Department of Computer Science and Engineering

CS333: Application Software Development Lab–2021

Day 1

1. Creation of a database using DDL commands and writes DQL queries to retrieve information from the database.
   a. Create the following tables.
      i. **Table Name:** Hospital

Column Name	Data Type	Constraint
DoctorId	Varchar2(10)	Primary Key
DocName	Varchar2(20)	
Specialization	Varchar2(10)	
HOD	Varchar2(10)	
DeptNo	Varchar2(5)	
HireDate	Date	
Sal	Number(10,3)	

      ii. **Table Name**: HospitalDept

Column Name	Data Type	Constraint
DeptNo	Varchar2 (5)	Primary key
DeptName	Varchar2(20)	
Location	Varchar2(20)	

   b. Add a column "Additional Qualification"to the Hospital table. The data type is character.
   c. Modify the column width of the Specialization field of Hospital table.
   d. Remove column Location from HospitalDept table.
   e. Rename the column name Sal to Salary in Hospital table.
   f. Delete the table HospitalDept.
   g. Display your name and age using DUAL table.
   h. Display the current system date.
   i. Perform the following operations: 55-15+8*3/6
   j. Display all the tables currently available to the user.

* Date of Completion: 30-12-2021

Day 2

2. Performing DML commands like Insertion, Deletion, Modifying, Altering, and Updating records based on conditions.
    a. Create and insert the following values in Employee table.

EmpId	EmpName	Job	Manager	DeptNo	HireDate	Salary	Comm
E0001	Abey	Tester	E0004	D004	15/12/12	30000	500
E0002	Jesto	Analyst	E0001	D002	24/04/11	25000	650
E0003	Adarsh	Clerk	E0004	D004	10/01/13	15000	500
E0004	Kevin	Admin	E0005	D002	10/10/13	20000	1750
E0005	Bony	Manager		D001	11/04/11	50000	1000
E0006	Manu	Supplier	E0001	D003	19/06/13	5000	450

    b. Create and insert the following values in Department table.

DeptNo	DeptName	Location
D001	DeptA	A block
D002	DeptB	B block
D003	DeptC	C block
D004	DeptD	D block

    c. Create a table as shown below and insert the values:

Table Name: Client

Name	**Data type**
Cno	Varchar2(6)
Name	Varchar2(20)
City	Varchar2(15)
PinCode	Number(8)
State	Varchar2(15)

Baldue	Number(10,2)

d. Insert the following values into the Client table

Cno	**Name**	**City**	**Pincode**	**State**	**Baldue**
C01	Nimmy	Cochin	680324	Kerala	14000
C02	Susan	Cochin	680324	Kerala	0
C03	Anjana	Salem	680345	TamilNadu	5000
C04	Sneha	Pune	680223	Maharashtra	500
C05	Annet	Gandipuram	680321	Karnataka	7600
C06	Ann	Bombay	682111	Maharashtra	2055

e. Display the entire contents of the tables.
f. Insert a new employee with EmpId=E0001.
g. Display the first 4 rows of the Client table.
h. Retrieve the names, Hire date and Salary of all employees.
i. List all employees whose name starts with ‘A’ or ‘K’.
j. Display the distinct cities to which the clients belong.
k. List managers hired after 2012 and whose salary is more than 17500.
l. List all employees whose name falls in the alphabetical range ‘E to L’.
m. Change the city of Client No: C03 from ‘Salem’ to ‘Delhi’.
n. Change the Commission of employee ‘Abey’ to 600.
o. List all from Client table and display in the following format: “Annet from Gandhipuram has 7600 Balance due”.
p. Display the column name ‘Baldue’ of Client table as “Due Balance”
q. List all clients who are not from ‘Kerala’.

* Date of Completion: 06-12-2021

Day 3

3. Creating relationship between the databases.
    a. Alter the client table to add Primary key constraint on Cno Column.
    b. Create foreign key constraint on Manager and Dept. No column of Employee table.
    c. Insert a new employee with DeptNo as D006.

4. Creating a database to set various constraints.
    a. Add a constraint to make the Job column unique.
    b. Add constraint to the Employee table to check if Comm> 400.
    c. Set Salary value by default as 25000, otherwise as the user enters.
    d. Remove the constraint from the column Job.
    e. Display all the constraints on the Employee table.

* Date of Completion: 13-12-2021

Day 4

5. Practice of SQL TCL commands like Rollback, Commit and Savepoint.
    a. Delete all clients whose Baldue is 0 or below.
    b. Write a query to undo the above delete query.

6. Practice of SQL DCL commands for granting and revoking user privileges.
    a. Write a query to grant all privileges of client table to nearby user.
    b. Write a query to grant some privileges of Employee table to nearby user.
    c. Write a query to revoke all privileges of client table from the user.
    d. Write a query to revoke some privileges of employees table from the user.

* Date of Completion: 17-12-2021

Day 5

7. Creation of Views *
    a. Create a view CUST_VW of the Employee table with the following columns:

EmpId
EmpName
Job
Manager

    b. Update CUST_VW by changing the Job='Clerk' to 'Senior Clerk'
    c. Delete from CUST_VW the Employee-Kevin.
    d. Delete the view created.

