1. 🡪Create Database library\_system ;

USE library\_system ;

🡪Create table LibraryBooks (Accession\_Number (integer)) primary key, Title (varchar(20)) not null, Author (varchar(60)) not null, Department (varchar(30)) not null ,Purchase\_Date (date) not null, Price (decimal(5,2)) ;

🡪Create table IssuedBooks (Accession\_Number (integer)not null, Borrower(varchar(47)) not null , Foreign key (Accession\_Number) REFRENCES LibraryBooks (Accession\_Number));

1. **Primary Key** -- Accession\_Number in TABLE LibraryBooks

**Foreign Key** -- Accession\_Number in TABLE IssuedBooks

* INSERT INTO LibraryBooks VALUES (5541, “Discrete Maths”, “R.D Sharma” , “Mathematics”, “2INT-5-4” , 550.00 ) ;
* INSERT INTO LibraryBooks VALUES (6721 , “ Python programming” , “Navathe” , “CS”, “2003-6-5”, 650.00);
* INSERT INTO LibraryBooks VALUES (7588 , “Literature and Grammar” , “S.Chand” , “English” , “2001-7-18”, 420.00) ;
* INSERT INTO LibraryBooks VALUES (8875 , “Database System Concepts” , “Bayross” , “CS” , “2000-5-26” , 435.00) ;
* INSERT INTO LibraryBooks VALUES (8765 , “Quantum Physics” , “Arihant” , “Physics” , “2005-6-11”, 650.00) ;
* INSERT INTO IssuedBooks VALUES (5541 , “Aman”);
* INSERT INTO IssuedBooks VALUES (6721 , “Derek” );
* INSERT INTO IssuedBooks VALUES ( 7588, “Akshay”);
* INSERT INTO IssuedBooks VALUES ( 8875, “Naidu” );
* INSERT INTO IssuedBooks VALUES (8765 , “Pallavi”);

(b) SET Foreign\_Key\_Checks = Off ;

DELETE FROM IssuedBooks WHERE Accession\_Number = 8875 ;

DELETE FROM LibraryBooks WHERE Title = “Database System Concepts" ;

SET Foreign\_Key\_Checks = On ;

(c) UPDATE LibraryBooks SET Department = “CS” WHERE Title = “Discrete Maths” ;

(d) SELECT Title FROM LibraryBooks WHERE Department = “CS” ;

1. SELECT Title FROM LibraryBooks WHERE Department = “CS” and Author = “Navathe” ;
2. SSELECT Title From LibraryBooks, IssuedBooks WHERE LibraryBooks.Accession Number = IssiedBooks.Accession Number and Department = “CS” ;
3. SELECT Title FROM LibraryBooks WHERE (Price < 500 And Purchase\_Date BETWEEN “1999-01-01” And “2004-01-01”) ;

2. 🡪CREATE DATABASE ComputerScience ;

USE ComputerScience;

🡪CREATE table Personal\_Information (College\_Roll\_Number (Integer(7)) primary key , Name (varchar(50))not null, Date\_of\_birth (date) not null , Address (varchar(60)), Marks\_in\_10+2 (integer(2)) not null, Phone\_number varchar(10)) not null) ;

🡪CREATE TABLE PaperDetails (Paper\_Code(int(4)) primary key ,Name\_of\_the\_paper (char(80)) unique );

🡪CREATE TABLE Student\_Academic\_And\_Attendance\_Details (College\_Roll\_Number (int(7)) primary key, Paper Code(int(4)) not null , Attendance(int) not null ,Marks (int(3)) not null ,Foreign Key (College\_Roll\_Number) REFRENCES Personal\_Information (College\_Roll\_Number) ,Foreign Key (Paper\_Code) REFRENCES PaperDetails (Paper\_Code)) ;

