

Department of Computer Science & Engineering

**DATABASE SYSTEMS LABORATORY MANUAL COURSE CODE: CSL57**

**CREDITS: (0:0:1)**

**M S RAMAIAH INSTITUTE OF TECHNOLOGY**

**(Autonomous Institute, Affiliated to VTU)**

**BANGALORE-560054**

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**Department of Computer Science & Engineering**

**QUESTION BANK**

**Database Systems Laboratory (CSL57)**

**I.A. Marks: 50 Exam Hours: 03**

**Credits: 0:0:1 Exam Marks: 50**

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
| 1. a) | Consider the Sailor database given below. The primary keys are underlined. Assume relevant data types for attributes.  SAILORS(Sid, Sname, Rating, Age) BOATS(Bid, Bname, Colour) RESERVES(Sid, Bid, day)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Find the names of sailors who have reserved at least one boat. 2. Find the Sid’s of sailors who have reserved a red or a green boat. 3. Find the Sid’s of sailors who have not reserved a boat. | CO2 | PO1, PO3 |
| 1.b) | Consider the following restaurant database with the following attributes -  Name, address –(building, street, area, pincode),id, cuisine, nearby landmarks, online delivery- yes/no, famous for(name of the dish)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List the name and address of all restaurants in Bangalore with Italian cuisine 2. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indianthali(cuisine) is available. | CO1 | PO2, PO5 |
| 2. a) | Consider the Employee database given below. The primary keys are underlined. Assume relevant data types for attributes.  EMPLOYEE (Fname, Lname, SSN, Addrs, Sex, Salary, SuperSSN, Dno)  DEPARTMENT (Dname, Dnumber, MgrSSN, MgrStartDate) PROJECT(Pno, Pname, Dnum)  WORKS\_ON (ESSN, Pno, Hours)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries. | CO2 | PO1, PO3 |

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
|  | 1. Retrieve the name of all employees whose salary is greater than the salary of all employees in dept 5. 2. Retrieve the ssn of all employees who work on project numbers 1,2 or 3 3. Display the total Number of hours put in by all employees on every project. |  |  |
| 2. b) | Consider the following restaurant table with the following attributes -  Name, address –(building, street, area, pincode), id, cuisine, nearby landmarks, online delivery- (yes/no), famousfor(name of the dish)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indian thali(cuisine) is available 2. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore. | CO1 | PO2, PO5 |
| 3.a) | Consider the Aircraft database given below. The primary keys are underlined. Assume relevant data types for attributes.  AIRCRAFT (Aircraft ID, Aircraft\_name, Cruising\_range) CERTIFIED (Emp ID, Aircraft ID)  EMPLOYEE (Emp ID, Ename, Salary)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Find the employee ID’s of employee who make the highest salary. 2. Find the name of aircrafts such that all pilots certified to operate them earn more than 50000 3. Find the employees who are not certified for operating any aircraft. | CO2 | PO1, PO3 |
| 3.b) | Consider the following restaurant table with the following attributes -  Name, address –(building, street, area, pincode), id, cuisine, nearby landmarks, online delivery- (yes/no), famous for(name of the dish)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indian thali(cuisine) is available. 2. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore where online delivery is available. | CO1 | PO2, PO5 |
| 4.a) | Consider the Supply-Parts database given below. The primary keys are underlined. Assume relevant data types for attributes.  SUPPLIER (Sid, Sname, Address) | CO2 | PO1, PO3 |

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
|  | PART (PID, Pname, Color) SHIPMENT (Sid, PID, Cost)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Find the Sid’s of suppliers who supply a green part 2. For every supplier print the name of the supplier and the total number of parts that he/she supplies 3. Update the part color supplied by supplier s3 to yellow |  |  |
| 4.b) | Consider the following Tourist places table with the following attributes -  Place, address – (state), id, tourist attractions, best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the tourist places of Karnataka 2. List the tourist attractions of Kerala. Exclude accommodation and food | CO1 | PO2, PO5 |
| 5.a) | Consider the Aircraft database given below. The primary keys are underlined. Assume relevant data types for attributes.  AIRCRAFT (Aircraft ID, Aircraft\_name, Cruising\_range) CERTIFIED (Emp ID, Aircraft ID)  EMPLOYEE (Emp ID, Ename, Salary)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Find the names of pilots certified for Boeing aircraft 2. Arrange the Aircrafts with respect to the ascending order of distance. 3. Find the name of pilots who can operate flights with a range greater than 3000 miles but are not certified on any Boeing aircraft. | CO2 | PO1, PO3 |
| 5.b) | Consider the following Tourist places table with the following attributes -  Place, address –(state, id), tourist attractions,best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:  i. List the tourist attractions of Kerala. Exclude accommodation  and food. | CO1 | PO2, PO5 |

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
|  | ii. List the places sorted state wise. |  |  |
| 6.a) | Consider the Employee database given below. The primary keys are underlined. Assume relevant data types for attributes.  EMPLOYEE (Fname, Lname, SSN, Addrs, Sex, Salary, SuperSSN, Dno) DEPARTMENT (Dname, Dnumber, MgrSSN, MgrStartDate) DEPENDENT(Dname, ESSN)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. For each department, retrieve the department name and the average salary of all employees working in that department 2. List the names of managers who have at least one dependent 3. Display the details of all departments having ‘tech’ as their substring | CO2 | PO1, PO3 |
| 6.b) | Consider the following Tourist places table with the following attributes -  Place, address – (state, id), tourist attractions,best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the tourist places of Karnataka 2. List the places sorted state wise | CO1 | PO2, PO5 |
| 7.a) | Consider the following Accident Tracker Schema. The primary keys are underlined.  PERSON (driver – id #, name, address) CAR (Regno, model, year)  ACCIDENT (report-number, acc\_date, location) OWNS (driver-id #, Regno)  PARTICIPATED (driver-id, Regno, report-number, damageamount)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Display the unique Regno’s of the cars involved in accidents. 2. Display the car Regno and model of the car which has the maximum damage amount. 3. Display the number of cars owned by each driver. | CO2 | PO1, PO3 |
| 7.b) | Consider the following Movie table with the following attributes - | **CO1** | PO2,  PO5 |

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
|  | Actor\_name,Actor\_id, Actor\_birthdate, Director\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the movies acted by John in the year 2018 2. List only the actors names and type of the movie directed by Ram |  |  |
| 8.a) | Consider the Cricket database given below. The primary keys are underlined. Assume relevant data types for attributes.  PLAYER (PId, Lname, Fname, Country, Yborn, Bplace) MATCH (MatchId, Team1,Team2, Ground, Date, Winner) BATTING (MatchId, Pid, Nruns, Fours, Sixes)  BOWLING (MatchId, Pid, Novers, Maidens, Nruns, Nwickets)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. Display the sorted list of ground names where Australia has played as team1 2. Find the match information of all matches in which Dhoni did batting. 3. Find the names of players who did batting in match 2689 | CO2 | PO1, PO3 |
| 8.b) | Consider the following Movie table with the following attributes - Actor\_name,Actor\_id, Actor\_birthdate, Director\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the movies acted by John and Elly in the year 2012. 2. List only the name and type of the movie where Ram has acted sorted by movie names | CO1 | PO2, PO5 |
| 9.a) | Consider the following shipment schema. The primary keys are underlined. Assume relevant data types for attributes.  CUSTOMER (cust# ,cname, city) ORDER (order#, odate, cust #, ord-Amt) ORDER – ITEM (order #, Item #, qty) ITEM (item #, unit price)  SHIPMENT (order #, ship-date) | CO2 | PO1, PO3 |

