University of Engineering & Management, Kolkata

Course: B.Tech. CSE / CSE (AIML) / CSE (IOT-CYS-BCT) / CSBS

Semester: 5th

Paper Name: Database Management System

Paper Code: PCC – CS591

Assignment List

University of Engineering & Management, Kolkata

Course: B.Tech (CSE / CSE(AIML) / CSE(IOT-CYS-BCT) / CSBS

Semester: 5th

Paper Name: Data Structure & Algorithm Laboratory

Paper Code: PCC – CS591

Assignment No 1

1. Write a query to create a table employee with empno, ename, designation and salary.
2. Write a query to display the column name and data type of the table employee
3. Write a query to create a table from an existing table with all the fields.
4. Write a query to create table from an existing table with selected fields.
5. Write a query to create a new table from an existing table without any record.
6. Write a query to Alter the column empno number(4) to empno number(6).
7. Write a query to Alter the table employee with multiple columns (empno, ename).
8. Write a query to add a new column in employee table.
9. Write a query to add multiple columns in employee table.
10. Write a query to drop a column from an existing table employee.
11. Write a query to drop multiple columns from the employee table.
12. Write a query to rename table employee to emp

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Assignment No 2

1. Create a table employee with attributes emp_id, f_name, l_name, job_type, salary, dept, commission, manager_id.
2. Make emp_id as the primary key of employee table.
3. Make f_name and salary NOT NULL type.
4. Add a column date_of_joining in the employee table.
5. Create a table department with attribute d_name, d_loc and HOD_id where d_name is primary key.
6. Create a table location with attributes loc_id, city and contact_no.
7. Enhance the size of the 'city' attribute by 5, in the location table.
8. Delete the contact_no attribute from the location table.
9. Make the department attribute of the employee table its foreign key referencing the department table.
10. Rename the city attribute to 'address' in the location table.
11. Rename the location table name to 'loc'.
12. Insert the following rows in 'loc' table

loc_id	address
1	Kolkata
2	Mumbai

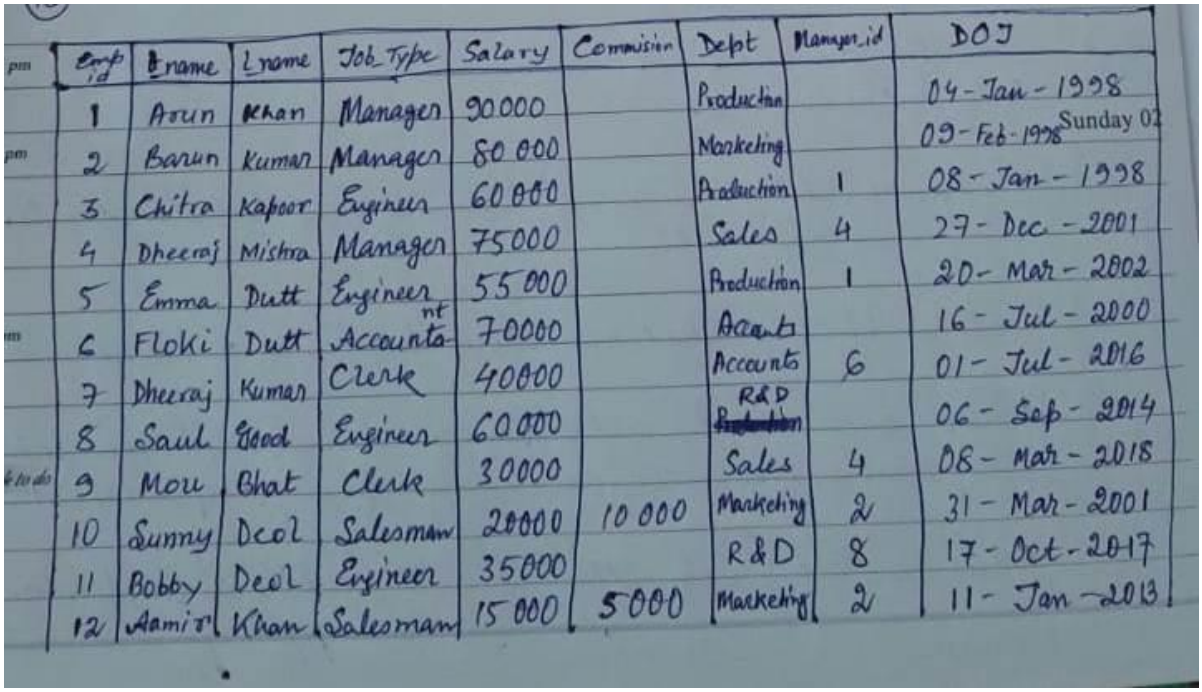
13. Truncate the table ‘loc’.