1. **Primary key** -- College\_Roll\_Number in TABLE Personal\_Information

Paper\_Code in TABLE PaperDetails

**Foreign Key** -- College\_Roll\_Number in TABLE Student\_Academic\_And\_Attendance\_Details

Paper\_Code in TABLE Student\_Academic\_And\_Attendance\_Details

* INSERT INTO Personal\_Information VALUES ( 1201 , “Kavish” , 2000-3-4 , “Delhi", 87, 9817654409 ) ;
* INSERT INTO Personal\_Information VALUES (1202, “ Arpan” , 2001-5-6, “Mumbai" ,86, 9816754379 ) ;
* INSERT INTO Personal\_Information VALUES (1203 , “Shubankit” , 1999-6-7, “ Uttar Pradesh” , 67,8998765413) ;
* INSERT INTO Personal\_Information VALUES (1204, “Akshay” , 1998-5-9,"Rajasthan",82, 9875671570);
* INSERT INTO Personal\_Information VALUES (1205, “Tanay” , 1999-7-16, “Gujarat" ,76,7886157890);
* INSERT INTO PaperDetails VALUES (001 , “Probability and Probability Distribution” );
* INSERT INTO PaperDetails VALUES (002 , “English Core” );
* INSERT INTO PaperDetails VALUES (003, “Algebra” ) ;
* INSERT INTO PaperDetails VALUES (004 , “Computer Science” ) ;
* INSERT INTO PaperDetails VALUES (005, “Environmental Studies” ) ;
* INSERT IN Student\_Academic\_And\_Attendance\_Details VALUES (1201 , 001 , 65 , 87) ;
* INSERT IN Student\_Academic\_And\_Attendance\_Details VALUES (1202 ,002 ,78, 86) ;
* INSERT IN Student\_Academic\_And\_Attendance\_Details VALUES ( 1203 , 003 , 81 , 67) ;
* INSERT IN Student\_Academic\_And\_Attendance\_Details VALUES ( 1204 , 004 ,86 , 82);
* INSERT IN Student\_Academic\_And\_Attendance\_Details VALUES (1205 ,005 , 88, 76) ;

(b) SELECT ppd.Paper\_Code,ppd.Name\_of\_the\_paper ,pi.Name FROM Paper\_Details as ppd ,Personal\_Information as pi WHERE Paper\_Code = 2 and pi.College\_Roll\_Number IN (SELECT College\_Roll\_Number FROM Student\_Academic\_And\_Attendance\_Details WHERE Paper\_Code =2 and Attendance >75 and Marks >60) ;

(c) SELECT Name from Personal\_Information as pi , Student\_Academic\_And\_Attendance\_Details as sa where (pi.College\_Roll\_Number = sa.College\_Roll\_Number and sa.Marks >60 and sa.Paper\_Code = 001 ) ;

(d) SELECT pi.Name,sa.Attendance,sa.Marks from Personal\_Information as pi, Student\_Academic\_And\_Attendance\_Details as sa where (pi.College\_Roll\_Number = sa.College\_Roll\_Number );

(e) SELECT Name FROM Personal\_Information as pi, Student\_Academic\_And\_Attendance\_Details as sa WHERE ( pi.College\_Roll\_Number = sa.College\_Roll\_Number and pi.College\_Roll\_Number =(SELECT College\_Roll\_Number FROM Student\_Academic\_And\_Attendance\_Details WHERE Marks =(SELECT MAX (Marks) FROM Student\_Academic\_And\_Attendance\_Details)) ;

3. 🡪CREATE DATABASE Bicycles ;

Use Bicycles;

🡪CREATE TABLE Customer (CustID (int(30)) primary key , email (varchar(60)) not null , Name (varchar(60)) not null , Phone (varchar(10)), ReferrerID (varchar(20)) not null );

🡪CREATE TABLE BicycleModel (ModelNo (int) primary key , Manufacturer (char(30)) not null , Style (varchar(20)) not null ) ;

🡪CREATE TABLE Bicycle (BicycleID (int) primary key , DatePurchased (Date) not null, Color (char(20)) not null , CustID (int) not null , ModelNo (int) not null, Foreign Key (CustID) REFERENCES Customer (CustID) , Foreign Key (ModelNo) REFERENCES BicycleModel(ModelNo) ) ;

🡪CREATE TABLE Service (StartDate (Date) not null , BicycleID (int) not null , EndDate (Date) not null , Foreign Key (BicycleID) REFERENCES Bicycle(BicycleID));