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| **Exercise**  **Number** | **Problem Statement** | **CO** | **PO** |
|  | Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. List the customer names who have placed more than 2 orders. 2. Find the total order amount for each day 3. List the customer details who has the largest order amount. |  |  |
| 9.b) | Consider the following Movie table with the following attributes - Actor\_name,Actor\_id, Actor\_birthdate, Director\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the movies acted by John in the year 2018 2. List only the actors names and type of the movie directed by Ram | CO1 | PO2, PO5 |
| 10.a) | Consider the following shipment schema. The primary keys are underlined. Assume relevant data types for attributes.  CUSTOMER (cust# ,cname, city) ORDER (order#, odate, cust #, ord-Amt) ORDER – ITEM (order #, Item #, qty) ITEM (item #, unit price)  SHIPMENT (order #, ship-date)  Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.   1. List name of the customer, no. of orders placed by each customer residing in Bangalore city. 2. List the names of the customers who have ordered at least 3 items 3. List the customer names who have not ordered for item no. 10. | CO2 | PO1, PO3 |
| 10.b) | Consider the following Movie table with the following attributes - Actor\_name, Actor\_id, Actor\_birthdate, Director\_name, Director\_id, Director\_birthdate, film\_title, year of production, type (thriller, comedy, etc.)  Create 10 documents with data relevant to the following questions. Write and execute MongoDB queries:   1. List all the movies acted by John and Elly in the year 2012. 2. List only the name and type of the movie where Ram has acted, sorted by movie names. | CO1 | PO2, PO5 |

1. a)

Consider the Sailor database given below. The primary keys are underlined. Assume relevant data types for attributes.

SAILORS(Sid, Sname, Rating, Age) BOATS(Bid, Bname, Colour) RESERVES(Sid, Bid, day)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

* 1. Find the names of sailors who have reserved at least one boat.

ANS:select distinct(sname) from soilr,res where rsid=sid

* 1. Find the Sid’s of sailors who have reserved a red (or) a green boat. ANS:select rsid from boat,res where rbid=bid and clr="block" or clr="blue";
  2. Find the Sid’s of sailors who have not reserved a boat. ANS:select sid from soilr,res where sid not in(select rsid from res);

ANS:

create table soilr(sid int primary key, sname varchar(10),

rate int, age int);

create table boat( bid int primary key, bname varchar(19),

clr varchar(10));

create table res(rsid int, rbid int,

day int,

foreign key(rsid) references soilr(sid), foreign key(rbid) references boat(bid));

insert into soilr values(111,"aa",4,23); insert into soilr values(112,"aa",4,23); insert into soilr values(113,"aa",4,23); insert into boat values(121,"baa","block"); insert into res values(111,121,45);

select distinct(sname) from soilr,res where rsid=sid

select rsid from boat,res where rbid=bid and clr="block" or clr="blue"; select sid from soilr,res where sid not in(select rsid from res);

1B.//Consider the following restaurant database with the following attributes -

Name, address –(building, street, area, pincode),id, cuisine, nearby landmarks, online delivery- yes/no, famous for(name of the dish)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List the name and address of all restaurants in Bangalore with Italian cuisine
2. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indianthali is available

ANS:

use restaurant

switched to db restaurant db.createCollection(“rest")

{ "ok" : 1 }

db.rest.insert({name:"McD",building:12,street:"KR",area:"JN",pin:072,ID:1,cuisine:"fast food",landmark:"post office",od:"yes",famousfor:"cheese burger"});

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Tailo",building:14, street:"MG", area:"Bangalore",pin:45,ID:2, cuisine:"Italian",landmark:"bank",od:"yes",famousfor:"pasta"})

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Kesar",building:15, street:"SS",area:"Bangalore",pin:55,ID:3, cuisine:"north indian",landmark:"milk factory",od:"no",famousfor:"north indian thali"})

WriteResult({ "nInserted" : 1 })

//List the name and address of all restaurants in Bangalore with Italian cuisine. db.rest.find({cuisine:"Italian",area:"Bangalore"},

{name:1,building:1,street:1,area:1,pin:1,\_id:0}).pretty()

{ "name" : "Tailo", "building" : 14 , “street” : “MG” , “area” : “Bangalore” , “pin” : 45 }

//List the name, address and nearby landmarks of all restaurants in Bangalore where north Indianthali is available.

db.rest.find({famousfor:"north indian thali",area:"Bangalore"},

{name:1,building:1,street:1,area:1,pin:1,landmark:1,\_id:0})

{ "name" : "Kesar", "building" : 15 , “street” : “SS” , “area” : “Bangalore” , “pin” : 55 , "landmark" : "milk factory" }

//2A)Consider the Employee database given below. The primary keys are underlined. Assume relevant data types for attributes.

EMPLOYEE (Fname, Lname, SSN, Addrs, Sex, Salary, SuperSSN, Dno) DEPARTMENT (Dname, Dnumber, MgrSSN, MgrStartDate) PROJECT(Pno, Pname, Dnum)

WORKS\_ON (ESSN, Pno, Hours)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Retrieve the name of all employees whose salary is greater than the salary of all employees in dept 5.
2. Retrieve the ssn of all employees who work on project numbers 1,2 or 3
3. Display the total Number of hours put in by all employees on every project.

CREATE TABLE EMPLOYEE ( Fname VARCHAR(10) NOT NULL, Lname VARCHAR(15) NOT NULL, Ssn VARCHAR(9) PRIMARY KEY,

Bdate DATE,

Address VARCHAR(40), Sex CHAR,

Salary INT,

Super\_ssn VARCHAR(9), Dno INT

);

CREATE TABLE DEPARTMENT( Dname VARCHAR(15) NOT NULL, Dnumber INT PRIMARY KEY, Mgr\_ssn VARCHAR(9) NOT NULL,

Mgr\_start\_date DATE,

FOREIGN KEY (Mgr\_ssn) REFERENCES EMPLOYEE(Ssn),

);

CREATE TABLE PROJECT (

Pnumber INT PRIMARY KEY, Pname VARCHAR(20) NOT NULL,

Dnum INT,

FOREIGN KEY (Dnum) REFERENCES DEPARTMENT(Dnumber),

);

CREATE TABLE WORKS\_ON (

Essn VARCHAR(9), Pno INT,

Hours INT,

PRIMARY KEY(Essn, Pno),

FOREIGN KEY (Pno) REFERENCES PROJECT(Pnumber), FOREIGN KEY (Essn) REFERENCES EMPLOYEE(Ssn)

);

INSERT INTO EMPLOYEE Values('John','Smith', 123456789, '09-JAN-65', '731 Fondren, Houston, TX', 'M', 30000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Franklin','Wong', 333445555, '08-DEC-55', '638 Voss, Houston, TX', 'M', 40000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Alicia','Zelaya', 999887777, '19-JAN-68', '3321 Castle, Spring, TX', 'F', 25000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Jennifer','Wallace', 987654321, '01-JAN-65', '731 Fondren, Houston, TX', 'F', 43000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Ramesh','Narayan', 666884444, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 38000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Joyce','English', 453453453, '01-JAN-65', '731 Fondren, Houston, TX', 'F', 25000, NULL, NULL);

