

```
show databases;  
create database practise;
```

1NF:

Q1:

to convert the table into 1NF:

```
create table StudentInfo (  
    studentId numeric,  
    Name varchar(35),  
    PhoneNumber varchar(10)  
)
```

```
insert into StudentInfo values(studentId, Name, PhoneNumber) VALUES  
(101, 'Ravi', '98765'),  
(101, 'Ravi', '87654'),  
(102, 'Anita', '99900'),  
(103, 'John', '88888'),  
(103, 'John', '77777'),  
(103, 'John', '66666');
```

Q2.

```
create table customers (  
    orderID numeric ,  
    Customer varchar(30),  
    Items varchar(30)  
)
```

```
insert into customers values(  
(01,'Raj','Pen'),  
(01,'Raj','Pencil'),  
(02,'Sam','Notebook'),  
(03,'Raj','Eraser'),  
(03,'Raj','Marker'),  
(03,'Raj','Pen'),  
)
```

Q3.

```
create table employee(
    EmpID int,
    EmpName varchar(50),
    Skill varchar(50)
);

insert into employee(EmpID, EmpName, Skill) VALUES
(1, 'Ramesh', 'Java'),
(1, 'Ramesh', 'Python'),
(2, 'Anita', 'Excel'),
(3, 'John', 'C++'),
(3, 'John', 'Java'),
(3, 'John', 'HTML');
```

Q4.

```
CREATE TABLE Customers1NF (
    CustID INT,
    Name VARCHAR(50),
    City VARCHAR(50),
    State VARCHAR(50),
    Country VARCHAR(50)
);
```

```
INSERT INTO Customers1NF (CustID, Name, City, State, Country) VALUES
(1, 'Meera', 'Hyderabad', 'Telangana', 'India'),
(2, 'Ajay', 'Pune', 'Maharashtra', 'India');
```

2NF:

Q5:

```
show databases;
create database practise;
use practise;
create table student(
StudentID numeric primary key,
StudentName varchar(35)
);

create table courses(
courseID varchar(10) primary key,
courseName varchar(50),
```

```
Faculty varchar(100)
);

create table enrollment (
StudentID numeric,
CourseID varchar(10),
Marks varchar(20),
primary key (StudentID , CourseID),
Foreign Key (StudentID) references student(StudentID),
foreign key (CourseID) references courses(courseID)
);
```

```
show tables;
```

```
insert into student values
(1,'Ramesh'),
(2,'Anita')
; 
```

```
insert into courses values
('c1','Java','Amit'),
('c2','Python','Seema');
```

```
insert into enrollment values
(1,'c1',90),
(1,'c2',85),
(2,'c1',78);
```

Q6:

```
create table products(
productID varchar(10) primary key,
productName varchar(50)
);
```

```
create table orders(
orderID numeric(10) primary key,
customerName varchar(100)
);
```

```
create table orderDetails(
orderID numeric(10),
productID varchar(10),
```

```
quantity varchar(5),
foreign key (orderID) references orders(orderID),
foreign key (productID) references products(productID),
primary key(orderID, productID)
);
```

```
insert into products values
('P1', 'Pen'),
('P2','Pencil');
```

```
insert into orders values
(1,'Raj'),
(2,'Meena');
```

```
insert into orderDetails values
(1,'P1','2'),
(1,'P2','1'),
(2,'P1','3')
;
```

Q7:

```
create table employee(
emplID numeric primary key,
empName varchar(10)
);
```

```
insert into employee values
(1,'Ravi'),
(2,'Anita');
```

```
create table project(
projectID varchar(5) primary key,
ProjectName varchar (10)
);
```

```
insert into project values
('P1','WebApp'),
('P2','MobileApp');
```

```
create table projDetails(
emplID numeric,
projectID varchar(5),
```

```
HoursWorked varchar(20),  
primary key (empID , projectID),  
foreign key (empID) references employee(empID),  
foreign key (projectID) references project(projectID)  
);
```

```
insert into projDetails values  
(1,'P1','20'),  
(1,'P2','30'),  
(2,'P1','25');
```

Q8:

```
CREATE TABLE Drivers (  
    DriverID VARCHAR(10) PRIMARY KEY,  
    DriverName VARCHAR(100)  
);
```

```
INSERT INTO Drivers (DriverID, DriverName) VALUES  
('D1', 'Amit'),  
('D2', 'Sunil');
```

```
CREATE TABLE Routes (  
    RouteID VARCHAR(10) PRIMARY KEY,  
    RouteName VARCHAR(100),  
    Distance VARCHAR(20)  
);
```

```
INSERT INTO Routes (RouteID, RouteName, Distance) VALUES  
('R1', 'Airport Route', '40 km'),  
('R2', 'City Route', '20 km');
```

```
CREATE TABLE DriverRoutes (  
    DriverID VARCHAR(10),  
    RouteID VARCHAR(10),  
    PRIMARY KEY (DriverID, RouteID),  
    FOREIGN KEY (DriverID) REFERENCES Drivers(DriverID),  
    FOREIGN KEY (RouteID) REFERENCES Routes(RouteID)  
);
```

```
INSERT INTO DriverRoutes (DriverID, RouteID) VALUES  
('D1', 'R1'),  
('D1', 'R2'),
```

('D2', 'R1');

Q9:

1NF:

```
CREATE TABLE Orders1NF (
    OrderID VARCHAR(10),
    CustomerName VARCHAR(50),
    City VARCHAR(50),
    ProductID VARCHAR(10),
    ProductName VARCHAR(100),
    Price DECIMAL(10,2),
    Quantity INT
);
```

```
INSERT INTO Orders(OrderID, CustomerName, City, ProductID, ProductName, Price, Quantity)
VALUES
('O1','Ravi','Mumbai','P1','Pen',10,2),
('O1','Ravi','Mumbai','P1','Pen',10,3),
('O2','Meena','Delhi','P2','Book',100,1),
('O2','Meena','Delhi','P3','Bag',500,1),
('O2','Meena','Delhi','P3','Bag',500,2);
```

2NF:

```
CREATE TABLE Orders (
    OrderID VARCHAR(10) PRIMARY KEY,
    CustomerName VARCHAR(50),
    City VARCHAR(50)
);
```

```
INSERT INTO Orders (OrderID, CustomerName, City) VALUES
('O1','Ravi','Mumbai'),
('O2','Meena','Delhi');
```

```
CREATE TABLE Products (
    ProductID VARCHAR(10) PRIMARY KEY,
    ProductName VARCHAR(100),
    Price DECIMAL(10,2)
);
```

```
INSERT INTO Products (ProductID, ProductName, Price) VALUES
('P1','Pen',10),
('P2','Book',100),
('P3','Bag',500);
```

```
CREATE TABLE OrderItems (
    OrderID VARCHAR(10),
    ProductID VARCHAR(10),
    LineNo INT,          -- distinguishes multiple quantities for same product in same order
    Quantity INT,
    PRIMARY KEY (OrderID, ProductID, LineNo),
    FOREIGN KEY (OrderID) REFERENCES Orders(OrderID),
    FOREIGN KEY (ProductID) REFERENCES Products(ProductID)
);
```

```
INSERT INTO OrderItems (OrderID, ProductID, LineNo, Quantity) VALUES
('O1','P1',1,2),
('O1','P1',2,3),
('O2','P2',1,1),
('O2','P3',1,1),
('O2','P3',2,2);
```