HERITAGE INSTITUTE OF TECHNOLOGY
KOLKATA – 700107

ACADEMIC YEAR: 2023-2024, ODD SEMESTER
Sub: DATABASE MANAGEMENT SYSTEMS LAB
Subject Code: CSBS3152

Assignment No 1

Create the following tables:

Table Name: EMPL

Column Name	Data Type	Size	Constraints
Eno	Char	2	Primary key and first character must be "E"
Ename	Varchar2	10	Not Null
City	Varchar2	10	Cities allowed "Chennai", "Mumbai"', "Delhi'.' , "Kolkata"
Salary	Number	6	
Dno	Number	2	Foreign key reference DEPT table
Join_date	Date		

Table Name: DEPT

Column Name	Data Type	Size	Constraints
Dno	Number	2	Primary key
Dname	Varcher2	15	

Table Name: PROJECT

Column Name	Data Type	Size	Constraints
Pno	Char	2	Primary key and first character must be "P"
ENo	Char	2	Primary key and Foreign key reference EMPL table

Insert the following data into the corresponding table:

Table: EMPL

Eno	Ename	City	Salary	Dno	Join_date
El	Ashim	Kolkata	10000	1	01:Jun-02
E2	Kamal	Mumbai	18000	2	02-Jan-02
E3	Tamal	Chennai	7000	1	07-Feb-04
E4	Asha	Kolkata	8000	2	01-Mar-07
E5	Timir	Delhi	7000	1	11-Jun-05

Table: DEPT

Dno	Dname
1	Research
2	Finance

Table: PROJECT

Pno	Eno
PI	EI
P2	E3
PI	E5
P2	EI

1. a) Display all employees having "a" as the second letter in their names.
   b) Display employee names for those who joined in the month of Jun.
   c) Display names of all employees in the alphabetic order.
   d) Find the average salary of all employees.

2. a) Display employee's names and department names of all employees who belong to either "Chennai", or "Kolkata" or "Mumbai".
   b) List all the employee names whose basic is greater than 7000 and less than 18000.
   c) Display list of all employees in department no. 2.
   d) Display the no. of employees in each department.

3. a) List only the names of all other employees who get the same basic pay as that of employee "Tamal".
   b) Display the joining date of all employees in "dd/mm/yy" format.
   c) Find all departments that have more than 3 employees.
   d) Find the difference between highest and lowest salary.

4. a) Display the names of all employees who are engaged in two or more projects.
   b) List of all employees who have salary between 2000 &10000.
   c) List details of all employees in department number 2 & 1.

5. a) Display employee number, employee name and basic pay for employees with lowest salary.
   b) Display the structure of table EMP.
   c) List the name and the salary of all employee sorted' by salary.
   d) Display the list of all employees who were hired during 2002.

6. a) Display employee name and basic pay for all employees who are engaged with at least one project.
   b) List of all employees who have name exactly 4 characters.
   c) List no. of projects undertaken in the department 1.

Assignment No 2

Employee Database

Table: Employee (emp_no, emp_name, street, city)

Column Name	Data Type	Size	Constraints
Emp_no	Char	2	Primary key and first character must be "E"
Emp_name	Varchar2	10	Not Null
Street	Varchar2	10	
city	Varchar2	10	Cities allowed "Chennai", "Mumbai"', "Delhi'.' , "Kolkata"

Table: Company (comp_no, comp _name, city)

Column Name	Data Type	Size	Constraints
Comp_no	Char	2	Primary key and first character must be "C"
Comp_name	Varchar2	10	Not Null
City	Varchar2	10	Cities allowed "Chennai", "Mumbai'", "Delhi'.' , "Kolkata"

Table: Works (emp_no, comp_no, salary)

Column Name	Data Type	Size	Constraints
Emp_no	Char	2	Primary key and foreign key references employee table
Comp_no	Char	2	Primary key and foreign key references company table
salary	Number	6	

Table: Managers (emp_no, manager_name)

Column Name	Data Type	Size	Constraints
Mgr_no	Char	2	Primary key and first character must be "E"
Manager_name	Varchar2	10	Not Null

Insert the following data into the corresponding table:

Table: Employee:

Emp_no	Emp_name	City	Street	Mgr_no
El	Ashim	Kolkata	ParkStreat	E4
E2	Kamal	Mumbai	MarineDrive	E3
E3	Tamal	Chennai	AnnaSalai	E5
E4	Asha	Kolkata	LeninSarani	
E5	Arun	Mumbai	MGRoad	

Table: Company

Comp_no	Comp_name	City
C1	SBI	Kolkata
C2	CTS	Chennai
C3	TCS	Mumbai

Table: Works

Emp_no	Comp_no	Salary
E1	C1	10000
E2	C3	20000
E3	C2	22000
E4	C1	18000
E5	C3	17000

Table: Manager

Mgr_no	Manager_name
E1	Ashim
E2	Kamal
E3	Tamal

Give an expression in SQL for each of the following queries:

1. Find the names of all employees who work for SBI.
2. Find the names and cities or residence of all employees who work for SBI.
3. Find the names, street, address and cities of residence of all employees who work for SBI and earn more than 10,000.
4. Find all employees in the database who live in the same cities as the companies for which they work.
5. Find all employees in the database who live in the same cities and on the same streets as do there managers.
6. Find all employees in the database who do not work for SBI.
7. Find all employees in the database who earn more than every employee of SBI.
8. Find all employees who earn more than the average salary of all employees of their company.
9. Find the company that has the most employees.
10. Find the company that has the smallest payroll.
11. Find those companies whose employees earn a higher salary, on average, than the average salary at SBI.
12. Modify the database so that John now lives in Kolkata.
13. Give all employees of SBI a 10 % raise.
14. Give all managers of SBI a 10 % raise.
15. Delete all tuples in works relation for employees of SBI.