INSERT INTO EMPLOYEE Values('Ahmad','Jabbar', 987987987, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 25000, NULL, NULL);

INSERT INTO EMPLOYEE Values('James','Borg', 888665555, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 55000, NULL, NULL);

INSERT INTO DEPARTMENT Values('Research',5,'333445555','22-MAY-1988'); INSERT INTO DEPARTMENT Values('Administration',4,'987654321','01-JAN-1995'); INSERT INTO DEPARTMENT Values('Headquarters',1,'888665555','19-JUN-1981'); INSERT INTO DEPARTMENT Values('Development',2,'666884444','22-MAY-1988'); INSERT INTO DEPARTMENT Values('Management',3,'999887777','01-JAN-1995');

INSERT INTO PROJECT Values(1,‘ProductX’,5); INSERT INTO PROJECT Values(2,'ProductY',5); INSERT INTO PROJECT Values(3,'ProductZ',2);

INSERT INTO PROJECT Values(10,'Computerization',1);

INSERT INTO PROJECT Values(20,'Reorganization',3); INSERT INTO PROJECT Values(30,'Newbenefits',4);

INSERT INTO WORKS\_ON Values('123456789',1,32); INSERT INTO WORKS\_ON Values('123456789',2,7); INSERT INTO WORKS\_ON Values('666884444',3,40); INSERT INTO WORKS\_ON Values('453453453',1,20); INSERT INTO WORKS\_ON Values('453453453',2,20); INSERT INTO WORKS\_ON Values('333445555',2,10); INSERT INTO WORKS\_ON Values('333445555',3,10); INSERT INTO WORKS\_ON Values('333445555',10,10); INSERT INTO WORKS\_ON Values('333445555',20,10); INSERT INTO WORKS\_ON Values('999887777',30,30); INSERT INTO WORKS\_ON Values('999887777',10,10); INSERT INTO WORKS\_ON Values('987987987',10,35); INSERT INTO WORKS\_ON Values('987987987',30,5); INSERT INTO WORKS\_ON Values('987654321',30,20); INSERT INTO WORKS\_ON Values('987654321',20,15); INSERT INTO WORKS\_ON Values('888665555',20,NULL);

//Retrieve the name of all employees whose salary is greater than the salary of all employees in dept 5.

SELECT Fname,Lname FROM EMPLOYEE

WHERE Salary >all (SELECT Salary FROM EMPLOYEE WHERE Dno=5);

//Retrieve the social security numbers of all employees who work on project numbers 1,2, or 3. SELECT DISTINCT Essn

FROM WORKS\_ON WHERE PNO IN (1, 2, 3);

//Display the total Number of hours put in by all employees on every project. SELECT Pno,SUM(Hours)

FROM WORKS\_ON GROUP BY Pno;

Consider the following restaurant table with the following attributes -

Name, address –(building, street, area, pincode), id, cuisine, nearby landmarks, online delivery- (yes/no), famousfor(name of the dish)

2B)//Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indian thali is available
2. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore.

use restaurant

switched to db restaurant db.createCollection(“rest")

{ "ok" : 1 }

db.rest.insert({name:"McD",building:12, street:"KR", area:"JN" pin:072,ID:1, cuisine:"fast food",landmark:"post office",od:"yes",famousfor:"cheese burger"})

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Tailo",building:14, street:"MG", area:"Bangalore" pin:45,ID:2, cuisine:"Italian",landmark:"bank",od:"yes",famousfor:"pasta"})

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Kesar",building:15, street:”SS”,area:"Bangalore",pin:55,ID:3, cuisine:"north indian",landmark:"milk factory",od:"no",famousfor:"north indian thali”})

WriteResult({ "nInserted" : 1 })

//List the name, address and nearby landmarks of all restaurants in Bangalore where north Indianthali is available.

db.rest.find({famousfor:"north indian thali",area:"Bangalore"},

{name:1,building:1,street:1,area:1,pin:1,landmark:1,\_id:0})

{ "name" : "Kesar", "building" : 15 , "street" : "SS" , "area" : "Bangalore" , "pin" : 55 , "landmark" : "milk factory" }

//List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore.

db.rest.find({area:"Bangalore"},{name:1, building:1, street:1, area:1, pin:1, famousfor:1})

3A)//Consider the Aircraft database given below. The primary keys are underlined. Assume relevant data types for attributes.

AIRCRAFT (Aircraft ID, Aircraft\_name, Cruising\_range) CERTIFIED (Emp ID, Aircraft ID)

EMPLOYEE (Emp ID, Ename, Salary)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Find the employee ID’s of employee who make the highest salary.
2. Find the name of aircrafts such that all pilots certified to operate them earn more than 50000
3. Find the employees who are certified for the maximum number of aircrafts.

Create table aircraft(

aid varchar(9) primary key, aname varchar(10),

crange int

);

Create table employees( eid varchar(9) primary key, ename varchar(10),

salary int

);

Create table certified(

eid varchar(9)references employees(eid), aid varchar(9)references aircraft(aid)

);

insert into aircraft values('B001','Boeing',4000); insert into aircraft values('B002','Boeing',2500);

insert into aircraft values('BB003','Blackbeard',6000); insert into aircraft values('S004','Supermarine',8000); insert into aircraft values('L005','Lockheed',2100);

insert into employees values(1,'Johnny',40000); insert into employees values(2,'Timmy',60000); insert into employees values(3,'Lawrence',70000); insert into employees values(4,'Zuzu',90000); insert into employees values(5,'Matt',80000);

insert into certified values(1,'B001'); insert into certified values(1,'B002'); insert into certified values(3,'S004'); insert into certified values(4,'S004'); insert into certified values(5,'L005'); insert into certified values(2,'B002'); insert into certified values(4,'BB003'); insert into certified values(3,'BB003'); insert into certified values(4,'L005');

//Find Emp ID of employee who makes highest salary SELECT eid

FROM employees

WHERE salary=(SELECT MAX(salary) FROM employees);

//Find the name of aircrafts such that all pilots certified to operate them earn more than 50000 SELECT distinct aname

FROM aircraft a,certified c,employees e

WHERE a.aid=c.aid and c.eid=e.eid and e.salary>50000;

//Find the employees who are certified for the maximum number of aircrafts.

select ename,max(a.aid) from employees e,certified c,aircraft a where e.eid=c.eid and a.aid=c.aid 3B)//Consider the following restaurant table with the following attributes -

Name, address –(building, street, area, pincode), id, cuisine, nearby landmarks, online delivery- (yes/no), famous for(name of the dish)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indian thali is available.
2. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore where online delivery is available.

use restaurant

switched to db restaurant db.createCollection(“rest")

{ "ok" : 1 }

db.rest.insert({name:"McD",building:12, street:"KR", area:"JN" pin:072,ID:1, cuisine:"fast food",landmark:"post office",od:"yes",famousfor:"cheese burger"})

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Tailo",building:14, street:"MG", area:"Bangalore" pin:45,ID:2, cuisine:"Italian",landmark:"bank",od:"yes",famousfor:"pasta"})

WriteResult({ "nInserted" : 1 })

db.rest.insert({name:"Kesar",building:15, street:"SS",area:"Bangalore",pin:55,ID:3, cuisine:"north indian",landmark:"milk factory",od:"no",famousfor:"north indian thali"})

WriteResult({ "nInserted" : 1 })

//List the name, address and nearby landmarks of all restaurants in Bangalore where north Indianthali is available.

db.rest.find({famousfor:"north indian thali",area:"Bangalore"},

{name:1,building:1,street:1,area:1,pin:1,landmark:1,\_id:0})

{ "name" : "Kesar", "building" : 15 , “street” : “SS” , “area” : “Bangalore” , “pin” : 55 , "landmark" : "milk factory" }

//List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore where online delivery is available.

db.rest.find({area:"Bangalore",od:"yes"},{name:1, building:1, street:1, arear:1, pin:1, famousfor:1})

4A)//Consider the Supply-Parts database given below. The primary keys are underlined. Assume relevant data types for attributes.