8. Implementation of Built in functions in RDBMS *
    a. Find the value of 16^5
    b. Find the length of the string "Application"
    c. What is the last date of the current month?
    d. Convert the given number 65432 to $65432. Use format mask.
    e. Display the current system date and time with fractional seconds with time zone.
    f. Display the year of the hiring of all the employees from the Employee table.
    g. Calculate the number of months the employees have been working in the Company.
    h. Find the number of departments available.
    i. Display the hire date of all employees in the following format:Friday, 11th August, 2017

9. Implementation of various aggregate functions in SQL *
    a. Calculate the total of Baldue from Client table.
    b. Count the total records in Employee table.
    c. Find the minimum and maximum Balance due from Client table.
    d. Find the average salary in Employee table.

* Date of Completion: 07-01-2022

Day 6

10. Implementation of Order By, Group by&Having clause. *
    a. Display the client names in ascending order.
    b. Determine the maximum salary in each department.
    c. Display the minimum salary of all departments except D001.

11. Implementation of set operators, nested queries and Join queries *
    a. Display all the DeptNo available with the dept and employee tables.
    b. Display all the DeptNoavailable in employee and not in dept tables.
    c. Write a nested query to select the employees who have got more salary than Adarsh.
    d. Write a nested query to select the employees who have less salary than any employees working in dept D004.
    e. Display all employee names and salary whose salary is greater than minimum salary of the company and job title starts with A.
    f. Display Employee Name and Department Name of employees whose salary is greater than 20000.
    g. Display the Employee name, Job, Manager Name by implementing a left outer join.
    h. Display the Employee name, Job, Manager Name by implementing a right outer join.
    i. Display the Employee name, Job, Manager Name by implementing a full outer join.

* Date of Completion: 14-01-2022

Day 7cc

12. Implementation of various control structures using PL/SQL *
    a. Write a PL/SQL code block to calculate the area of a circle for a value of radius varying from 5 to 15. Store the radius and the corresponding values of calculated area in an empty table named areas, consisting of two columns radius & area.

    b. Write a PL/SQL code block that will accept an account number from the user, check if the users balance is less than minimum balance, then deduct Rs.100/ -from the balance. This process is fired on the ACCOUNT table. (Exception handling in PL/SQL)

* Date of Completion: 21-01-2022

Day 8

13. Creation of Procedures and Functions *
    a. Create a procedure which increases the Commission of the given employee of the Employee table by 5%.
    b. Create a function which returns the manager name of an employee, given the EmpId.

* Date of Completion: 28-01-2022

Day 9

14. Creation of Packages *
    a. Create a package which contains:
        i. A procedure to hire a new employee.
        ii. A function to increase the commission of the employee.

* Date of Completion: 04-02-2022

15. Creation of database Triggers and Cursors *
    a. Given the tables,
    MASTER (ACCNO, NAME, OPEN_DATE, BALANCE)
    TRANSACTION (TACCNO, TAMOUNT, TDATE, OPERATION)
    i) Create a trigger to check whether withdrawal or deposit is possible or not. Withdrawal is possible only if the minimum balance after withdrawal is greater than or equal to 1000.
    ii) Record each transaction in TRANSACTION table. Raise a trigger for each entry in the Transaction table.
    iii) Update the balance in MASTER table accordingly.
    b. Consider the following tables (**Advanced Question**)
    SUPPLIERS (SuppNo, SName, SAddress, SCity, SState, SPhone, SBalance)
    ORDERS (OrdNo, OrdDate, OrdSuppNo,OrdPartNo, OrdQty)
    PARTS (PartNo, PName, Qty, Price)

i) Create a trigger to ensure that Supplier 'S002' is not to be given orders larger than 100 units of any part.

ii) Create a procedure to

Ensure that there should not be more than 2 suppliers based inthe same city.

Ensure that supplier is having enough balance to place the order.

c. Create a Cursor which updates the salaries of an Employee as follows.
   i. If salary < 10000 then update the salary to 15000.
   ii. If salary >= 10000 and < 30000 then update the salary to 35000.
   iii. If salary >= 30000 and < 60000 then update the salary to 65000.
   iv. Count the no: of records that have been updated

16. * Date of Completion: 11-02-2022

Day 10

17. Practice various front-end tools and report generation.
    a. Generate a report on the employee table.
    b. Generate a report on the clients from outside Kerala.

* Date of Completion: 18-02-2022

Day 11

18. Structure of 'restaurants' collection:

```
{
"address": {
   "building": "1007",
   "coord": [ -73.856077, 40.848447 ],
   "street": "Morris Park Ave",
   "zipcode": "10462"
 },
 "borough": "Bronx",
 "cuisine": "Bakery",
 "grades": [
   { "date": { "$date": 1393804800000 }, "grade": "A", "score": 2 },
```

{ "date": { "$date": 1378857600000 }, "grade": "A", "score": 6 },
{ "date": { "$date": 1358985600000 }, "grade": "A", "score": 10 },
{ "date": { "$date": 1322006400000 }, "grade": "A", "score": 9 },
{ "date": { "$date": 1299715200000 }, "grade": "B", "score": 14 }
],
"name": "Morris Park Bake Shop",
"restaurant_id": "30075445"
}

a. Write a MongoDB query to display all the documents in the collection restaurants.
b. Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine for all the documents in the collection restaurant
c. Write a MongoDB query to display the fields restaurant_id, name, borough and cuisine, but exclude the field _id for all the documents in the collection restaurant.
d. Write a MongoDB query to display the fields restaurant_id, name, borough and zip code, but exclude the field _id for all the documents in the collection restaurant.

* Date of Completion: 25-12-2022

Day 12

19. Mini project (Application Development using Oracle/ MySQL using Database connectivity)* - group assignment

* Date of Completion: 25-12-2022