14. Drop the table ‘loc’.

15. Insert the following rows in the department table:

d_name	d_loc	HOD_id
Sales	Kol	4
Accounts	Delhi	6
Production	Kol	1
Marketing	Kol	2
R & D	Marketing	8

16. Insert the following rows in the employee table:



Emp_id	Fname	Lname	Job_Type	Salary	Commision	Dept	Manager_id	DOJ
1	Arun	Khan	Manager	90000		Production		04-Jan-1998
2	Barun	Kumar	Manager	80000		Marketing		09-Feb-1998 Sunday 02
3	Chitra	Kapoor	Engineer	60000		Production	1	08-Jan-1998
4	Dheeraj	Mishra	Manager	75000		Sales	4	27-Dec-2001
5	Emma	Dutt	Engineer nt	55000		Production	1	20-Mar-2002
6	Floki	Dutt	Accounta	70000		Accounts		16-Jul-2000
7	Dheeraj	Kumar	Clerk	40000		Accounts	6	01-Jul-2016
8	Saul	Good	Engineer	60000		R&D		06-Sep-2014
9	Mou	Bhat	Clerk	30000		Sales	4	08-Mar-2018
10	Sunny	Deol	Salesman	20000	10000	Marketing	2	31-Mar-2001
11	Bobby	Deol	Engineer	35000		R&D	8	17-Oct-2017
12	Aamir	Khan	Salesman	15000	5000	Marketing	2	11-Jan-2013

17. Show the values of departmental table.
18. Select the department names and their locations.
19. Show the employees f_name , l_name , salary and the salary after 1000rs. Bonus.
20. Show the employees annual salary with a 1000rs. Yearly bonus and the annual salary with a 100rs. Monthly bonus.
21. Show f_name as NAME and annual salary as ANNSAL from the employee table.
22. Show the l_name as LasT AND 100rs. Incremented salary as NewSal.
23. Show the emp_id, f_name, l_name, job_type of the employee getting highest salary.
24. Show the emp_id, f_name, l_name, job_type of the employee getting minimum salary.
25. Show the average salary of employees in the employee table.
26. Consider the Insurance database given below. The primary keys are underlined and the data types are specified:

PERSON (driver-id: string, name: string, address: string)

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

ACCIDENT (report-number:int,date:date,location:string)

OWNS (driver-id:string,regno:string)

PARTICIPATED (driver-id:string,regno:string,report-number:int,damage-amount:int)

i. Create the above tables by properly specifying the primary keys and the foreign keys
ii. Enter atleast five tuples for each relation
iii. Demonstrate how you a. Update the damage amount for the car with a specific regno in accident with report number 12 to 25000 b. Add a new accident to the database
iv. Find the total number of people who owned cars that were involved in accidents in 2006.
v. Find the number of accidents in which cars belonging to a specific model were involved.

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Assignment No 3

Consider the following employee table and execute the queries based on it

Emp_id	f_name	l_name	Job_Type	Salary	Commision	Dept	Manager_id	DOJ
1	Arun	Khan	Manager	90000		Production		04-Jan-1998
2	Barun	Kumar	Manager	80000		Marketing		09-Feb-1998 Sunday 02
3	Chitra	Kapoor	Engineer	60000		Production	1	08-Jan-1998
4	Dheeraj	Mishra	Manager	75000		Sales	4	27-Dec-2001
5	Emma	Dutt	Engineer	55000		Production	1	20-Mar-2002
6	Floki	Dutt	Accountant	70000		Accounts		16-Jul-2000
7	Dheeraj	Kumar	Clerk	40000		Accounts	6	01-Jul-2016
8	Saul	Good	Engineer	60000		R&D		06-Sep-2014
9	Mou	Bhat	Clerk	30000		Sales	4	08-Mar-2018
10	Sunny	Deol	Salesman	20000	10000	Marketing	2	31-Mar-2001
11	Bobby	Deol	Engineer	35000		R&D	8	17-Oct-2017
12	Aamir	Khan	Salesman	15000	5000	Marketing	2	11-Jan-2013