SUPPLIER (Sid, Sname, Address) PART (PID, Pname, Color) SHIPMENT (Sid, PID, Cost)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Find the Sid’s of suppliers who supply a green part
2. For every supplier print the name of the supplier and the total number of parts that he/she supplies
3. Update the part color supplied by supplier s3 to yellow

CREATE TABLE SUPPLIER (

Sid int NOT NULL PRIMARY KEY,

Sname varchar(16) NOT NULL UNIQUE, Address varchar(20) NOT NULL

);

CREATE TABLE PART (

Pid int NOT NULL PRIMARY KEY,

Pname varchar(18) NOT NULL, Color varchar(10) NOT NULL,

);

CREATE TABLE SHIPMENT (

Sid int NOT NULL REFERENCES SUPPLIER, Pid int NOT NULL REFERENCES PART,

Cost int NOT NULL,

PRIMARY KEY (Sid, Pid)

);

CREATE TABLE SHIPMENT (

Sid int, Pid int, Cost int,

primary key(Sid,Pid),

foreign key(Sid) references SUPPLIER(Sid), foreign key(Pid) references PART(Pid));

INSERT INTO SUPPLIER VALUES (1, 'Smith', 'London'); INSERT INTO SUPPLIER VALUES (2, 'Jones', 'Paris'); INSERT INTO SUPPLIER VALUES (3, 'Blake', 'Paris'); INSERT INTO SUPPLIER VALUES (4, 'Clark', 'London'); INSERT INTO SUPPLIER VALUES (5, 'Adams', 'Athens');

INSERT INTO PART VALUES (1, 'Nut', 'Red'); INSERT INTO PART VALUES (2, 'Bolt', 'Green'); INSERT INTO PART VALUES (3, 'Screw', 'Blue'); INSERT INTO PART VALUES (4, 'Screw', 'Red'); INSERT INTO PART VALUES (5, 'Cam', 'Blue'); INSERT INTO PART VALUES (6, 'Cog', 'Red');

INSERT INTO SHIPMENT VALUES (1, 1, 300);

INSERT INTO SHIPMENT VALUES (1, 2, 200);

INSERT INTO SHIPMENT VALUES (1, 3, 400);

INSERT INTO SHIPMENT VALUES (1, 4, 200);

INSERT INTO SHIPMENT VALUES (1, 5, 100);

INSERT INTO SHIPMENT VALUES (1, 6, 100);

INSERT INTO SHIPMENT VALUES (2, 1, 300);

INSERT INTO SHIPMENT VALUES (2, 2, 400);

INSERT INTO SHIPMENT VALUES (3, 2, 200);

INSERT INTO SHIPMENT VALUES (4, 2, 200);

INSERT INTO SHIPMENT VALUES (4, 4, 300);

INSERT INTO SHIPMENT VALUES (4, 5, 400);

//Find the Sids of suppliers who supply green part SELECT Distinct S.Sid

FROM SUPPLIER S, PART P, SHIPMENT C

WHERE C.Sid=S.Sid AND P.PID=C.PID AND P.Color like 'Green';

//For every supplier print the name of the supplier and the total number of parts that he/she supplies. SELECT S.Sname, COUNT(\*) as PartCount

FROM SUPPLIER S, SHIPMENT C, PART P WHERE C.Sid = S.Sid and P.PID = C.PID GROUP BY S.Sname, S.Sid

//Update part color supplied by supplier S3 to Yellow UPDATE PART

SET Color='Yellow'

WHERE PID IN (SELECT C.PID FROM SUPPLIER S, SHIPMENT C WHERE C.Sid=S.Sid and C.Sid=3);

4B)//Consider the following Tourist places table with the following attributes -

Place, address – (state), id, tourist attractions,best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List all the tourist places of Karnataka
2. List the tourist attractions of Kerala. Exclude accommodation and food

db.createCollection("tourist")

{ "ok" : 1 }

db.tourist.insert([{place:"bangalore",address:"karnataka",id:1,tour\_att:"att1",time:"jan",mode:"train ",acc:"acc1",food:"chicken"}])

db.tourist.insert([{place:"kochi",address:"kerala",id:2,tour\_att:"att2",time:"feb",mode:"boat",acc:"a cc2",food:"fish fry"}])

db.tourist.insert([{place:"agra",address:"delhi",id:3,tour\_att:"taj mahal",time:"march",mode:"car",acc:"acc3",food:"petha"}])

//List all the tourist places of Karnataka db.tourist.find({address:"karnataka"},{tour\_att:true}).pretty()

{ "\_id" : ObjectId("5c27375e7fd87cec5944fab7"), "tour\_att" : "att1" }

//List the tourist attractions of Kerala. Exclude accommodation and food. db.tourist.find({address:"kerala"},{acc:0,food:0}).pretty()

{

"\_id" : ObjectId("5c2737be7fd87cec5944fab8"), "place" : "kochi",

"address" : "kerala", "id" : 2,

"tour\_att" : "att2",

"time" : "feb",

"mode" : "boat",

}

5A)//Consider the Aircraft database given below. The primary keys are underlined. Assume relevant data types for attributes.

AIRCRAFT (Aircraft ID, Aircraft\_name, Cruising\_range) CERTIFIED (Emp ID, Aircraft ID)

EMPLOYEE (Emp ID, Ename, Salary)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Find the names of pilots certified for Boeing aircraft
2. Arrange the flight no with respect to the ascending order of distance.
3. Find the name of pilots who can operate flights with a range greater than 3000 miles but are not certified on any Boeing aircraft.

