

# **Department of Computer Science & Engineering**

**QUESTION BANK FOR VSEMESTER (Term: Oct 2021 – Feb 2022)**

**Database Systems Laboratory (CSL57)**

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

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

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| **Sl. No.** | **Question** |
| 1. a) | Consider the Employee database given below. The primary keys are underlined.  Assume relevant data types for attributes.  EMPLOYEE (employee-name, street, city)  WORKS (employee-name, company-name, salary)  COMPANY (company-name, city)  MANAGES (employee-name, manager-name)  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, street address, and cities of residence for all employees who work for 'First Bank Corporation' and earn more than $10,000.   **select e.ename,e.street,e.city from employee e,works w where e.ename=w.ename and w.cname="First Bank Corporation" and w.salary >10000**   1. Find the names of all employees in the database who live in the same cities as the companies for which they work.   **select e.ename from employee e,works w,company c where e.ename=w.ename and w.cname=c.cname and e.city=c.city;**   1. Find the average salary company wise and display it with the heading “Average Salary”.   **select w.cname,avg(w.salary) as average\_salary from works w group by(cname);** |
| 1.b) | Consider a 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   db.restaurant.find({cuisine:"Italian","address.area":"Bangalore"},{name:1,address:1}).pretty();   1. List the name, address and nearby landmarks of all restaurants in Bangalore where north Indian thali(cuisine) is available.   db.restaurant.find({famousfor:"North Indian Thali","address.area":"Bangalore"},{name:1,address:1,nearbylandmarks:1}).pretty(); |
| 2. a) | Consider the Order-Shipment database given below. The primary keys are underlined. Assume relevant data types for attributes.  CUSTOMER (cust #, cname, city)  ORDERS (order #, odate, cust #, ord-Amt)  ORDER – ITEM (order #, Item #, qty)  ITEM (item #, unit price)  SHIPMENT (order #, warehouse#, ship-date)  WAREHOUSE (warehouse #, city)  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 no. of order placed by customer no. 5.   **select count(orderid)as ordercount from orders where custid=5;**   1. List customer details who have the largest order amount.   **select c.custid,c.cname from customer c,orders o where c.custid=o.custid order by(amt) desc limit 1;**   1. List the names of customers who have ordered at least 10 items.   **select c.cname,count(oi.itemid) from order\_item oi,customer c,orders o where c.custid=o.custid and o.orderid=oi.orderid group by(oi.orderid) having count(oi.itemid)>=10;** |
| 2. b) | Consider a 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, address and nearby landmarks of all restaurants in Bangalore where north Indian thali(cuisine) is available   db.restaurant.find({famousfor:"North Indian Thali","address.area":"Bangalore"},{name:1,address:1,nearbylandmarks:1}).pretty();   1. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore.   **db.restaurant.find({"address.area":"Bangalore"},{name:1,address:1,famousfor:1,\_id:0}).pretty();** |
| 3.a) | Consider the Employee database given below. The primary keys are underlined.  Assume relevant data types for attributes.  EMPLOYEE (employee-name, street, city)  WORKS (employee-name, company-name, salary)  COMPANY (company-name, city)  MANAGES (employee-name, manager-name)  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 all employees in the database who live in the same cities and on the same streets as do their managers. 2. Find the names of all employees in the database who do not work for 'First Bank Corporation‘   **select e.ename from employee e, works w where e.ename=w.ename and w.cname!="First Bank Corporation";**   1. Find the names of all employees in the database who earn more than every employee of 'Small Bank Corporation'. Assume that all people work for at most one company.   **select e.ename,w.cname from employee e,works w where e.ename=w.ename and w.salary > all(select ww.salary from works ww where ww.cname="Small Bank Corporation");** |
| 3.b) | Consider a 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, address and nearby landmarks of all restaurants in Bangalore where north Indian thali(cuisine) is available.   db.restaurant.find({famousfor:"North Indian Thali","address.area":"Bangalore"},{name:1,address:1,landmark:1,\_id:0}).pretty();   1. List the name and address of restaurants and also the dish the restaurant is famous for, in Bangalore where online delivery is available.   db.restaurant.find({"address.area":"Bangalore",online\_delivery:"yes"},{name:1,address:1,\_id:0}).pretty(); |
| 4.a) | Consider the Bank database given below. The primary keys are underlined. Assume relevant data types for attributes.  BRANCH (branch\_name, branch\_city, assets)  CUSTOMER (customer\_name, customer\_street, customer\_city)  ACCOUNT (account\_number, branch\_name, amount)  LOAN (loan\_number, branch\_name, amount)  DEPOSITOR (customer\_name, account\_number)  BORROWER (customer\_name, loan\_number)  EMPLOYEE (employee\_name, branch\_name, 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 all customers whose balance is less than 500.   **select d.customer\_name from depositor d,account a where d.account\_number=a.account\_number;**   1. Find all employees whose salary is greater than 1400 and working branch is not ‘Downtown’   **select employee\_name from employee where salary>1400 and branch\_name!="Downtown";**   1. Calculate the average salary of all employees and display the average salary as “Avg\_Salary”   **select avg(salary) as avg\_salary from employee;** |
| 4.b) | Consider a Tourist places database 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. |