(a) **Primary Key** – CustID in TABLE Customer

ModelNo in TABLE BicycleModel

BicycleID in TABLE Bicycle

**Foreign Key** – CustID in table Bicycle

ModelNo in TABLE Bicycle

BicycleID in TABLE Service

* INSERT INTO Customer VALUES ( 1212, “ rupesh1213@gmail.com” , “Rupesh" , “9817654789” , “C1” );
* INSERT INTO Customer VALUES ( 1213 , “ abhishek1213@gmail.com” , “Abhishek" , “7889816578” , “C2");
* INSERT INTO Customer VALUES (1214, “ Maharshi1214@gmail.com “ , “Maharshi" , “8719980178” , “C3" );
* INSERT INTO Customer VALUES (1215 , “Noel1215@gmail.com” , “Noel" , “7888981088” , “C4" ) ;
* INSERT INTO Customer VALUES (1216, “Jay1216@gmail.com” , “Jay" , “8910758966”, “C5" ) ;
* INSERT INTO BicycleModel VALUES ( 101, “Honda" , “Scooty") ;
* INSERT INTO BicycleModel VALUES ( 102, “Hercules" ,“Sports");
* INSERT INTO BicycleModel VALUES (103 , “Hero" , “Bike") ;
* INSERT INTO BicycleModel VALUES (104, “Honda" , “Sports" ) ;
* INSERT INTO BicycleModel VALUES (105 , “Hero" , “Scooty" ) ;
* INSERT INTO Bicycle VALUES (11, “2000-4-5" , “Red" , 1212,101 ) ;
* INSERT INTO Bicycle VALUES ( 12, “ 2001-5-7" , “Blue" , 1213, 102) ;
* INSERT INTO Bicycle VALUES (13, “2017-5-17" , “White" , 1214 ,103 ) ;
* INSERT INTO Bicycle VALUES (14 , “2016-4-15" , “Orange" , 1215, 104 ) ;
* INSERT INTO Bicycle VALUES (15 , “ 2018-3-15" , “Yellow" , 1216 ,105) ;
* INSERT INTO Service VALUES ( “2019-4-16" , 11 , “2019-4-26" );
* INSERT INTO Service VALUES ( “2019-5-14” , 12, “2019-5-24" );
* INSERT INTO Service VALUES ( “2019-6-17" , 13 , “2019-6-27" );
* INSERT INTO Service VALUES ( “2019-7-13" , 14 , “2019-7-23");
* INSERT INTO Service VALUES ( “2019 -3-15" , 15, “2019-3-25" );

(b) SELECT \* FROM Customer WHERE CustID IN (SELECT CustID from Bicycle WHERE ModelNo IN (SELECT ModelNo FROM BicycleModel WHERE Manufacturer = “Honda" ));

(c) SELECT \* FROM BicycleModel WHERE ModelNo IN (SELECT ModelNo FROM Bicycle WHERE CustID IN (SELECT CustID FROM Customer WHERE RefferID = “C1"));

(d) SELECT bm.Manufacturer FROM Bicycle as bi , BicycleModel as bm WHERE ( bi.ModelNo = bm.ModelNo and bi.Color = “Red" );

(e) SELECT ModelNo FROM Bicycle WHERE BicycleID IN (SELECT DISTINCT BicycleID FROM Service );

4. 🡪CREATE DATABASE Company\_Details ;

Use Company\_Details;

🡪CREATE TABLE EMPLOYEE ( Person\_Name(varchar (60)) primary key , Street (char(10)) not null , City(varchar(40)) not null ) ;

🡪CREATE TABLE COMPANY ( Company\_Name(varchar(70)) primary key , City(varchar(60)) ) ;

🡪CREATE TABLE WORKS ( Person\_Name(varchar(80)) , Company\_Name(varchar(70)), Salary(decimal(10,2)) ,Foreign Key (Person\_Name) REFERENCES EMPLOYEE (Person\_Name), Foreign Key (Company\_Name) REFERENCES COMPANY(Company\_Name));

🡪CREATE TABLE MANAGES ( Person\_Name varchar(70), Manager\_Name(varchar(60)), Foreign Key (Person\_Name) REFERENCES EMPLOYEE (Person\_Name)) ;