Create table aircraft(

aid varchar(9) primary key, aname varchar(10),

crange int

);

Create table employees( eid varchar(9) primary key, ename varchar(10),

salary int

);

Create table certified(

eid varchar(9)references employees(eid), aid varchar(9)references aircraft(aid)

);

insert into aircraft values('B001','Boeing',4000); insert into aircraft values('B002','Boeing',2500); insert into aircraft values('BB003','Blackbeard',6000); insert into aircraft values('S004','Supermarine',8000); insert into aircraft values('L005','Lockheed',2100);

insert into employees values(1,'Johnny',40000); insert into employees values(2,'Timmy',60000); insert into employees values(3,'Lawrence',70000); insert into employees values(4,'Zuzu',90000); insert into employees values(5,'Matt',80000);

insert into certified values(1,'B001'); insert into certified values(1,'B002'); insert into certified values(3,'S004'); insert into certified values(4,'S004'); insert into certified values(5,'L005'); insert into certified values(2,'B002'); insert into certified values(4,'BB003'); insert into certified values(3,'BB003'); insert into certified values(4,'L005');

//Find names of pilots certified to fly Boeing SELECT DISTINCT E.ename

FROM employees E, certified C, aircraft A

WHERE E.eid = C.eid AND C.aid = A.aid AND A.aname='Boeing';

//Arrange flight no with respect to ascending order of distance SELECT aid

FROM aircraft

ORDER BY crange ASC;

//Find the name of pilots who can operate flights with a range greater than 3000 miles but are not certified on any Boeing aircraft.

select distinct(ename) from employees E,certified C, aircraft A where A.crange > 3000 and C.aid NOT in(select aid from aircraft A where A.aname='Boeing') and E.eid = C.eid

5B)//Consider the following Tourist places table with the following attributes -

Place, address –(state, id), tourist attractions,best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List the tourist attractions of Kerala. Exclude accommodation and food.
2. List the places sorted state wise. db.createCollection("tourist")

{ "ok" : 1 }

db.tourist.insert([{place:"bangalore",address:"karnataka",id:1,tour\_att:"att1",time:"jan",mode:"train ",acc:"acc1",food:"chicken"}])

db.tourist.insert([{place:"kochi",address:"kerala",id:2,tour\_att:"att2",time:"feb",mode:"boat",acc:"a cc2",food:"fish fry"}])

db.tourist.insert([{place:"agra",address:"delhi",id:3,tour\_att:"taj mahal",time:"march",mode:"car",acc:"acc3",food:"petha"}])

//List the tourist attractions of Kerala. Exclude accommodation and food. db.tourist.find({address:"kerala"},{acc:0,food:0}).pretty()

{

"\_id" : ObjectId("5c2737be7fd87cec5944fab8"), "place" : "kochi",

"address" : "kerala", "id" : 2,

"tour\_att" : "att2",

"time" : "feb",

"mode" : "boat",

}

//List the places sorted state wise. db.tourist.find({},{place:1}).sort({address:1})

{ "\_id" : ObjectId("5c2738557fd87cec5944fab9"), "place" : "agra" }

{ "\_id" : ObjectId("5c27375e7fd87cec5944fab7"), "place" : "bangalore" }

{ "\_id" : ObjectId("5c2737be7fd87cec5944fab8"), "place" : "kochi" }

6A)//Consider the Employee database given below. The primary keys are underlined. Assume relevant data types for attributes.

EMPLOYEE (Fname, Lname, SSN, Addrs, Sex, Salary, SuperSSN, Dno) DEPARTMENT (Dname, Dnumber, MgrSSN, MgrStartDate) DEPENDENT(Dname, ESSN)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. For each department, retrieve the department name and the average salary of all employees working in that department
2. List the names of managers who have at least one dependent
3. Display the details of all departments having ‘tech’ as their substring

CREATE TABLE EMPLOYEE15 ( Fname VARCHAR(10) NOT NULL, Lname VARCHAR(15) NOT NULL, Ssn VARCHAR(9) PRIMARY KEY,

Bdate DATE,

Address VARCHAR(40), Sex CHAR,

Salary INT,

Super\_ssn VARCHAR(9), Dno INT

);

CREATE TABLE DEPARTMENT( Dname VARCHAR(15) NOT NULL, Dnumber INT PRIMARY KEY, Mgr\_ssn VARCHAR(9) NOT NULL,

Mgr\_start\_date DATE,

FOREIGN KEY (Mgr\_ssn) REFERENCES EMPLOYEE15(Ssn),

);

CREATE TABLE DEPENDENT (

Dname VARCHAR(15), Essn VARCHAR(9),

PRIMARY KEY(Essn, Dname),

FOREIGN KEY (Essn) REFERENCES EMPLOYEE15(Ssn)

);

INSERT INTO EMPLOYEE15 Values('John','Smith', 123456789, '09-JAN-65', '731 Fondren, Houston, TX', 'M', 30000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Franklin','Wong', 333445555, '08-DEC-55', '638 Voss, Houston, TX', 'M', 40000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Alicia','Zelaya', 999887777, '19-JAN-68', '3321 Castle, Spring, TX', 'F', 25000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Jennifer','Wallace', 987654321, '01-JAN-65', '731 Fondren, Houston, TX', 'F', 43000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Ramesh','Narayan', 666884444, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 38000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Joyce','English', 453453453, '01-JAN-65', '731 Fondren, Houston, TX', 'F', 25000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('Ahmad','Jabbar', 987987987, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 25000, NULL, NULL);

INSERT INTO EMPLOYEE15 Values('James','Borg', 888665555, '01-JAN-65', '731 Fondren, Houston, TX', 'M', 55000, NULL, NULL);

INSERT INTO DEPARTMENT Values('Research',5,'333445555','22-MAY-1988'); INSERT INTO DEPARTMENT Values('Administration',4,'987654321','01-JAN-1995'); INSERT INTO DEPARTMENT Values('Headquarters',1,'888665555','19-JUN-1981');

INSERT INTO DEPARTMENT Values('tech-Development',2,'666884444','22-MAY-1988'); INSERT INTO DEPARTMENT Values('tech-Management',3,'999887777','01-JAN-1995');

INSERT INTO DEPENDENT VALUES('Alice','333445555'); INSERT INTO DEPENDENT VALUES('Theodore','333445555'); INSERT INTO DEPENDENT VALUES('Joy','333445555'); INSERT INTO DEPENDENT VALUES('Abner','987654321'); INSERT INTO DEPENDENT VALUES('Michael','123456789'); INSERT INTO DEPENDENT VALUES('Alice','123456789'); INSERT INTO DEPENDENT VALUES('Elizabeth','123456789');

//For each dept, retreive the dept name and avg salary of all employees working in that department

SELECT Dname, AVG(Salary)

FROM DEPARTMENT, EMPLOYEE15;

//List names of managers who have at least one dependent SELECT Fname, Lname

FROM EMPLOYEE15

WHERE EXISTS(SELECT \* FROM DEPENDENT WHERE Ssn=Essn) AND

EXISTS (SELECT \* FROM DEPARTMENT WHERE Ssn=Mgr\_ssn);

//Display details of all departments having 'tech' as their substring

/\*SELECT \*

FROM DEPARTMENT

WHERE EXISTS(SUBSTRING('tech',1) AS ExtractString);\*/ select \* from DEPARTMENT where Dname like'%sear%'

6B)//Consider the following Tourist places table with the following attributes -

Place, address – (state, id), tourist attractions,best time of the year to visit,modes of transport(include nearest airport, railway station etc), accommodation, food - what not to miss for sure Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List all the tourist places of Karnataka
2. List the places sorted state wise db.createCollection("tourist")

{ "ok" : 1 }

db.tourist.insert([{place:"bangalore",address:"karnataka",id:1,tour\_att:"att1",time:"jan",mode:"train ",acc:"acc1",food:"chicken"}])

db.tourist.insert([{place:"kochi",address:"kerala",id:2,tour\_att:"att2",time:"feb",mode:"boat",acc:"a cc2",food:"fish fry"}])

db.tourist.insert([{place:"agra",address:"delhi",id:3,tour\_att:"taj mahal",time:"march",mode:"car",acc:"acc3",food:"petha"}])

//List all the tourist places of Karnataka. db.tourist.find({address:"karnataka"},{tour\_att:true}).pretty()

{ "\_id" : ObjectId("5c27375e7fd87cec5944fab7"), "tour\_att" : "att1" }

//List the places sorted state wise. db.tourist.find({},{place:1}).sort({address:1})

{ "\_id" : ObjectId("5c2738557fd87cec5944fab9"), "place" : "agra" }

{ "\_id" : ObjectId("5c27375e7fd87cec5944fab7"), "place" : "bangalore" }

{ "\_id" : ObjectId("5c2737be7fd87cec5944fab8"), "place" : "kochi" }

7A)//Consider the following Accident Tracker Schema. The primary keys are underlined. PERSON (driver – id #: String, name: string, address: string)

CAR (Regno: string, model: string, year: int)

ACCIDENT (report-number: int, acc\_date: date, location: string) OWNS (driver-id #: string, Regno: string)

PARTICIPATED (driver-id: string, Regno: string, report-number: int, damageamount: int)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Display the unique Regno’s of the cars involved in accidents.
2. Display the car Regno and model of the car which has the maximum damage amount.
3. Displaythe number of cars owned by each driver.

