**List of Lab Experiments**

**Subject: RDBMS Class: FYMCA**

1. Case study to design Normalised Tables
2. Assignment on DDL with constraint
3. Assignment on DML commands
4. Assignment on Alter & Drop table
5. DML operators and Functions
6. Organising records with order by clause and Grouping
7. Assignment on various types of function with Group by
8. Join concept: Simple, equi, non equi, self, outer join
9. Sub queries
10. View: create, Update and Delete
11. Trigger
12. Introduction to PLSQL programming
13. Cursor using PLSQL
14. Stored Procedure, Exception Handling using PLSQL

Assignment -1

Aim:- Case Study of Normalization (To understand designing of Normalized tables)

**Theory:**

## What is Normalisation?

## Rules of Normalisation

## **Practical**

## Write down

## Title of Case Study.

## Requirements finalized

## Business rules

## Process identified

## Forms design

## Output

## Normalises tables design

## **Conclusion**

## Normalised database design is understood.

Note:- draw form design, output report formats and database design with PK,FK and constraints to be applied on tables. As shown during presentation.

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**Assignment- 2 DDL Commands**

**Aim- Study Create Table**

**Theory**

Write DDL commands and syntax in short.

Types of constraints with explanation in short/one line.

**DDL Assignment (DDL Commands)**

Create following tables by applying constraints on each table.

Branch (BranchNo, Street,City, PostCode) Branchno-PK

Staff (StaffNo, FName, LName, position,sex , dob, salary, branchNo) staffNo-PK, BranchNo-FK

Client ( ClientNo, FName, LName, TelNo, PrefType, MaxRent) Clientno-PK

PrivateOwner (OwnerNo, FName, LName, Address, TelNo)OwnerNo-PK

Viewing ( ClientNo, PropNo, ViewDate, Comment)ClientNo, PropNo-PK

Registration (ClientNo, BranchNo, StaffNo, DateJoined)ClientNo, BranchNo, StaffNo-PK

PropertyForRent (PropertyNo, street, city, postcode, Type, rooms, rent, ownerNo, StaffNo,

BranchNo) – PropertyNo-PK, ownerNo, StaffNo, BranchNo- FK

1. Create the PropertyForRent table using the CREATE TABLE command and insert appropriate records in all tables using following instructions.
2. Apply position by default as ‘Asst’
3. Apply Sex as M for Male and F for Female
4. Apply Property type as 1bhk,2Bhk,Bung,Villas,PG4
5. Salary to be inserted is Annual salary
6. Some records must be inserted with null comment and some are with Liked in Viewing table

**Assignment- 3 Data Manipulation Language Assignment (DML Commands)**

**Aim- Study DML Commands**

**Theory**

Shortly write DML commands and syntax .

Assignment -3 Use tables in Assignment 2. Insert records according to data to be displayed in for following commands.

1. List full details of all Staff.
2. Produce a list of salaries for all staff showing only the staff number, the first and last names, and the salary details.
3. List the property numbers of all properties that have been viewed.
4. List the property details of all properties that have comment as Liked
5. Produce a list of monthly salaries for all staff, showing a staff number, the first and last names and the salary details.
6. List all staff fname , Lname and salary with a salary greater than 10000.
7. List the addresses of all branch offices in London or Glasgow.
8. List all staff with a salary between 20000 and 30000.
9. List all managers and supervisors.
10. List the details of all viewings on Property PG4 where a comment has not been supplied.
11. Produce a list of salaries for all staff range in descending order of salary.
12. List the details of PrivateOwners where address field contains a string ‘Glasgow’.
13. Produce an abbreviated list of properties range in order of property type.
14. Give all staff a 3% pay increase
15. Give all managers a 5% pay increase
16. Promote David Ford (StaffNo-SG14) to manager and change his salary to 18000
17. Display Fname,Lname, Branchno of all Male staff
18. Delete all viewings that relate to property PG4.
19. Delete all rows from the viewing table.
20. Display Fname,Lname, maxrent of all clients want maxrent less than 8000
21. Display Fname,Lname,Salaryof all Female staff working at branch B010

Ass-4 Study Alter and DROP Tables (DML Commands)

Aim – Learn and understand Alter and Drop tables

Theory:-

Write application and syntax of Alter and Drop commands

ASSIGNMENT-4

Use tables in assignment 2 and apply following to existing tables.

