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Experiment No.	2
Aim	To understand DDL and DML commands in MySql.
Problem Statement	Write <b>DDL</b> commands to create a table with <b>primary key, foreign key,</b> and <b>check constraints,</b> and demonstrate altering the table to <b>add, modify, or drop</b> a column. Use <b>DML</b> commands to <b>insert</b> values into the table, <b>update</b> specific records, and <b>delete</b> records.
DDI Commond	mysql> create database BMS;

## **DDL Command**

```
mysql> create database BMS;
Query OK, 1 row affected (0.01 sec)
mysql> use BMS;
Database changed
```

Database created with the name BMS and use command is used with database name to perform operations on the database.

```
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
                                   Null | Key |
                                                 Default | Extra
                  Type
                                           PRI
                                                 NULL
  id
                  int
                                   NO
  firstname
                  varchar(20)
                                   NO
                                                  NULL
  lastname
                  varchar(20)
                                   NO
                                                  NULL
                  varchar(11)
varchar(550)
  contact
                                   YES
                                                  NULL
                                           UNI
  email
                                   YES
                                                  NULL
  bloodgroup
                  varchar(30)
                                   YES
                                                  NULL
                                   YES
                                                  NULL
                   int
  Age
                  varchar(20)
                                   YES
                                                  NULL
  healthstatus
8 rows in set (0.01 sec)
```

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  $\geq 18$ ) and stores other details like contact, blood group, and health status.

```
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
                               Null |
                                      Key |
                                             Default | Extra
                Type
  id
                 int
                               NO
                                       PRI
                                             NULL
  bloodgroup
                 varchar(20)
                               NO
                                             NULL
  quantity
                 int
                               YES
                                             NULL
                                             NULL
  expiry_date
                 date
                               YES
  bloodStatus
                 varchar(10)
                                             NULL
                               YES
 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
                  varchar(10)
                                  NO
                                                NULL
  firstname
  lastname
                  varchar(10)
                                  NO
                                                NULL
                  varchar(20)
varchar(30)
  contact
                                  YES
                                                NULL
                                          UNI
  email
                                  YES
                                                NULL
                                                NULL
                  varchar(10)
                                  YES
  bloodgroup
  healthstatus
                  varchar(15)
                                  YES
                                                NULL
  request_id
                  varchar(10)
                                  YES
                                                NULL
                                                NULL
  request_date
                  date
                                  YES
 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 | Kev |
                                               Default |
                                                          Extra
  id
                  int
                                  NO
                                         PRI
                                               NULL
                  varchar(20)
  firstname
                                  NO
                                               NULL
  lastname
                  varchar(20)
                                  NO
                                               NULL
                  varchar(11)
  contact
                                  YES
                                               NULL
  email
                  varchar(550)
                                  YES
                                         UNI
                                               NULL
                  varchar(30)
                                  YES
                                               NULL
  bloodgroup
                  int
                                  YES
                                               NULL
  Age
  healthstatus
                  varchar(20)
                                  YES
                                               NULL
  gender
                  varchar(15)
                                  YES
                                               NULL
 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.