| 5.a) | Consider the Order-Shipment database given below. 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 #, warehouse#, ship-date)  WAREHOUSE (warehouse #, city)  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 number of orders placed by each customer.   **select custid,count(\*) from orders group by(custid);**   1. List the customer names who have not ordered for item no. 10.   **select c.cname,count(o.orderid) from customer c,orders o where c.custid=o.custid group by(o.orderid);**   1. List the names of customers who have ordered at least 10 items.   **select c.cname,count(oi.itemid) from order\_item oi,customer c,orders o where c.custid=o.custid and o.orderid=oi.orderid group by(oi.orderid) having count(oi.itemid)>=10;** |
| 5.b) | Consider a Tourist places database 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 the tourist attractions of Kerala. Exclude accommodation and food. 2. List the places sorted state wise. |
| 6.a) | Consider the Bank database given below. The primary keys are underlined. Assume relevant data types for attributes.  BRANCH (branch\_name, branch\_city, assets)  CUSTOMER (customer\_name, customer\_street, customer\_city)  ACCOUNT (account\_number, branch\_name, amount)  LOAN (loan\_number, branch\_name, amount)  DEPOSITOR (customer\_name, account\_number)  BORROWER (customer\_name, loan\_number)  EMPLOYEE (employee\_name, branch\_name, 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 all customers whose city is not Brooklyn.   **select customer\_name from customer where customer\_city!="Brooklyn";**   1. Find the names of all customers who have taken loans.   **select customer\_name from borrower;**   1. Display all account numbers, branch name and corresponding branch city.   **select a.account\_number,a.branch\_name,b.branch\_city from account a, branch b where a.branch\_name=b.branch\_name;** |
| 6.b) | Consider a Tourist places database 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 |
| 7.a) | Consider the Order-Shipment database given below. 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 #, warehouse#, ship-date)  WAREHOUSE (warehouse #, city)  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 item numbers and their quantity for order number 5.   **select itemid,quantity from order\_item where orderid=5;**   1. Display the average order amount for day wise orders.   **select odate,avg(amt) from orders group by(odate);**   1. List the number of orders placed by each customer.   **select c.cname,count(o.orderid) from customer c,orders o where c.custid=o.custid group by(o.orderid);** |
| 7.b) | Consider a Movie database 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. |
| 8.a) | Consider the Employee database given below. The primary keys are underlined.  Assume relevant data types for attributes.  EMPLOYEE (employee-name, street, city)  WORKS (employee-name, company-name, salary)  COMPANY (company-name, city)  MANAGES (employee-name, manager-name)  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, street address, and cities of residence for all employees who work for 'First Bank Corporation' and earn more than $10,000 and less than $20,000.   **select e.ename,e.street,e.city from employee e,works w where e.ename=w.ename and w.cname="First Bank Corporation" and w.salary>10000 and w.salary<20000;**   1. Find the names of all employees in the database who live in the same cities as the companies for which they work.   **select e.ename from employee e,works w,company c where e.ename=w.ename and w.cname=c.cname and c.city=e.city;**   1. Find the names of all employees in the database who earn more than every employee of 'Small Bank Corporation'. Assume that all people work for at most one company.   **select e.ename,w.cname from employee e,works w where e.ename=w.ename and w.salary > all(select ww.salary from works ww where ww.cname="Small Bank Corporation");** |
| 8.b) | Consider a Movie database 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. |
| 9.a) | Consider the Order-Shipment database given below. 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 #, warehouse#, ship-date)  WAREHOUSE (warehouse #, city)  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 number of orders placed by customer no. 5.   **select count(orderid) from orders where custid=5;**   1. Find the total order amount for each day.   **select odate,count(\*) from orders group by(odate);**   1. List the customer details who has the largest order amount.   **select c.cname from customer c,orders o where c.custid=o.custid order by(amt) desc limit 1;** |
| 9.b) | Consider a Movie database 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. |
| 10.a) | Consider the Bank database given below. The primary keys are underlined. Assume relevant data types for attributes.  BRANCH (branch\_name, branch\_city, assets)  CUSTOMER (customer\_name, customer\_street, customer\_city)  ACCOUNT (account\_number, branch\_name, amount)  LOAN (loan\_number, branch\_name, amount)  DEPOSITOR (customer\_name, account\_number)  BORROWER (customer\_name, loan\_number)  EMPLOYEE (employee\_name, branch\_name, 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 all customers who have not taken loans.   **select c.customer\_name from customer c where c.customer\_name !=all(select cc.customer\_name from borrower cc);**   1. Display all loan numbers sorted by branch.   **select loan\_number from loan order by(branch\_name);**   1. Display the names of Employees who earn the maximum salary.   **select employee\_name from employee where salary >=all(select salary from employee);** |
| 10.b) | Consider a Movie database 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. |

**Note:**

* **Student is required to solve one problem including both PART-A and   
  PART-B.**
* **The questions are allotted based on lots.**

**Marks Distribution:**

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| **Conduction and Result** | **Write-Up** | **Execution** | **Viva/Demo** | **Change of Question** | **Total** |
| **Part – A** | **05** | **25** | **07** | **-5 Marks for each Part A and Part B** | **50 Marks** |
| **Part – B** | **03** | **10** |