//create tables

create table PERSON (

Did VARCHAR(10) PRIMARY KEY, Pname VARCHAR(10),

Address VARCHAR(60));

create table CAR (

Regno VARCHAR(10) PRIMARY KEY, Model VARCHAR(20),

Year INT);

create table ACCIDENT ( Repno INT PRIMARY KEY,

Date DATE,

Loc VARCHAR(20));

create table OWNS ( Odid VARCHAR(10), Oregno VARCHAR(10),

Primary Key(Odid,Oregno),

Foreign key(Odid) references PERSON(Did) on delete cascade, Foreign key(Oregno) references CAR(Regno) on delete cascade);

create table PARTICIPATED ( Pdid VARCHAR(10),

Pregno VARCHAR(10),

Prepno INT, Damage INT,

Primary key(Pdid, Pregno, Prepno),

Foreign key (Pdid) references PERSON(Did) on delete cascade, Foreign key (Pregno) references CAR(Regno) on delete cascade,

Foreign key(Prepno) references ACCIDENT(Repno) on delete cascade);

//insert values

insert into PERSON values('1','Steve','Frankfurt'); insert into PERSON values('2','Dustin','Perryridge'); insert into PERSON values('3','Mike','Brooklyn'); insert into PERSON values('4','Lucas','Perryridge '); insert into PERSON values('5','John',' Brooklyn '); insert into PERSON values('6','Antony','Hellington');

insert into CAR values('KA04','BMW',2000); insert into CAR values('KA05','Ford',2002); insert into CAR values('KA03','Maruthi',1999); insert into CAR values('KA02','Tata',2002); insert into CAR values('KA01', 'Audi',2003); insert into CAR values('KA08', 'Maruthi',2003); insert into CAR values('KA06', 'Maruthi',2003); insert into CAR values('KA07', 'BMW',2003);

insert into ACCIDENT values(12,'01-Jun-2001','Frankfurt');

insert into ACCIDENT values(25,'02-Jul-2002','Brooklyn'); insert into ACCIDENT values(512,'08-Mar-2000',' Brooklyn');

insert into ACCIDENT values(1024,'25-Oct-2002','AvenueRoad'); insert into ACCIDENT values(1000,'23-Dec-2003','RichmondCircle'); insert into ACCIDENT values(1,'25-Dec-2004','ParkStreet');

insert into OWNS values('1', 'KA04'); insert into OWNS values('1', 'KA06'); insert into OWNS values('2', 'KA07'); insert into OWNS values('2', 'KA05'); insert into OWNS values('3', 'KA03'); insert into OWNS values('4', 'KA02'); insert into OWNS values('5', 'KA01'); insert into OWNS values('6', 'KA08');

insert into PARTICIPATED values('1', 'KA04',12,1000); insert into PARTICIPATED values('1', 'KA06',25,1500); insert into PARTICIPATED values('2', 'KA05',512,1500); insert into PARTICIPATED values('2', 'KA05',1024,2500); insert into PARTICIPATED values('3', 'KA03',1000,1700); insert into PARTICIPATED values('4', 'KA02',1,100);

//Display unique car Regnos involved in accidents. Select distinct (Pregno)

from PARTICIPATED;

//Display the car Regno and model which has the maximum damage amount.

Select Pregno,Model

from CAR, PARTICIPATED

where Pregno=Regno and Damage in (select max(Damage) from PARTICIPATED);

//Display no. of cars owned by each driver.

Select Odid,count(\*) as no\_of\_cars from OWNS

group by Odid;

7B)//Consider the following Movie table with the following attributes -

Actor\_name,Actor\_id, Actor\_birthdate, Dirctor\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List all the movies acted by John in the year 2018
2. List only the actors names and type of the movie directed by Ram

db.createCollection("movie")

{ "ok" : 1 }

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"williams",dir\_id:101,dir\_bdat e:"12/9/1987",film:"battleship",year:2015,type:"thriller"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"john wick",year:2012,type:"killer"}])

db.movie.insert([{act\_n:"elly",act\_id:12,act\_bdate:"4/12/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2

/3/1997",film:"aquaman",year:2012,type:"action"}])

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"thomas",dir\_id:103,dir\_bdate: "12/3/1999",film:"xxx",year:2018,type:"action"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"mr.bean",year:2018,type:"comedy"}])

//List all the movies acted by John in the year 2018. db.movie.find({$and : [{act\_n:"john"},{year:2018}]},{film:1}).pretty()

{ "\_id" : ObjectId("5c273f627fd87cec5944fac3"), "film" : "mr.bean" }

//List only the actors names and type of the movie directed by Ram. db.movie.find({dir\_n:"ram"},{act\_n:1,type:1}).pretty()

{

"\_id" : ObjectId("5c273e247fd87cec5944fabf"), "act\_n" : "john",

"type" : "killer"

}

{

"\_id" : ObjectId("5c273e2e7fd87cec5944fac0"), "act\_n" : "elly",

"type" : "action"

}

{

"\_id" : ObjectId("5c273f627fd87cec5944fac3"), "act\_n" : "john",

"type" : "comedy"

}

//8A)//Consider the Cricket database given below. The primary keys are underlined. Assume PLAYER (PId, Lname, Fname, Country, Yborn, Bplace)

MATCH (MatchId, Team1,Team2, Ground, Date, Winner) BATTING (MatchId, Pid, Nruns, Fours, Sixes)

BOWLING (MatchId, Pid, Novers, Maidens, Nruns, Nwickets)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. Display the sorted list of ground names where Australia has played as team1
2. Find the match information of all matches in which Dhoni did batting.
3. Find the names of players who did batting in match 2689

create table PLAYER ( Pid int,

Lname varchar(10), Fname varchar(10), Country varchar(10), Yborn date,

Bplace varchar(10), primary key (Pid)

);

create table MATCHING ( MatchID int,

Team1 varchar(10), Team2 varchar(10), Ground varchar(10), Date date,

Winner varchar(10), primary key(MatchID)

);

create table BATTING ( MatchID int,

Pid int, Nruns int, Fours int, Sixes int,

primary key(MatchID,Pid),foreign key(MatchID) references MATCHING(MatchID),foreign key(Pid) references PLAYER(Pid)