* INSERT INTO EMPLOYEE VALUES (“ Prem" , 12 , “New Delhi” );
* INSERT INTO EMPLOYEE VALUES (“Hardik" ,13, “Mumbai”);
* INSERT INTO EMPLOYEE VALUES (“Hritik" , 14 , “Pune" ) ;
* INSERT INTO EMPLOYEE VALUES (“Raj" , 15 , “Andheri” );
* INSERT INTO EMPLOYEE VALUES ( “Charles" ,16, “New Delhi");
* INSERT INTO COMPANY VALUES (“Samba Bank" , “New Delhi") ;
* INSERT INTO COMPANY VALUES (“Axis Bank" , “Mumbai" ) ;
* INSERT INTO COMPANY VALUES ( “NCB Bank” , “Pune") ;
* INSERT INTO COMPANY VALUES ( “State Bank of India" , “Andheri") ;
* INSERT INTO COMPANY VALUES ( “Bank of Baroda” , “New Delhi") ;
* INSERT INTO WORKS VALUES (“Prem", “Samba Bank" , 25000 ) ;
* INSERT INTO WORKS VALUES ( “Hardik" , “Axis Bank" , 30000) ;
* INSERT INTO WORKS VALUES ( “Hritik" , “ NCB Bank” ,35000) ;
* INSERT INTO WORKS VALUES (“Raj", “State Bank of India" , 40000 ) ;
* INSERT INTO WORKS VALUES ( “Charles" , “Bank of Baroda" , 45000) ;
* INSERT INTO MANAGES VALUES (“Prem", “Naidu” ) ;
* INSERT INTO MANAGES VALUES (“Hardik", “Raja" ) ;
* INSERT INTO MANAGES VALUES ( “Hritik" , “Kartik") ;
* INSERT INTO MANAGES VALUES (“Raj", “Akshay" ) ;
* INSERT INTO MANAGES VALUES ( “Charles" , “Shijin”) ;
  1. **Primary Key** -- Person\_Name in TABLE EMPLOYEE

Company\_Name in TABLE COMPANY

**Foreign Key** -- Person\_Name in TABLE WORKS

Company\_Name in TABLE COMPANY

Person\_Name in TABLE MANAGES

(b) ALTER TABLE EMPLOYEE ADD Column email varchar(20);

(c) SELECT DISTINCT (Manager\_Name) FROM MANAGES as ma , WORKS as w WHERE (ma.Person\_Name =w.Person\_Name and (w.Company\_Name = “Samba Bank" or w.Company\_Name=”NCB Bank" ));

(d) SELECT e.Person\_Name ,e.Street,e.City,w.Salary FROM EMPLOYEE as e , WORKS as w WHERE (e.Person\_Name =w.Person\_Name and w.Company\_Name =”Samba Bank" and w.Salary>10000);

(e) SELECT e.Person\_Name FROM EMPLOYEE as e ,WORKS as w ,COMPANY as c WHERE (e.Person\_Name= w.Person\_Name and e.city=c.city and w.Company\_Name =c.Company\_Name ;

(f) SELECT Company\_Name ,Max(Salary), Min(Salary) , Avg(Salary) FROM WORKS GROUP BY Company\_Name ;

(g) SELECT Company\_Name ,Sum(Salary),Count(Company\_Name) as “Number of Employees” FROM WORKS GROUP BY Company\_Name ;

(h) SELECT Company\_Name, Max(Salary) FROM WORKS ;

5. 🡪CREATE DATABASE MACHINE ;

USE MACHINE ;

🡪CREATE TABLE Suppliers (SNo (Int(10)) primary key , SName(varchar(30)) not null , Status (char(20)) not null , SCity (char(20)) not null ) ;

🡪 CREATE TABLE Parts (PNo (int(10)) primary key, PName (varchar(20)) not null , Colour (varchar(20)) not null, Weight (int(5)) not null , City (varchar(20)) not null ) ;

🡪 CREATE TABLE Project (JNo (int(10)) primary key , JName (char (30)) not null, Jcity (char(20)) not null ) ;

🡪 CREATE TABLE Shipment (SNo (int(30)) not null , Pno (int(10)) not null , Jno (int(8)) not null, Qunatity (int(8)) not null ,Foreign Key (SNo) REFERENCES Suppliers (SNo), Foreign Key (PNo) REFERENCES Parts (PNo) ,Foreign Key (JNo) REFERENCES Project (JNo)) ;