Assignment No 3

Create the following tables:

Table: Employee

Column Name	Data Type With Size	Constraint With Size
Eno	Varchar2 (5)	Primary key and 1st character not 'e'
Ename	Varchar2 (10)	Not null
Salary	Number (7,2)	Within 5000 to 30000
Join_date	Date	.
Birth date	Date	
Dno	Number (4)	Foreign key of department
Address	Varchar2 (20)	
Manager id	Varchar2 (5)	1st character not 'e'

Table: Department

Column Name	Data Type With Size	Constraint With Size
Dno	Number (4)	Primary key
Dname	Varchar2 (10)	Not null

Write down the following queries:

a) Find the number of employees in each department with department name.
b) Find the employees who earn highest salary in each department.
c) Find the name of the employees who has the second highest salary.
d) Find the name and salary of employee with the name and salary of their manager.
e) Find the name of employees whose Joining month and birth month are same.

Assignment No 4

Create a table account and insert the following data into the table:

Table : Account

Account No	Branch Name	Amount (Rs.)
AI	Kolkata	50000
A2	Howrah	40000
A3	Howrah	40000
A4	Kolkata	20000
AS	Durgapur	30000

a) Create a view that will show the branch name and total amount of that branch. The name of the view will be Account1.
b) Select the branch names having total amount greater than 50,000 I) using Accountl view II) without using the view.
c) Create an index table named Branch from the Account table on Branch Name attribute and then display the details of Branch table.

Assignment No 5

1. Write a PL/SQL to print the string "HELLO WORLD".
2. Write a PL/SQL to test whether a number is even or odd.
3. Write a PL/SQL code to check whether a number is prime or not.
4. Write a PL/SQL to insert a record in the accounts table. (Create a account table having fields ac_no varchar2 (6), nm number (6), balance number (6)).
5. Write a PL/SQL programme to calculate factorial of a given number.
6. Write a PL/SQL programme to print first N Fibonacci number.
7. Write a PL/SQL block of code for inverting a given number.
8. Write a PL/SQL block to calculate maximum of three numbers.
9. i) Write a PL/SQL code block to calculate the area of a circle of a value of radius varying from 3 to 7. Store the radius and the corresponding values of calculates areas in table Circle (radius, area),
   ii) Add an extra column diameter to the table Circle and update the diameter column for each entry diameter = 2 * radius.
   iii) Print the number of records in the circ1e table with the help of an explicit cursor.

Assignment No 6

1. Create a cursor for the EMP table, that produce the output in following format:

   Employee {emp_name} working in company {company_name} and earns Rs. {salary}.

2. Create a cursor for updating the salary of employee working in companywith company_id 10 by 20%. If any rows are affected than display the no of rows affected. Use *implicit cursor*.

3. Create a cursor for updating the salary of employee working in company with company_id 10 by 20%. If any rows are affected than display the no of rows affected. Use *explicit cursor*.
4. Create a cursor that will display the employee name, companyname and salary of the first 10 employees getting the highest salary. Use *for cursor*.
5. Write a PL/SQL program using *parameterized cursor* to display all the information of employee living in specified address. Address (street and city) taken from keyboard.

Assignment No 7

1. Write a function which accepts the name from user and returns the length of that name.
2. Write a function to find the roots of a quadratic equation.
3. Write a function to reverse an input string and check whether it is palindrome or not.
4. WAF which accepts one number and return TRUE if no is prime and return FALSE if no is not prime.

Assignment No 8

5. Write a Procedure to swap 2 numbers.
6. Write a Procedure to check whether a given year is leap year or not.
7. Write a procedure which accepts the name from the user. Return UPPER if name is in uppercase, LOWER if name is in lowercase, MIXCASE if name is entered using both the case.

Assignment No 9

1. Finding the sum of the following series:

$$x + \frac{x^2}{2!} + \frac{x^3}{3!} + \cdots + \frac{x^n}{n!} \; ; \; n, x \; taken \; from \; keyboard$$

2. Write a package which consist of two functions.
   - ✓ *Addition ()* function accept two number arguments and return the addition of them.
   - ✓ *Concat ()* function accept two strings and return concatenated string.
3. Create a package which consist of three procedures.
   - ✓ First procedure check for the number is > 0 or not.
   - ✓ Second procedure accepts one *date* argument and check that is <SYSDATE or not.
   - ✓ Third procedure accepts a name and check whether it is in uppercase or not.

Assignment No 10

1. Write a trigger that ensures *emp_no* of EMP table is in the format ‘E0001’ (*emp_no* must start with ‘E’ and must be 5 characters long). If not then compute*emp_no* with this format before inserting into the employee table.
2. Write a trigger which checks the age of employee while inserting the record in EMP table. If it is less than 18 years generate the error and display proper message.
3. Write a trigger which converts the employee name in upper case if it is inserted in any other case. Change should be done before the insertion only.