

## 20/2/22 Data Definition Language - Project

- AIM - To use data definition language to create tables, apply keys and required constraints for blood donation database.
- Project Title - Blood Donation Management System.
- Creating Tables with Constraints
- Constraints enforce rules at the table level. They prevent deletion of a table if there are dependencies.
- Constraint types available in Oracle:
  - NOT NULL
  - UNIQUE KEY
  - PRIMARY KEY
  - FOREIGN KEY
  - CHECK
- Defining Constraints
- Column level :  
column [constraint constraint name] constraint type
- Table constraint level :  
[constraint constraint name] constraint type (column)
- Create Table tablename (column datatype column constraint,  
.....  
table constraint );

◦ Creating Tables with constraints and keys:

→ Create a table hospital with two columns as not null and hospital ID as primary key.

> Create Table Hospital

```
(HospitalID varchar(10) PrimaryKey,  
  DdrID varchar(30) NOT NULL,  
  Name varchar(30) NOT NULL,  
  Phone varchar(30),  
  Address varchar(50));
```

→ Create a table manager with EmpID as primary key and the name column cannot have null values

> Create Table Manager

```
(EmpID varchar(10) PrimaryKey,  
  Name varchar(30) Not Null,  
  Phone varchar(30),  
  Address varchar(50),  
  Email varchar(60));
```

→ Create a Table to Store blood type information with BloodID as primary key.

> Create Table Blood

```
(BloodID varchar(10) PrimaryKey,  
  BloodType varchar(30),  
  BloodBankID varchar(10),  
  Date of Reg date);
```



## Creating Tables with Constraints and Keys

```
mysql> CREATE TABLE Hospital
-> (HospitalID varchar(10) PRIMARY KEY,
-> OrderID varchar(30) NOT NULL,
-> Name varchar(30) NOT NULL,
-> Phone varchar(30),
-> Address varchar(50));
```

Query OK, 0 rows affected (0.44 sec)

```
mysql> DESC HOSPITAL
-> ;
```

Field	Type	Null	Key	Default	Extra
HospitalID	varchar(10)	NO	PRI	NULL	
OrderID	varchar(30)	NO		NULL	
Name	varchar(30)	NO		NULL	
Phone	varchar(30)	YES		NULL	
Address	varchar(50)	YES		NULL	

```
mysql> CREATE TABLE Manager
-> (EmpID varchar(10) PRIMARY KEY,
-> Name varchar(30) NOT NULL,
-> Phone varchar(30),
-> Address varchar(50),
-> email varchar(60));
```

Query OK, 0 rows affected (1.27 sec)

```
mysql> DESC MANAGER;
```

Field	Type	Null	Key	Default	Extra
EmpID	varchar(10)	NO	PRI	NULL	
Name	varchar(30)	NO		NULL	
Phone	varchar(30)	YES		NULL	
Address	varchar(50)	YES		NULL	
email	varchar(60)	YES		NULL	

5 rows in set (0.12 sec)

→ Create a table stock to store stock information with stock ID as primary key

→ Create Table stock  
(StockID ~~ID~~ varchar(10) Primary Key,  
BloodID varchar(10),  
Qty decimal);

→ Create a table to store information of all blood banks and orders

→ Create Table BloodBank  
(BloodBankID varchar(10) Primary Key,  
OrderID varchar(30),  
OrderDesc varchar(50),  
Name varchar(30));

○ Adding a constraint

→ Add or drop but not modify a constraint

→ Add a not null constraint using the modify clause

→ Syntax :

Alter Table table\_name Add Constraint  
constraint-name constraint-type(column);

Q Alter table and add not null constraint to Name of hospital table.

→ Alter table hospital ~~add~~ modify Name varchar(30)  
NOT NULL;

```
mysql> CREATE TABLE Stock
-> (StockID varchar(10) PRIMARY KEY,
-> BloodID VARCHAR(10),
-> Qty Decimal);
```

Query OK, 0 rows affected (0.91 sec)

```
mysql> desc stock
-> ;
```

Field	Type	Null	Key	Default	Extra
StockID	varchar(10)	NO	PRI	NULL	
BloodID	varchar(10)	YES		NULL	
Qty	decimal(10,0)	YES		NULL	

3 rows in set (0.05 sec)

```
mysql> CREATE TABLE Blood
-> (BloodID varchar(10) PRIMARY KEY,
-> BloodType varchar(30),
-> BloodBankID varchar(10),
-> DateOfReg date);
```

Query OK, 0 rows affected (6.30 sec)

```
mysql> desc Blood;
```

Field	Type	Null	Key	Default	Extra
BloodID	varchar(10)	NO	PRI	NULL	
BloodType	varchar(30)	YES		NULL	
BloodBankID	varchar(10)	YES		NULL	
DateOfReg	date	YES		NULL	