```
mysgl> 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
                                Null |
                                       Key | Default
                                                        Extra
                 Type
 id
                                        PRI
                 int
                                NO
                                              NULL
                 varchar(20)
  firstname
                                 NO
                                              NULL
                                NO
 lastname
                 varchar(20)
                                              NULL
                 varchar(11)
                                 YES
 contact
                                              NULL
  email
                 varchar(550)
                                YES
                                        UNI
                                              NULL
                                              NULL
 bloodgroup
                 varchar(30)
                                YES
                                              NULL
                 int
                                 YES
  Age
  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
                                     Null | Key | Default | Extra
                  Type
                                             PRI |
                                     NO
                                                     NULL
                    varchar(20)
  firstname
                                     NO
                                                     NULL
                                                     NULL
  lastname
                    varchar(20)
                                     NO
                    varchar(11)
varchar(550)
                                      YES
  contact
                                                     NULL
  email
                                             UNI
                                     YES
                                                     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', '0+', 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');
     -> (104, 'AVIIIa.
-> (105, 'Shruti',
Query OK, 5 rows affected (0.01 sec)
Records: 5 Duplicates: 0 Warnings: 0
mysql> select * from Donor;
            firstname
                              lastname
                                                 contact
                                                                   email
                                                                                                                 bloodgroup
                                                                                                                                               healthstatus
   id
                                                                                                                                     Age
                                                 7798802841
                                                                    sujal.dingankar@spit.ac.in
                                                                                                                                                Healthy
            Sujal
                              Dingankar
                                                                                                                                        19
   102
           Shreeya
                                                 7698231082
                                                                     shreeya.nemade@spit.ac.in
                                                                                                                 Α+
                                                                                                                                                Healthy
                              Nemade
   103
            Harsha
                              Surwase
                                                 5612798561
                                                                     harsha.surwase@spit.ac.in
                                                                                                                 B+
                                                                                                                                        19
                                                                                                                                                Healthy
   104
           Avinash
                              Patil
                                                 1234598745
                                                                    avinash.patil@spit.ac.in
                                                                                                                 AB+
                                                                                                                                                Healthy
                                                                                                                                        20
                                                 455612345
                                                                     shruti.bhuvad@spit.ac.in
   105
           Shruti
                              Bhuvad
                                                                                                                 Δ+
                                                                                                                                                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, '0+',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
                                       50
                                               2024-10-13
                                                                   Available
   102
           B+
                                      100
                                              2024-10-09
                                                                   Available
   103
           AB+
                                      150
                                               2024-10-15
                                                                   Expired
   104
           0+
                                      170
                                               2024-10-20
                                                                   Available
   105
                                              2024-10-14
                                                                   Available
           Δ+
                                       60
  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
                                                                                                                         | bloodgroup | healthstatus | request_id | request_date
                                                                      email
                                                    7798521123
  101 | Shubham
                                                                                                                                                Healthy
                                                                                                                                                                                            2024-10-05
                                   Bhuvad
                                                                       shubham.bhuvad@spit.ac.in
                                                                                                                           A+
                                                                                                                                                                        R001
   102
            Sanjay
                                   Kadam
                                                    4568912345
                                                                        sanjay.bhuvad@spit.ac.in
                                                                                                                           AB+
                                                                                                                                                Healthy
                                                                                                                                                                        R002
                                                                                                                                                                                            2024-10-06
   103
            Harshvardan
                                   Nemade
                                                    777894561
                                                                        harshavardan.nemade@spit.ac.in
                                                                                                                           0+
                                                                                                                                                Healthy
                                                                                                                                                                        R003
                                                                                                                                                                                            2024-10-14
            Soham
                                   Bhojane
                                                    564781234
                                                                        soham.bhojane@spit.ac.in
                                                                                                                                                                        R004
                                                                                                                                                                                            2024-10-20
   104
                                                                                                                            Δ+
                                                                                                                                                Healthy
   105 | Pratiksha
                                                    8895421463
                                                                        pratiksha.kunke@spit.ac.in
                                                                                                                            B+
                                                                                                                                                Healthy
                                                                                                                                                                        R005
                                                                                                                                                                                            2024-10-18
                                   Kunke
  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
-> 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;
          donar_id | blood_id | donee_id | donation_date
   id
                                                                                receive_date
     1
                  101
                                  101
                                                  101
                                                            2024-10-01
                                                                                   2024-10-05
                  102
                                  102
                                                 NULL
                                                            2024-10-15
                                                                                   NULL
                  103
                                  103
                                                            2024-10-20
                                                                                   NIII I
                                                 NULL
                                                            2024-10-16
     4
                  104
                                  104
                                                  104
                                                                                   2024-10-12
     5
                                  105
                  105
                                                   105
                                                            2024-10-24
                                                                                   2024-10-25
   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.