1. Change the Staff table by removing the default of ‘Assistant’ for the position column and setting the default for the sex column to Female.
2. Change the client table by adding a new column representing the preferred number of rooms by column prefnorooms Int (3).
3. On deletion of branch from branch table, concern branch staff must get deleted from staff table (use on delete cascade)
4. Drop column Telno from PrivateOwner and add mobno new column to same table.
5. Update data in mobno column of PrivateOwner table
6. Delete Registration table

**Assignment-** 5 SQL operators and Function

**Aim-** StudySQL operators and Function

**Theory**

Write short theory on Mysql Operators and different types of functions.

Assignment:-5

Use following tables to write sql commands using operators and functions

Emp(empno,ename,post,deptno,salary,doj,mgrno) pk-empno, FK - deptno

Dept(Deptno,Dname) pk –Deptno

DEPT

|  |  |
| --- | --- |
| Deptno | Dname |
| 10 | Prod |
| 20 | AF |
| 30 | Sales |
| 40 | Maint |

EMP

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Empno | Ename | Post | Deptno | DOB | DOJ | Mgrno | Salary(monthly) |
| 101 | Anil | salesman | 30 | 05 Nov62 | 1 Jan 96 | 107 | 45000 |
| 102 | Ravi | Accountant | 20 | 2 march 1991 | 1 Apr 2001 | 109 | 37000 |
| 103 | Ram | Salesman | 30 | 2 march 1992 | 5 Jul 2000 | 107 | 42000 |
| 104 | Seema | Prod | 10 | 3 Jan 1994 | 15mar2010 | 113 | 38000 |
| 105 | Rita | Accountant | 20 | 2 Aug 1994 | 1 Apr2019 | 109 | 28000 |
| 106 | Kishan | Prod | 10 | 10 March 1995 | 1Mar 2015 | 113 | 32000 |
| 107 | Milind | Mgr | 20 | 13Feb1970 | 2Aug1999 | Null | 75000 |
| 108 | Mahima | Accountant | 20 | 9Apr1998 | 1 Apr2002 | 107 | 25000 |
| 109 | Ketki | Mgr | 30 | 26jan1991 | 5 Jul 2006 | Null | 72000 |
| 110 | Sunil | salesman | 30 | 5 Jun 2005 | 5Jun2005 | 107 | 31000 |
| 111 | Manoj | salesman | 30 | 1 feb 1961 | 1feb 2010 | 107 | 33000 |
| 113 | Ramesh | Mgr | 10 | 3 Jan 2000 | 3Jan 2000 | null | 70000 |
| 114 | Mittal | CEO |  | 1 Mar 1969 | 1 Jan 1996 |  | 500000 |

1. List the no of jobs available in the EMP table

2. List the no of employees working with the company.

3.List the dept no and number of employees in each dept.

4. List the total salary, max and min salary and the average salary of employees’ job wise for deptno 20 only.

5. List the average salary for all department employing more than five people.

6. List the max salary of employee working as salesman.

7. Display the name in the lowercase, job in the initial capitalization for all managers.

8. Display the value 45.923 rounded to the hundredth number and ten decimal places.

9. For employees in dept 30, display the ename and number of weeks/months employed.

10. Display the head of the company, who has no manager, display that there is no manager for that name.

11. Display the job and total salary for each job category with a total salary for each job category and sort list by total salary.

12. Display the number of managers without listing them.

13. Write a query to display the minimum and maximum salary for each job type ordered alphabetically.

14. Display the list of owners having Lname with K

**Assignment-** 6 Organising records with order by clause and Grouping

**Aim-** StudySQL order by clause and Group by

**Theory**

Write short theory of Order by and Group By clause with syntax.

Assignment -6 (use tables in assignment -2)

1. Produce list of properties in order of property type.
2. List properties details on property type having rent more than 15000in order of rent in asc order
3. List the branch wise and staff wise list of properties handled order by branch
4. Display Staff wise properties viewed details in order of no staffno
5. List the branchwise properties viewed with no comments order by branch
6. List the position wise list of staff order by position
7. List city wise branch for city London or Manchester

**Assignment-** 7 Assignment on various types of function with Group by(use tables in assignment -2)

**Theory**

Write short theory of aggregate functions

**Assignment**

1. Find the total salary for managers and supervisors for each branch
2. Find the Min and Max staff salaries for each branch
3. Find the no of staff working in each branch and the sum of their salaries
4. List the count of peorperties on property types
5. List branch wise count of male and female staff
6. Display the List of property viewed more than 1
7. Display propertywise view count

**Assignment no -8 Learn Join and its Types**

Theory

Write purpose if Join, Types of Join in short.

