROM Blood_Donation WHERE donee_id = 105; Query OK, 1 row affected (0.01 sec) mysql> DELETE FROM Donne WHERE bloodgroup = 'B+'; Query OK, 1 row affected (0.00 sec) mysql> Select * from Donne;</pre> <table><tr><th>id</th><th>firstname</th><th>lastname</th><th>contact</th><th>email</th><th>bloodgroup</th><th>healthstatus</th><th>request_id</th><th>request_date</th></tr><tr><td>101</td><td>Shubham</td><td>Bhuvad</td><td>7798521123</td><td>shubham.bhuvad@spit.ac.in</td><td>A+</td><td>Healthy</td><td>R001</td><td>2024-10-05</td></tr><tr><td>102</td><td>Sanjay</td><td>Kadam</td><td>4568912345</td><td>sanjay.bhuvad@spit.ac.in</td><td>AB+</td><td>Healthy</td><td>R002</td><td>2024-10-06</td></tr><tr><td>103</td><td>Harshvardan</td><td>Nemade</td><td>777894561</td><td>harshavardan.nemade@spit.ac.in</td><td>O+</td><td>Healthy</td><td>R003</td><td>2024-10-14</td></tr><tr><td>104</td><td>Soham</td><td>Bhojane</td><td>564781234</td><td>soham.bhojane@spit.ac.in</td><td>A+</td><td>Healthy</td><td>R004</td><td>2024-10-20</td></tr></table> <pre>4 rows in set (0.00 sec)</pre>	id	firstname	lastname	contact	email	bloodgroup	healthstatus	request_id	request_date	101	Shubham	Bhuvad	7798521123	shubham.bhuvad@spit.ac.in	A+	Healthy	R001	2024-10-05	102	Sanjay	Kadam	4568912345	sanjay.bhuvad@spit.ac.in	AB+	Healthy	R002	2024-10-06	103	Harshvardan	Nemade	777894561	harshavardan.nemade@spit.ac.in	O+	Healthy	R003	2024-10-14	104	Soham	Bhojane	564781234	soham.bhojane@spit.ac.in	A+	Healthy	R004	2024-10-20
id	firstname	lastname	contact	email	bloodgroup	healthstatus	request_id	request_date																																						
101	Shubham	Bhuvad	7798521123	shubham.bhuvad@spit.ac.in	A+	Healthy	R001	2024-10-05																																						
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103	Harshvardan	Nemade	777894561	harshavardan.nemade@spit.ac.in	O+	Healthy	R003	2024-10-14																																						
104	Soham	Bhojane	564781234	soham.bhojane@spit.ac.in	A+	Healthy	R004	2024-10-20																																						
	<p>This DELETE command removes all records from the Donne table where the bloodgroup is 'B+'.</p>																																													
Conclusion	<p>From this experiment, I learned how to use different DDL and DML commands in MySQL to create and manage database structures and manipulate data. This experience improved my skills in organizing and handling information effectively within a database.</p>																																													