1. Show f_name, l_name and job_type from employees.
2. Show employee details in the following fashion:

Employee details

Arun is a manager

3. Show the monthly salary details in the following fashion

Monthly Salary Details

Arun's monthly salary is Rs. 90000

Consider the Department table to answer the queries

d_name	d_loc	HOD_id
Sales	Kol	4
Accounts	Delhi	6
Production	Kol	1
Marketing	Kol	2
R & D	Marketing	8

4. Show the different department names from department table
5. Show the employee names who works in 'Sales'
6. Show the employee names who gets salary of more than 50000 per month
7. Show the details of the employee whose manager id is not 1
8. Show the employee details whose salary ranges between 40000 and 70000
9. Show the details of the employees who works under the manager having id 1, 6 and 8
10. Select the f_name and salary of those employees whose last name starts with 'K'
11. Select the f_name and salary of those employees whose last name starts with 'K' and ends with 'R'
12. Show the details of those employees where 3rd letter of l_name is 'o'
13. Select the details of those employees who works as an engineer with monthly salary more than 50000

14. Select the employees whose department is ‘Production’ or monthly salary is more than 60000 per month.
15. Find the minimum salary, maximum salary, total salary, average salary of the employees who work in ‘Sales’ department
16. Find the employee l_name that is first and f_name that is last if they are arranged in an order
17. Find the number of employees working in each department
18. Find the number of departments from employee table
19. Find the average commission of the employees.
20. Find the average salaries of the employees department wise
21. Find the sum of salary of different job_type according to different departments
22. Find the department name and average salaries of those departments whose average salary is greater than 40000
23. Find the department name and maximum salaries of those departments whose maximum salary is greater than 55000
24. Display the job_type and total monthly salary for each job_type where total payroll is exceeding 100000
25. Display the name of the department having maximum average salary

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Assignment No 4

1. Show the use of upper and lower function.
2. Show the use of concat, instr and length function
3. Show the use of the following functions on numeric values:
    a. Sqrt()
    b. Power()
    c. Ceil()
    d. Substr()
    e. Max()
    f. min()
    g. Round()
    h. avg()
    i. count()
    j. Exp()
    k. mod()

4. Solve the following queries
    a. Find the ceiling and floor value of 14.887.
    b. Find out the round-off 17.49989.
    c. Calculate 8^7.
5. Show the current date
6. Find the total experience of the employees in weeks who works in Sales department
7. Display the use of the following functions on date
    a. Months_between
    b. Add_months
    c. Next_day
    d. Last_day
    e. Round
    f. Trunc
    g. To_char
8. Show the employee details with a revised salary. The salary is incremented in the following way:
    a. 10% for sales department
    b. 20% for marketing department
    c. No increment for others
9. Determine the tax for each employee in production department based on the monthly salary. The tax rate are as per the following data:

Monthly Salary Range	**Rate**
0 – 19,999	0%
20,000 – 39,999	9%
40,000 – 59,999	20%
60,000 – 79,999	30%

80,000 or more	45%

10. Find the Cartesian product between Employee and Department table.
11. Show the employee names and the respective department location.
12. Give an example of the following joins considering employee and department tables.
    k. Natural join
    l. Inner join
    m. Left outer join
    n. Right outer join
    o. Full outer join
13. **1.** Write a query to find the addresses (location_id, street_address, city, state_province, country_name) of all the departments. Go to the editor
Hint : Use NATURAL JOIN.