);

create table BOWLING ( MatchID int,

Pid int, Novers int,

Maidens varchar(10), Nruns int,

Nwickets int,

primary key(MatchID,Pid),foreign key(MatchID) references MATCHING(MatchID),foreign key(Pid) references PLAYER(Pid)

);

//insert values

insert into PLAYER values("1,"aa","Dhoni","india","01-jan-88","chennai");

insert into MATCHING values("12,"Australia","D2","china","01-jan-2012","india"); insert into BATTING values("12,1,20,4,4);

insert into BOWLING values("12,1,12,"cc",20,2);

//Display the sorted list of ground names where Australia has played as team1. SELECT Ground

FROM MATCHING

WHERE Team1='Australia' ORDER BY Ground;

//Find the match information of all matches in which Dhoni did batting. SELECT \*

FROM (PLAYER natural join MATCHING) natural join BATTING WHERE Fname='Dhoni';

//Find the names of players who did batting in match 2689. SELECT Fname,Lname

FROM (PLAYER natural join MATCHING) natural join BATTING WHERE MatchID=2686;

//8B)Consider the following Movie table with the following attributes -

Actor\_name,Actor\_id, Actor\_birthdate , Dirctor\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List all the movies acted by John and Elly in the year 2012.
2. List only the name and type of the movie where Ram has acted sorted by movie names

db.createCollection("movie")

{ "ok" : 1 }

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"williams",dir\_id:101,dir\_bdat e:"12/9/1987",film:"battleship",year:2015,type:"thriller"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"john wick",year:2012,type:"killer"}])

db.movie.insert([{act\_n:"elly",act\_id:12,act\_bdate:"4/12/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2

/3/1997",film:"aquaman",year:2012,type:"action"}])

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"thomas",dir\_id:103,dir\_bdate: "12/3/1999",film:"xxx",year:2018,type:"action"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"mr.bean",year:2018,type:"comedy"}])

//List all the movies acted by John and Elly in the year 2012.

db.movie.find({$and : [{act\_n:{$in : ["john","elly"]}},{year:2012}]},{film:1}).pretty()

{ "\_id" : ObjectId("5c273e247fd87cec5944fabf"), "film" : "john wick" }

{ "\_id" : ObjectId("5c273e2e7fd87cec5944fac0"), "film" : "aquaman" }

//ii. List only the name and type of the movie where Ram has acted sorted by movie names. db.movie.find({act\_n:"ram"},{film:1,type:1}).sort({film:1}).pretty()

{ "\_id" : ObjectId("5c273ddb7fd87cec5944fabd"), "film" : "battleship", "type" : "thriller" }

{ "\_id" : ObjectId("5c273ef97fd87cec5944fac1"), "film" : "xxx", "type" : "action" }

9A)//Consider the following shipment schema. The primary keys are underlined. Assume relevant data types for attributes.

CUSTOMER (cust # , cname, city) ORDER (order#, odate, cust #, ord-Amt) ORDER – ITEM (order #, Item #, qty) ITEM (item #, unit price)

SHIPMENT (order #, ship-date)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. List the customer names who have placed more than 2 orders.
2. Find the total order amount for each day
3. List the customer details who has the largest order amount.

//create tables

Create table CUSTOMER( Cno INT,

Cname VARCHAR(50), Ccity VARCHAR(50),

Primary key(Cno)

);

Create table ORDER1( Ono INT,

Odate DATE, Ocno INT, Oamt INT,

Primary key(Ono),

Foreign Key(Ocno) references CUSTOMER(Cno) on delete cascade

);

Create table ITEM( Ino INT ,

Uprice INT, Primary key(Ino)

);

Create table ORDER\_ITEM( Iono INT,

Oino INT, Qty INT,

Primary key(Iono,Oino),

Foreign Key(Iono) references ORDER1(Ono) on delete cascade, Foreign Key(Oino) references ITEM(Ino) on delete cascade

);

Create table WAREHOUSE( Wno INT,

Wcity VARCHAR(50),

Primary Key(Wno)

);

Create table SHIPMENT( Sono INT,

Swno INT, Shipdate DATE,

Primary key(Sono,Swno),

Foreign Key(Sono) references ORDER1(Ono) on delete cascade, Foreign Key(Swno) references WAREHOUSE(Wno) on delete cascade

);

//insert values

Insert into CUSTOMER values (1,'Archie','Bangalore'); Insert into CUSTOMER values (2,'Veronica','Bangalore'); Insert into CUSTOMER values (3,'Betty','Mysore'); Insert into CUSTOMER values (4,'Jughead','Bangalore'); Insert into CUSTOMER values (5,'Cheryl','Mysore'); Insert into CUSTOMER values (6,'Jason','Mangalore');

Insert into ORDER1 values (1, '01-Jun-2016',1,1000); Insert into ORDER1 values (2, '03-Jun-2016',1,2000); Insert into ORDER1 values (3, '03-Jun-2016',3,3000); Insert into ORDER1 values (4, '05-Jun-2016',4,4000); Insert into ORDER1 values (5, '06-Jun-2017',5,5000);

Insert into ITEM values(1,100); Insert into ITEM values(2,200); Insert into ITEM values(3,300);

Insert into ITEM values(4,400); Insert into ITEM values(10,500);

Insert into ORDER\_ITEM values(1,1,2); Insert into ORDER\_ITEM values(1,2,1); Insert into ORDER\_ITEM values(2,3,2); Insert into ORDER\_ITEM values(3,4,3); Insert into ORDER\_ITEM values(4,3,1); Insert into ORDER\_ITEM values(5,2,1);

Insert into WAREHOUSE values(1,'Bangalore'); Insert into WAREHOUSE values(2,'Bangalore'); Insert into WAREHOUSE values(3,'Mysore'); Insert into WAREHOUSE values(4,'Mangalore'); Insert into WAREHOUSE values(5,'Mangalore');

Insert into SHIPMENT values(1,1,'03-Jun-2016'); Insert into SHIPMENT values(2,1,'03-Jun-2016'); Insert into SHIPMENT values(3,2,'05-Jun-2016'); Insert into SHIPMENT values(4,3,'05-Jun-2016'); Insert into SHIPMENT values(5,4,'06-Jun-2016');

//List the customer names who have placed more than 2 orders Select Cname FROM CUSTOMER

where (Select count(Ono) from ORDER1 where Cno=Ocno)>=2;

//Find the total order amount for each day. Select Odate,SUM(Oamt)

from ORDER1 group by Odate;

//List customer details who has the largest order amount.