* INSERT INTO Suppliers VALUES ( “101” , “S1" , 30 , “Mumbai” ) ;
* INSERT INTO Suppliers VALUES ( “102”, “S2" , 19 , “Paris" ) ;
* INSERT INTO Suppliers VALUES (“103” , “S1" , 26 , “Cape Town" ) ;
* INSERT INTO Suppliers VALUES ( “104” , “S2" , 30, “London” ) ;
* INSERT INTO Suppliers VALUES (“105” , “S2", 28 , “Chennai" ) ;
* INSERT INTO Parts VALUES (201, “P1" , “Red" , 17 , “Mumbai" ) ;
* INSERT INTO Parts VALUES ( 202 , “P2" , “Black” , 20, “Paris") ;
* INSERT INTO Parts VALUES ( 203 , “P3" , “Grey" , 25, “Cape Town” ) ;
* INSERT INTO Parts VALUES (204 , “P4" , “Black" , 56, “London" ) ;
* INSERT INTO Parts VALUES ( 205 , “P5" , “Green" ,40 , “Chennai" ) ;
* INSERT INTO Project VALUES ( 301, “ J1" , “Paris " ) ;
* INSERT INTO Project VALUES ( 302, “J2" , “London" ) ;
* INSERT INTO Project VALUES ( 303 , “J3" , “Chennai” ) ;
* INSERT INTO Project VALUES (304 , “J4” , “New Delhi” ) ;
* INSERT INTO Project VALUES (305 , “J5", “Mumbai" ) ;
* INSERT INTO Shipment VALUES (101,201,301,250);
* INSERT INTO Shipment VALUES (102,202,302,100);
* INSERT INTO Shipment VALUES (103,203,303,500);
* INSERT INTO Shipment VALUES (104,204,300);
* INSERT INTO Shipment VALUES (105,205,305,750);

1. **Primary Key** – SNo in TABLE Suppliers

PNo in TABLE Parts

JNo in TABLE Shipment

**Foreign Key** – SNo in TABLE Shipment

PNo in TABLE Shipment

JNo in TABLE Shipment

1. SELECT SNo FROM Suppliers WHERE SCity = “Paris" and Status >20 ;
2. SELECT \* FROM Suppliers WHERE SNo IN(SELECT SNo FROM Shipment WHERE PNo IN (SELECT PNo FROM Parts WHERE PName = “P2" )) ORDER BY SNo ;
3. SELECT SName FROM Suppliers WHERE SNo IN (SELECT DISTINCT SNo FROM Shipment WHERE PNo IN (SELECT PNo FROM Parts WHERE PName != “ P2" ));
4. SSELECT s.SNo ,s.PNo ,s.JNo,s.Quantity , s.Quantity\*p.Weight as “TotalShipmentWeight" FROM Shipment as s ,Parts as p WHERE s.PNo =p.PNo ;
5. SELECT \* FROM Shipment WHERE Quantity BETWEEN 300 and 750;
6. SELECT PNo FROM Parts WHERE Weight >16 or PNo IN (SELECT PNo FROM Shipment WHERE SNo IN (SELECT s.SNo FROM Shipment as s , Suppliers as su WHERE s.SNo =su.SNo and su.SName = “S2” ;
7. SELECT City FROM Parts WHERE Color =”Red" and PNo IN (SELECT PNo FROM Shipment WHERE Quantity >5);
8. SELECT \* FROM Parts WHERE PNo IN(SELECT PNo FROM Shipment WHERE SNo IN(SELECT SNo FROM Suppliers WHERE SCity = “ London" );
9. SELECT PNo FROM Shipment WHERE SNo IN (SELECT SNo FROM Suppliers WHERE SNo IN (SELECT SNo FROM Suppliers WHERE SCity = “ London" ) and JNo IN (SELECT JNo FROM Project WHERE JCity = “London" );
10. SELECT COUNT(DISTINCT(JNo)) as “Number of Projects supplied by Supplier S1” FROM Shipment WHERE SNo IN (SELECT SNo FROM Suppliers WHERE SName = “S1" );
11. SELECT COUNT (\*) FROM Parts WHERE PNo IN (SELECT PNo FROM Shipment WHERE SNo IN (SELECT SNo FROM Suppliers WHERE SName = “S1" and PName = “P1" );