Sample table: locations

location_id	street_address	postal_code	city	state_province	country_id
1000	1297 Via Cola di Rie	989	Roma		IT
1100	93091 Calle della Te	10934	Venice		IT
1200	2017 Shinjuku-ku	1689	Tokyo	Tokyo Prefectu	JP
1300	9450 Kamiya-cho	6823	Hiroshima		JP
1400	2014 Jabberwocky Rd	26192	Southlake	Texas	US
1500	2011 Interiors Blvd	99236	South San	California	US
1600	2007 Zagora St	50090	South Brun	New Jersey	US
1700	2004 Charade Rd	98199	Seattle	Washington	US
1800	147 Spadina Ave	M5V 2L7	Toronto	Ontario	CA

Sample table: countries

country_id	country_name	region_id
country_id	country_name	region_id
AR	Argentina	2
AU	Australia	3
BE	Belgium	1
BR	Brazil	2
CA	Canada	2
CH	Switzerland	1
CN	China	3
DE	Germany	1

14.

2. Write a query to find the name (first_name, last name), department ID and name of all the employees. Go to the editor

Sample table: employees

EMPLOYEE_ID	FIRST_NAME	LAST_NAME	EMAIL	PHONE_NUMBER	HIRE_DATE	JOB_ID
100	Steven	King	SKING	515.123.4567	1987-06-17	AD_PRES
101	Neena	Kochhar	NKOCHHAR	515.123.4568	1987-06-18	AD_VP
102	Lex	De Haan	LDEHAAN	515.123.4569	1987-06-19	AD_VP
103	Alexander	Hunold	AHUNOLD	590.423.4567	1987-06-20	IT_PROG
104	Bruce	Ernst	BERNST	590.423.4568	1987-06-21	IT_PROG
105	David	Austin	DAUSTIN	590.423.4569	1987-06-22	IT_PROG
106	Valli	Pataballa	VPATABAL	590.423.4560	1987-06-23	IT_PROG

Sample table: departments

DEPARTMENT_ID	DEPARTMENT_NAME	MANAGER_ID	LOCATION_ID
10	Administration	200	1700
20	Marketing	201	1800
30	Purchasing	114	1700
40	Human Resources	203	2400
50	Shipping	121	1500
60	IT	103	1400
70	Public Relations	204	2700
80	Sales	145	2500

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Assignment No 5

Consider the following Employee table and execute the queries based on it

Emp id	Fname	Lname	Job_Type	Salary	Commision	Dept	Manager_id	DOJ
1	Arun	Khan	Manager	90000		Production		04-Jan-1998
2	Barun	Kumar	Manager	80000		Marketing		09-Feb-1998 Sunday 02
3	Chitra	Kapoor	Engineer	60000		Production	1	08-Jan-1998
4	Dheeraj	Mishra	Manager	75000		Sales	4	27-Dec-2001
5	Emma	Dutt	Engineer nt	55000		Production	1	20-Mar-2002
6	Floki	Dutt	Accounta	70000		Acants		16-Jul-2000
7	Dheeraj	Kumar	Clerk	40000		Accounts	6	01-Jul-2016
8	Saul	Good	Engineer	60000		R&D Production		06-Sep-2014
9	Mou	Bhat	Clerk	30000		Sales	4	08-Mar-2018
10	Sunny	Deol	Salesman	20000	10000	Marketing	2	31-Mar-2001
11	Bobby	Deol	Engineer	35000		R&D	8	17-Oct-2017
12	Aamir	Khan	Salesman	15000	5000	Marketing	2	11-Jan-2013

Also consider the following Department table

D_Name	D_Loc	HOD_ID
Sales	Kol	4
Accounts	Delhi	6
Production	Kol	1
Marketing	Kol	2
R&D	Delhi	8

1. Find the Cartesian product between Employee and Department table.
2. Show the employee names and the respective department location.
3. Find the employee name and date of joining who are working in Delhi.
4. Create a table 'Emp_Address' for storing the permanent address of the employees and insert the following values:

Emp-id	City	District	State
1	Suri	Birbhum	WB
2	Kolkata	Kolkata	WB
3	Bhubaneswar	Khurda	Odisha
4	Durgapur	Burdwan	WB
5	Noida	GB Nagar	UP
6	Secunderabad	Hyderabad	Telangana
7	Derhadun	Derhadun	Uttarakhand
8	Asansol	Bardwan	WB
9	Siliguri	Darjeeling	WB
10	Kolkata	Kolkata	WB
11	Jalpaiguri	Jalpaiguri	WB
12	New Delhi	New Delhi	Delhi