Select Cno,Cname,Ccity from CUSTOMER,ORDER1

where Cno=Ocno and Oamt in(select max(Oamt) from ORDER1);

//9B)Consider the following Movie table with the following attributes -

Actor\_name,Actor\_id, Actor\_birthdate , Dirctor\_name,Director\_id, Director\_birthdate, film\_title, year of production ,type (thriller, comedy, etc.)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

1. List all the movies acted by John in the year 2018
2. List only the actors names and type of the movie directed by Ram

db.createCollection("movie")

{ "ok" : 1 }

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"williams",dir\_id:101,dir\_bdat e:"12/9/1987",film:"battleship",year:2015,type:"thriller"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"john wick",year:2012,type:"killer"}])

db.movie.insert([{act\_n:"elly",act\_id:12,act\_bdate:"4/12/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2

/3/1997",film:"aquaman",year:2012,type:"action"}])

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"thomas",dir\_id:103,dir\_bdate: "12/3/1999",film:"xxx",year:2018,type:"action"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"mr.bean",year:2018,type:"comedy"}])

//List all the movies acted by John in the year 2018. db.movie.find({$and : [{act\_n:"john"},{year:2018}]},{film:1}).pretty()

{ "\_id" : ObjectId("5c273f627fd87cec5944fac3"), "film" : "mr.bean" }

//List only the actors names and type of the movie directed by Ram. db.movie.find({dir\_n:"ram"},{act\_n:1,type:1}).pretty()

{

"\_id" : ObjectId("5c273e247fd87cec5944fabf"), "act\_n" : "john",

"type" : "killer"

}

{

"\_id" : ObjectId("5c273e2e7fd87cec5944fac0"), "act\_n" : "elly",

"type" : "action"

}

{

"\_id" : ObjectId("5c273f627fd87cec5944fac3"), "act\_n" : "john",

"type" : "comedy"

}

//10A)Consider the following shipment schema. The primary keys are underlined. Assume relevant data types for attributes.

CUSTOMER (cust # , cname, city) ORDER (order#, odate, cust #, ord-Amt) ORDER – ITEM (order #, Item #, qty) ITEM (item #, unit price)

SHIPMENT (order #, ship-date)

Create the above tables in SQL. Specify primary and foreign keys properly. Enter at least 5 tuples in each table with relevant data. Solve the following queries.

1. List name of the customer, no. of orders placed by each customer residing in Bangalore city.
2. List the names of the customers who have ordered at least 10 items
3. List the customer names who have not ordered for item no. 10.

//create tables

Create table CUSTOMER( Cno INT,

Cname VARCHAR(50), Ccity VARCHAR(50),

Primary key(Cno)

);

Create table ORDER1(

Ono INT,

Odate DATE, Ocno INT, Oamt INT,

Primary key(Ono),

Foreign Key(Ocno) references CUSTOMER(Cno) on delete cascade

);

Create table ITEM( Ino INT ,

Uprice INT, Primary key(Ino)

);

Create table ORDER\_ITEM( Iono INT,

Oino INT, Qty INT,

Primary key(Iono,Oino),

Foreign Key(Iono) references ORDER1(Ono) on delete cascade, Foreign Key(Oino) references ITEM(Ino) on delete cascade

);

Create table WAREHOUSE( Wno INT,

Wcity VARCHAR(50),

Primary Key(Wno)

);

Create table SHIPMENT( Sono INT,

Swno INT, Shipdate DATE,

Primary key(Sono,Swno),

Foreign Key(Sono) references ORDER1(Ono) on delete cascade, Foreign Key(Swno) references WAREHOUSE(Wno) on delete cascade

);

//insert values

Insert into CUSTOMER values (1,'Archie','Bangalore'); Insert into CUSTOMER values (2,'Veronica','Bangalore'); Insert into CUSTOMER values (3,'Betty','Mysore'); Insert into CUSTOMER values (4,'Jughead','Bangalore'); Insert into CUSTOMER values (5,'Cheryl','Mysore'); Insert into CUSTOMER values (6,'Jason','Mangalore');

Insert into ORDER1 values (1, '01-Jun-2016',1,1000); Insert into ORDER1 values (2, '03-Jun-2016',1,2000); Insert into ORDER1 values (3, '03-Jun-2016',3,3000); Insert into ORDER1 values (4, '05-Jun-2016',4,4000); Insert into ORDER1 values (5, '06-Jun-2017',5,5000);

Insert into ITEM values(1,100); Insert into ITEM values(2,200); Insert into ITEM values(3,300); Insert into ITEM values(4,400);

Insert into ITEM values(10,500);

Insert into ORDER\_ITEM values(1,1,2); Insert into ORDER\_ITEM values(1,2,1); Insert into ORDER\_ITEM values(2,3,2); Insert into ORDER\_ITEM values(3,4,3); Insert into ORDER\_ITEM values(4,3,1); Insert into ORDER\_ITEM values(5,2,1);

Insert into WAREHOUSE values(1,'Bangalore'); Insert into WAREHOUSE values(2,'Bangalore'); Insert into WAREHOUSE values(3,'Mysore'); Insert into WAREHOUSE values(4,'Mangalore'); Insert into WAREHOUSE values(5,'Mangalore');

Insert into SHIPMENT values(1,1,'03-Jun-2016'); Insert into SHIPMENT values(2,1,'03-Jun-2016'); Insert into SHIPMENT values(3,2,'05-Jun-2016'); Insert into SHIPMENT values(4,3,'05-Jun-2016'); Insert into SHIPMENT values(5,4,'06-Jun-2016');

//List name of customer, no. of orders placed by each customer residing in Bangalore city. Select Cname,count(Ono)

from CUSTOMER,ORDER1

where Ocno=Cno and Ccity=’Bangalore’ group by Cname;

//List the names of customers who have ordered at least 10 items. Select Cname,count(\*)

from CUSTOMER,ORDER1

where Ocno=Cno group by Cname having count(\*)>=10;

//List the customer names who have not ordered for item no. 10 Select distinct(Cname)

from ORDER1,CUSTOMER,ORDER\_ITEM

where Ono=Iono and Ocno=Cno and Iono!=10;

//10B)Consider the following Movie table with the following attributes -

Actor\_name, Actor\_id, Actor\_birthdate, Director\_name, Director\_id, Director\_birthdate, film\_title, year of production, type (thriller, comedy, etc.)

Create 10 collections with data relevant to the following questions. Write and execute MongoDB queries:

* 1. List all the movies acted by John and Elly in the year 2012.
  2. List only the name and type of the movie where Ram has acted, sorted by movie names.

db.createCollection("movie")

{ "ok" : 1 }

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"williams",dir\_id:101,dir\_bdat e:"12/9/1987",film:"battleship",year:2015,type:"thriller"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"john wick",year:2012,type:"killer"}])

db.movie.insert([{act\_n:"elly",act\_id:12,act\_bdate:"4/12/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2

/3/1997",film:"aquaman",year:2012,type:"action"}])

db.movie.insert([{act\_n:"ram",act\_id:13,act\_bdate:"2/3/1997",dir\_n:"thomas",dir\_id:103,dir\_bdate: "12/3/1999",film:"xxx",year:2018,type:"action"}])

db.movie.insert([{act\_n:"john",act\_id:11,act\_bdate:"1/2/1998",dir\_n:"ram",dir\_id:100,dir\_bdate:"2/ 3/1997",film:"mr.bean",year:2018,type:"comedy"}])

//List all the movies acted by John and Elly in the year 2012.

db.movie.find({$and : [{act\_n:{$in : ["john","elly"]}},{year:2012}]},{film:1}).pretty()

{ "\_id" : ObjectId("5c273e247fd87cec5944fabf"), "film" : "john wick" }

{ "\_id" : ObjectId("5c273e2e7fd87cec5944fac0"), "film" : "aquaman" }

//ii. List only the name and type of the movie where Ram has acted sorted by movie names. db.movie.find({act\_n:"ram"},{film:1,type:1}).sort({film:1}).pretty()

{ "\_id" : ObjectId("5c273ddb7fd87cec5944fabd"), "film" : "battleship", "type" : "thriller" }

{ "\_id" : ObjectId("5c273ef97fd87cec5944fac1"), "film" : "xxx", "type" : "action" }