4 rows in set (0.00 sec)

```
mysql> CREATE TABLE BloodBank
-> (BloodBankID varchar(10) PRIMARY KEY,
-> OrderID varchar(30),
-> OrderDesc varchar(50),
-> Name varchar(30));
```

Query OK, 0 rows affected (0.66 sec)

```
mysql> desc BloodBank;
```

Field	Type	Null	Key	Default	Extra
BloodBankID	varchar(10)	NO	PRI	NULL	
OrderID	varchar(30)	YES		NULL	
OrderDesc	varchar(50)	YES		NULL	
Name	varchar(30)	YES		NULL	



Q. Alter table BloodBank and add unique key constraint to OrderID

→ Alter Table BloodBank Modify  
OrderID varchar(10) UNIQUE;

Q. Alter table Manager to add a check constraint to restrict empID between 1500 and 3000

→ Alter Table Manager Add Constraint emp-ck  
check (EmpID between 1500 and 3000);

Q. Add a Foreign Key constraint to Stock table indicating that BloodID is a valid ID from Blood Bank Table.

→ Alter Table Stock Add Constraint Bloodfk  
Foreign Key (BloodID) References  
Blood (BloodID);

Q. Add a Foreign Key constraint to Blood Table for BloodBankID connecting to Blood Bank table.

→ Alter Table Blood Add Constraint BloodBankfk  
Foreign Key (BloodBankID)  
References BloodBank (BloodBankID);

## Altering Table and Adding Constraints

```
mysql> Alter table hospital modify Name varchar(30) NOT NULL;  
Query OK, 0 rows affected (0.39 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> DESC HOSPITAL;
```

Field	Type	Null	Key	Default	Extra
HospitalID	varchar(10)	NO	PRI	NULL	
OrderID	varchar(30)	NO		NULL	
Name	varchar(30)	NO		NULL	
Phone	varchar(30)	YES		NULL	
Address	varchar(50)	YES		NULL	

5 rows in set (0.10 sec)

```
mysql> ALTER TABLE BLOODBANK MODIFY ORDERID varchar(10) UNIQUE;  
Query OK, 0 rows affected (2.82 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> DESC BloodBank;
```

Field	Type	Null	Key	Default	Extra
BloodBankID	varchar(10)	NO	PRI	NULL	
ORDERID	varchar(10)	YES	UNI	NULL	
OrderDesc	varchar(50)	YES		NULL	
Name	varchar(30)	YES		NULL	

4 rows in set (0.06 sec)

```
mysql> Alter table manager add constraint emp_ck CHECK(EmpID BETWEEN 1500 AND 3000);  
Query OK, 0 rows affected (4.30 sec)  
Records: 0 Duplicates: 0 Warnings: 0
```



## • Dropping Constraints

→ Constraints can be dropped from the table using drop constraint

→ Syntax :

Alter Table tablename Drop Constraint constraint-name;

Q Remove the emp\_ck constraint added to Manager Table

→ Alter Table Manager Drop Constraint emp\_ck;

## • Disable and Enable Constraint

→ Execute the Disable clause of the Alter Table statement to deactivate a constraint.

→ Activate a constraint using Enable clause.

Q. Disable all keys of Blood Bank Table.

→ Alter table Bloodbank disable keys;

Q. Enable all keys of Bloodbank table.

→ Alter table Bloodbank enable keys;



## Adding Foreign Keys

```
mysql> Alter table Stock Add Constraint Blood_fk FOREIGN KEY(BloodID) REFERENCES Blood(BloodID);
Query OK, 0 rows affected (4.02 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> DESC STOCK;
```

Field	Type	Null	Key	Default	Extra
StockID	varchar(10)	NO	PRI	NULL	
BloodID	varchar(10)	YES	MUL	NULL	
Qty	decimal(10,0)	YES		NULL	

```
3 rows in set (0.06 sec)
```

```
mysql> Alter table Blood Add Constraint BloodBank_fk FOREIGN KEY(BloodBankID) REFERENCES BloodBank(BloodBankID);
Query OK, 0 rows affected (4.08 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

```
mysql> desc blood;
```

Field	Type	Null	Key	Default	Extra
BloodID	varchar(10)	NO	PRI	NULL	
BloodType	varchar(30)	YES		NULL	
BloodBankID	varchar(10)	YES	MUL	NULL	
DateOfReg	date	YES		NULL	

## Dropping Constraints

```
mysql>
mysql> Alter Table Manager Drop constraint emp_ck;
Query OK, 0 rows affected (0.31 sec)
Records: 0 Duplicates: 0 Warnings: 0
```

## Disabling and Enabling Constraints

```
mysql> alter table bloodbank disable keys;  
Query OK, 0 rows affected, 1 warning (0.04 sec)  
  
mysql> alter table bloodbank enable keys;  
Query OK, 0 rows affected, 1 warning (0.04 sec)
```



## ◦ Result

Data Definition Language was used for creating tables and constraints for Blood Donation Management System