5. Display the name of employees, department location and the city name the employee belongs to, from the Employee, Department and Emp_Address tables.
6. Find the name of each department's manager.
7. Create 'Job_Grades' table and insert the following values:

GRADE	LOWEST_SAL	HIGHEST_SAL
A	10000	24999
B	25000	49,999
C	50000	100000

8. Display the employee names with their respective job grades and salary.
9. Insert two rows in Employee table having 'NULL' values in dept field.
10. Insert two rows in Department table.
11. Perform the following joins considering Employee and Department tables.
    a. Natural join
    b. Inner join
    c. Left outer join
    d. Right outer join
    e. Full outer join

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Assignment No 6

Sample Table – Worker

WORKER_ID	FIRST_NAME	LAST_NAME	SALARY	JOINING_DATE	DEPARTMENT
001	Monika	Arora	100000	2014-02-20 09:00:00	HR
002	Niharika	Verma	80000	2014-06-11 09:00:00	Admin
003	Vishal	Singhal	300000	2014-02-20 09:00:00	HR
004	Amitabh	Singh	500000	2014-02-20 09:00:00	Admin
005	Vivek	Bhati	500000	2014-06-11 09:00:00	Admin
006	Vipul	Diwan	200000	2014-06-11 09:00:00	Account
007	Satish	Kumar	75000	2014-01-20 09:00:00	Account
008	Geetika	Chauhan	90000	2014-04-11 09:00:00	Admin

Sample table: Bonus

WORKER_REF_ID	BONUS_DATE	BONUS_AMOUNT
1	2016-02-20 00:00:00	5000
2	2016-06-11 00:00:00	3000
3	2016-02-20 00:00:00	4000
1	2016-02-20 00:00:00	4500
2	2016-06-11 00:00:00	3500

Sample Table – Title

WORKER_REF_ID	WORKER_TITLE	AFFECTED_FROM
1	Manager	2016-02-20 00:00:00
2	Executive	2016-06-11 00:00:00
8	Executive	2016-06-11 00:00:00
5	Manager	2016-06-11 00:00:00
4	Asst. Manager	2016-06-11 00:00:00
7	Executive	2016-06-11 00:00:00
6	Lead	2016-06-11 00:00:00
3	Lead	2016-06-11 00:00:00

1. Write An SQL Query To Fetch "FIRST_NAME" From Worker Table In Upper Case alias as WORKER_FIRSTNAME.
2. Write An SQL Query To Print The First Three Characters Of FIRST_NAME From Worker Table.
3. Write An SQL Query To Find The Position Of The Alphabet ('A') In The First Name Column 'Amitabh' From Worker Table.
4. Write An SQL Query To Print The FIRST_NAME And LAST_NAME From Worker Table Into A Single Column COMPLETE_NAME. A Space Char Should Separate Them.

5. Write An SQL Query To Print All Worker Details From The Worker Table Order By FIRST_NAME Ascending And DEPARTMENT Descending.
6. Write An SQL Query To Print Details Of The Workers Whose FIRST_NAME Contains 'A'.
7. Write An SQL Query To Print Details Of The Workers Whose FIRST_NAME Ends With 'A'.
8. Write An SQL Query To Print Details Of The Workers Whose SALARY Lies Between 100000 And 500000.
9. Write An SQL Query To Fetch The Count Of Employees Working In The Department 'Admin'.
10. Write An SQL Query To Fetch The No. Of Workers For Each Department In The Descending Order.
11. Write An SQL Query To Print Details Of The Workers Who Are Also Managers.
12. Write An SQL Query To Show Only Odd Rows From A Table
13. Write An SQL Query To Show Records From One Table That Another Table Does Not Have.
14. Write An SQL Query To Show The Top N (Say 10) Records Of A Table.
15. Write An SQL Query To Fetch The List Of Employees With The Same Salary.
16. Write An SQL Query To Show All Departments Along With The Number Of People Working There.
17. Write An SQL Query To Print The Name Of Employees Having The Highest Salary In Each Department.
18. Write An SQL Query To Fetch Departments Along With The Total Salaries Paid For Each Of Them.
19. Consider the following relations for an order processing database application in a company.