id	firstname	lastname	contact	email	bloodgroup	Age	healthstatus	
101	Sujal	Dingankar	7798802841	sujal.dingankar@spit.ac.in	0+	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	
/sql> uery ( ows ma	in set (0.00  update Donor  DK, 1 row affatched: 1 Ch  Select * fro	r set firstna fected (0.01 hanged: 1 Wa	sec)	nere id = 104;				
rsql> uery ( ows ma	update Donon DK, 1 row aft atched: 1 Ch	r set firstna fected (0.01 hanged: 1 Wa	sec)	nere id = 104;    email	:	I – – – – – – – – – – – – – – – – – – –	:	
sql> ery ( ws ma sql>  id	update Donoi DK, 1 row aff atched: 1 Ch Select * fro	r set firstna fected (0.01 hanged: 1 Wa om Donor;      lastname	sec) arnings: 0    contact	email	bloodgroup	<del> </del>	i	
sql> ery ( ws ma sql>  id   +	update Donon DK, 1 row aff atched: 1 Ch Select * fro firstname Sujal	r set firstna fected (0.01 hanged: 1 Wa om Donor;      lastname   Dingankar	sec) arnings: 0   contact   7798802841	   email      sujal.dingankar@spit.ac.in	   0+	   20	   healthstatu:      Healthy	
sql> ery ( ws ma sql> + id   + 101   102	update Donor DK, 1 row aff atched: 1 Cf Select * fro firstname Sujal Shreeya	r set firstna fected (0.01 hanged: 1 Wa om Donor;   lastname   Dingankar   Nemade	sec) arnings: 0   contact   7798802841   7698231082	email email sujal.dingankar@spit.ac.in shreeya.nemade@spit.ac.in	   0+   A+	20 19	Healthy	
rsql> lery ( lows ma rsql>	update Donon DK, 1 row aff atched: 1 Ch Select * fro firstname Sujal	r set firstna fected (0.01 hanged: 1 Wa om Donor;      lastname   Dingankar	sec) arnings: 0   contact   7798802841	   email      sujal.dingankar@spit.ac.in	   0+	   20	Healthy	

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   102   Shreeya   103   Harsha   104   Avi   105   Shruti	Dingankar   Nemade   Surwase   Patil   Bhuvad	7798802841 7698231082 5612798561 1234598745 455612345	sujal.dingankar@spit.ac.in shreeya.nemade@spit.ac.in harsha.surwase@spit.ac.in avinash.patil@spit.ac.in shruti.bhuvad@spit.ac.in	0+   A+   B+   AB+   A+	20 19 19 20 21	Healthy Healthy Healthy Healthy Healthy			
<pre>5 rows in set (0.00 sec)  mysql&gt; update Donor     -&gt; set age = 20     -&gt; where email like'%spit.ac.in'; Query OK, 3 rows affected (0.01 sec) Rows matched: 5 Changed: 3 Warnings: 0  mysql&gt; Select * from Donor;</pre>									
id   firstname	lastname	contact	email	bloodgroup	Age	healthstatus			
101   Sujal 102   Shreeya 103   Harsha 104   Avi 105   Shruti	Shreeya   Nemade   7698231082   shreeya.nemade@spit.ac.in   A+   20   Healthy   Harsha   Surwase   5612798561   harsha.surwase@spit.ac.in   B+   20   Healthy   Avi   Patil   1234598745   avinash.patil@spit.ac.in   AB+   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**.

	Query OK, 1 row af mysql> DELETE FROM Query OK, 1 row af	<pre>mysql&gt; DELETE FROM Blood_Donation WHERE donee_id = 105; Query OK, 1 row affected (0.01 sec)  mysql&gt; DELETE FROM Donne WHERE bloodgroup = 'B+'; Query OK, 1 row affected (0.00 sec)  mysql&gt; Select * from Donne;</pre>								
	id   firstname	lastname	t   contact	+   email	+   bloodgroup	+   healthstatus :	+   request_id	request_date		
	101   Shubham   102   Sanjay   103   Harshvarda   104   Soham	Bhuvad   Kadam   Nemade   Bhojane	7798521123   4568912345   777894561   564781234	shubham.bhuvad@spit.ac.in   sanjay.bhuvad@spit.ac.in   harshavardan.nemade@spit.ac.in   soham.bhojane@spit.ac.in	A+   AB+   O+   A+	Healthy   Healthy   Healthy   Healthy	R001   R002   R003   R004	2024-10-05 2024-10-06 2024-10-14 2024-10-20		
	4 rows in set (0.0  This DELI bloodgrou	ЕТЕ со		removes all record	s from	the <b>Donr</b>	<b>ne</b> table	where the		
Conclusion	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.									