III & IV Semester DS & RDBMS

Program List for the Academic Year 2020-21

Part A: DATA STRUCTURES USING C

1. Reverse a string using pointers.
2. Implement Pattern matching algorithm.
3. Search an element in the 2-dimensional array
4. Append 2 arrays
5. Search an element in the array using binary search.
6. Read a sparse matrix and display its triplet representation using array.
7. Create a singly linked list of n nodes and display it.
8. Delete a given node from a singly linked list.
9. Create a doubly linked list of integers and display in forward and backward direction.
10. Implement Stack using array
11. Implement Stack using linked list
12. Evaluation of postfix expression.
13. Implement Queue using array.
14. Implement Queue using linked list.
15. Search an element in a binary search tree
16. Implement exchange sort
17. Implement selection sort.
18. Implement insertion sort.

Part B: RDBMS

1. Create a table customer (cust_no varchar (5), cust_name varchar (15), age number, phone varchar (10))
   a) insert 5 records and display it
   b) add new field d_birth with date datatype
   c) create another table cust_phone with fields cust_name and phone from customer table
   d) remove the field age
   e) change the size of the cust_name to 25
   f) delete all the records from the table
   g) rename the table cutomer to cust
   h) drop the table

2. Create a table sale_man (salesman_no primary key, s_name not null, place, phone unique)

Create table sales_order (order_no primary key
order_date not null
salesman_no foreign key references salesman_no in sales_man
del_type values should be either P or F (check constraints)
order_status values should be 'Inprocess','Fullfilled','Backorder', 'Cancelled' (check constraints))

a) Insert few records in both tables
b) Delete primary key from sales_man table
c) Delete Foreign key and Check constraints from sales_order table
d) Add primary key in sales_man using ALTER TABLE
e) Add foreign key and CHECK constraints in sales_order table using ALTER TABLE

3. Create a table Hospital with the fields (doctorid,doctorname,department,qualification,experience).

Write the queries to perform the following.

a) Insert 5 records
b) Display the details of Doctors
c) Display the details of doctors who have the qualification 'MD'
d) Display all doctors who have more than 5 years experience but do not have the qualification 'MD'
e) Display the doctors in 'Skin' department
f) update the experience of doctor with doctored='D003' to 5
g) Delete the doctor with DoctorID='D005'

4. Create the following tables

Bank_customer (accno primary key, cust_name, place)
Deposit (accno foreign key, deposit_no, damount)
Loan (accno foreign key loan_no, Lamount)

Write the following queries

a) Display the details of the customers
b) Display the customers along with deposit amount who have only deposit with the bank
c) Display the customers along with loan amount who have only loan with the bank
d) Display the customers they have both loan and deposit with the bank
e) Display the customer who have neither a loan nor a deposit with the bank

5. Create a table employee with fields (EmpID, EName, Salary, Department, and Age). Insert some records. Write SQL queries using aggregate functions and group by clause

A. Display the total number of employees.
B. Display the name and age of the oldest employee of each department.
C. Display the average age of employees of each department
D. Display departments and the average salaries
E. Display the lowest salary in employee table

F. Display the number of employees working in purchase department
G. Display the highest salary in sales department;
H. Display the difference between highest and lowest salary

6. Create a table product with the fields (Product_code primary key, Product_Name, Category, Quantity, Price).
   Insert some records Write the queries to perform the following.
   a. Display the records in the descending order of Product_Name
   b. Display Product_Code, Product_Name with price between 20 and 50
   c. Display the details of products which belongs to the categories of 'bath soap', 'paste', or 'washing powder'
   d. Display the products whose Quantity less than 100 or greater than 500
   e. Display the products whose names starts with 's'
   f. Display the products which not belongs to the category 'paste'
   g. Display the products whose second letter is 'u' and belongs to the Category 'washing powder'
7. Consider the employee database given below. Give an expression in SQL for each of the following queries:
   EMPLOYEE (Employee-Name, City)
   WORKS (Employee-Name, Company-Name, Salary)
   COMPANY (Company-Name, City)
   MANAGES (Employee-Name, Manager-Name)
   A) Find the names of all employees who work in Infosys
   B) Find the names and cities of residence of all employees who works in Wipro
   C) Find the names, and cities of all employees who work in Infosys and earn more than Rs. 10,000.
   D) Find the employees who live in the same cities as the companies for which they work.
   E) Find all employees who do not work in Wipro Corporation.
   F) Find the company that has the most employees.

8. Write a program code to calculate the area of a circle for a value of radius varying from 3 to 7. Store the radius and the corresponding value of calculated area in an empty table named areas with field's radius and area.
9. Write a program block to calculate the electricity bill by accepting cust_no and units_consumed
10. Create a procedure to print Fibonacci number up to a limit, limit is passed as an argument
11. Create a function to check whether a given number is prime or not
12. create a table emp_salary(empno,enamedept,salary)
    Write a function to return the average salary of a particular department by accepting departmentname as argument.