CUSTOMER (Cust #: int, Cname: string, City: string)

ORDER (Order #: int, Odate: date, Cust #: int, Ord-Amt: int) ORDER-ITEM (Order #: int, Item #: int, qty: int)

ITEM (Item #: int, Unit Price: int)

SHIPMENT (Order #: int, Warehouse #: int, Ship-Date: date) WAREHOUSE (Warehouse #: int, City: string)

i) Create the above tables by properly specifying the primary keys and the foreign keys.

ii) Enter at least five tuples for each relation.

iii) Produce a listing: CUSTNAME, NO_OF_ORDERS, AVG_ORDER_AMT, where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer

iv) List the Order# for the orders that were shipped from all the warehouses that the company has in a specific city

v) Demonstrate how you delete Item# 10 from the ITEM table and make that field null in the ORDER- ITEM table.

20. Create a table Emp(e_no, e_name, e_phone, e_addr,e_salary) to store records of 10 employees:

    i) Alter the data type of e_no from number to varchar

    ii) Alter table by setting e_no as primary key

    iii) Alter table by adding a column e_pin

    iv) Update the phone number of an employee in the table

21. Create a table Dept(dept_no, dept_name,e_no, dept_loc,dept_hod) to store records of 10 departments:

    i) Create the reference between Emp and Dept table with e_no attribute.

    ii) Assign dept_no as primary key.

    iii) Update the dept_hod for one department.

    iv) Delete one department.

22. Solve the following queries

i) Write a query to find the employee name and dept_hod whose dept_hod is SAY, “John”.

ii) Write a query to find the average salary of the employee of CSE department.

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Assignment No 7

1. Create Job_History table and insert the following data

Emp_id	Start_date	End_date	Job_type	D_name
1	04-Jan-1998	30-Jun-2001	Engineer	Production
2	09-Feb-1998	28-Feb-2002	Salesman	Sales
1	01-Jul-2001	31-Dec-2010	Manager	R & D
4	27-Dec-2001	19-Sep-2016	Sales_executive	Marketing
2	01-Mar-2002	30-Mar-2015	Sales_Executive	Marketing
2	01-Apr-2016	15-Dec-2017	Manager	Sales
4	20-Sep-2016	16-Dec-2017	[redacted] Asst. Manager	Sales
6	16-Jul-2000	30-Nov-2006	Clerk	Accounts
5	20-Mar-2002	12-Aug-2011	Engineer	R & D
1	01-Jan-2011	31-Jan-2012	Engineer	Production

2. Display the previous and current job_types of all the employees.
3. Display the previous and current department and job_types of all the employees.

4. Display the employee id and job_types of the employees who currently have a job title that they held previously.
5. Find the name of those employees who have not changed their jobs once.
6. Find the names of the employees who earn more than Chitra.
7. Find the details of those employees who have the same job_type as of emp_id 7.
8. Find the details of the employees whose job_type is same as that of emp_id 3 and whose salary is greater than that of emp_id 7.
9. Display l_name, job_type and the salary of the employees whose salary is equal to the minimum salary.
10. Find the job_type with lowest average salary.
11. Display all the departments that have a minimum salary greater than that of 'Sales' department.
12. Find the employees who earn the same salary for each department.
13. Display the employees who are not engineers and whose salary is less than that of any engineer.
14. Display the employees whose salary is less than the salary of all employees with a job_type 'Clerk' and whose job_type is not 'Clerk'.
15. Consider the following database of students enrollment in courses and books adopted

for each course.

STUDENT(regno: string, name: string, major: strong, bdate: date)

COURSE(course-no: int cname: string, dept: string)

ENROLL(reg-no: string, course-no: int, sem: int, marks: int)

BOOK-ADOPTION(course-no: int, sem: int, book-isbn: int)

TEXT(book-isbn: int, book-title: string, publisher: string, author: string)

i) Create the above tables by properly specifying the primary keys and the foreign keys

ii) Enter atleast five tuples for each relation.

iii) Demonstrate how you add a new text book to the database and make this book be

adopted by some department.

iv) Produce a list of text books (include Course-no, book-isbn, book-title) in the alphabetical order for courses offered by the ‘Compute Science’ department that use more than two books.

v) List any department that has all its adopted books published by a specific publisher.

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Assignment No 8

1. **The following tables are maintained by a book dealer**

AUTHOR(author-id: int, name: string, city: string, country: string)

PUBLISHER(publisher-id: int name: string, city: string, country: string)

CATLOG(book-id: int, title : string, author-id: int, publisher-id: int, category: int, year:

int, price: int)

CATEGORY(category-id: int, description: string)

ORDER-DETAILS(order-no: int, book-id: int, quantity: int)

i) Create above tables by properly specifying the primary keys and the foreign keys.

ii) Enter atleast five tuples for each relation.

iii) Give the details of the authors who have 2 or more books in the catalog and the price of the books is greater than the average price of the books in the catalog and the year of publication is after 2010.

iv) Find the author of the book which has maximum sales.

v) Demonstrate how to increase price of books published by specific publisher by 10%

2. **Consider the following database for BANK.**

BRANCH(branch-name: string, branch-city: string, assets: real)

ACCOUNT(accno: int, branch-name: string, balance: real)

DEPOSITOR(customer-name: string, accno: int)

CUSTOMER(customer-name: string, customer-street: string, customer-city: string)

LOAN(loan-no: int, branch-name: string, amount: real)

BORROWER(customer-name: string, loan-no: int)

i) Create the above tables by properly specifying the primary keys and foreign keys.

ii) Enter atleast five tuples for each relation.

iii) Find all the customers who have atleast two accounts at the main branch.

iv) Find all customer who have an account at all the branches located in a specific city.

v) Demonstrate how t0 delete all account tuples at every branch located in specific city.

3. **Consider the following database for ORDER PROCESSING.**

CUSTOMER(cust-no: int, cname: string, city: string)

ORDER(orderno: int, odate: date, ord-amt: real)

ORDER_ITEM(orderno: int, itemno:int, qty: int)

ITEM(itemno: int, unitprice: real)

SHIPMENT(orderno: int, warehouseno: int, ship-date: date)

WAREHOUSE(warehouseno: int, city: string)

i) Create the above tables by properly specifying the primary keys and the foreign keys

ii) Enter atleast five tuples for each relation.

iii) List the order number and ship date for all orders shipped from particular warehouse

iv) Produce a listing: customer name, no of orders, average order amount

v) List the orders that were not shipped within 30 days of ordering

University of Engineering & Management, Kolkata

Course: B.Tech (CSE / CSE(AIML) / CSE(IOT-CYS-BCT) / CSBS

Semester: 5th

Paper Name: Data Structure & Algorithm Laboratory

Paper Code: PCC – CS591

Assignment No 9

1. Write a PL/SQL program to find the largest of three numbers

```
declare
  a number;
  b number;
  c number;

begin
  a:=&a;
  b:=&b;
  c:=&c;

if (a>b and a>c) then
        dbms_output.put_line('a is largest' || a);
elsif (b>a and b>c) then
        dbms_output.put_line('b is largest' || b);
else
        dbms_output.put_line('c is the largest'||c);
endif;
end;
```

2. Write a PL/SQL program to generate reverse for given number

```
declare
        n number(4) := &n;
        s number(4) := 0;
        r number(4);
begin
        while n > 0
loop
        r:= mod(n,10);
        s:=(s*10)+r;
        n:=trunc(n/10);
end loop;


dbms_output.put_line('the reverse number is');
dbms_output.put_line(s);

end;
```

13. Write a PL/SQL program to find the factorial of a given number

```
declare
        i number(4) :=1;
        n number(4) := &n;
        f number(4) :=1;

begin
        for i in 1..n
        loop
                f:=f*i;
        end loop;

dbms_output.put_line('factorial of a number is'|| f);
end;
```

4. Write a PL/SQL program to check whether given number is prime or not

5. Write a PL/SQL program to generate Fibonacci series upto N

6. Write a PL/SQL program for calculating sum of two numbers.

7. Write a PL/SQL program to check the given year is leap year or not

8. Find the sum of the digits of a given number

9. Check the number of vowels and consonants in a given string

10. Count odd and even digits in a number

Q. Explain the concepts of stored procedure and triggers in a database management system.