Assignment-8 (use tables in Ass -3)

1. List the name of all clients who have view property along with any comment supplied

2. For each branch office list the no and name of staff who manage the property and the

property manage by staff

3. For each branch list no and staff name who manage property including the city in which

the branch no is located and property that the staff manages

4. Find the no of property handled by each staff no

5. List the branch office and property that are in the same city along with any unmatched branches

6. Find all staff who works in London branch office

7. Display how many property are registered by each staff no of all branches

8. Give the list of private owner with property details having more than one property

along with no of property.

1. Give the details of owner register under each branch
2. List the branch wise salary total with branch details

10 Display the details of property which is viewed maximum time.

**Assignment-** 9 Sub query

**Aim-** StudySub queries

**Theory**

Write short theory of Subquery and its purpose with having clause

Assignment

Dept Table

|  |  |  |
| --- | --- | --- |
| Dept no | Deptname | Loc |
| 10 | Accounting | New York |
| 20 | Research | Dallas |
| 30 | Sales | Chicago |
| 40 | Operations | Boston |

**SAL GRADE TABLE**

|  |  |  |
| --- | --- | --- |
| **Grade** | **Losal** | **HISAL** |
| 1 | 700 | 1200 |
| 2 | 1201 | 1400 |
| 3 | 1401 | 2000 |
| 4 | 2001 | 3000 |
| 5 | 3001 | 9999 |

EMp

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Empno** | **Ename** | **Job** | **MGR** | **Hiredate** | **Sal** | **Comm** | **Dept No.** |
| 7369 | Smith | Clerk | 7902 | 17-Dec-80 | 800 |  | 20 |
| 7499 | Allen | Salesman | 7698 | 20-feb-81 | 1600 | 300 | 30 |
| 7521 | Ward | Salesman | 7698 | 22-Feb-81 | 1250 | 500 | 30 |
| 7566 | Jones | Manager | 7839 | O2-Apr-81 | 2975 |  | 20 |
| 7654 | Martin | Salesman | 7698 | 28-Sep-81 | 1250 | 1400 | 30 |
| 7698 | Blake | Manager | 7893 | 01-May-81 | 2850 |  | 30 |
| 7782 | Clark | Manager | 7893 | 09-Jun-81 | 2450 |  | 10 |
| 7788 | Scott | Analyst | 7566 | 09-Dec-82 | 3000 |  | 20 |
| 7839 | King | President |  | 17-Nov-81 | 5000 |  | 10 |
| 7844 | Turner | Salesman | 7698 | 08-Sep-81 | 1500 | 0 | 30 |
| 7876 | Adams | Clerk | 7788 | 12-Jan-83 | 1100 |  | 20 |
| 7900 | James | Clerk | 7698 | 03-Dec-81 | 950 |  | 30 |
| 7902 | Ford | Analyst | 7599 | 03-Dec-81 | 3000 |  | 20 |
| 7934 | Miller | Clerk | 7782 | 23-jan-82 | 1300 |  | 10 |

1. Display the details of employees who work in new York.
2. List the employees belonging to the department of MILLER.
3. List the name of the employees drawing the highest salary.
4. List employee details who earn salary greater than the average salary for their department.
5. List all employees who have at least one person reporting to them.
6. List all the employees details who do not manage any one.
7. List the employee details of those employees whose salary is greater than any of the mangers.
8. List the employee names whose salary is greater than the highest salary of all employees belonging to department no 20.
9. List the details of the employee earning more than the highest paid MANAGER.
10. Display all the department that have an average salary is greater than that of

Department 20.

**Assignment -10 View**

**Aim: Study and understand view**

**Theory:**

Write short theory of View-Create, Alter and Drop

Use tables in assignment in 9

Assignment

Create View for the following’

1. Display Empno, Eame and Location name of all employees
2. Display job wise of employees
3. Drop first view

**Assignment -11 Trigger**

**Aim: Study and understand Trigger**

**Theory:**

Write short theory of Trigger, types and advantages

Assignment

Create following tables.

Emp(Empno Int primary key,

Ename varchar(25) not null,

Email varchar(25))

employees\_audit

(**id** INT AUTO\_INCREMENT PRIMARY **KEY**,

empno INT**NOT** NULL, lastname VARCHAR(50) **NOT** NULL,

changedat DATETIME **DEFAULT** NULL,

**action** VARCHAR(50) **DEFAULT** NULL

);

create a BEFORE UPDATE trigger on Emp table

that is invoked before a change is made to the employees table. On update the old name , current date and time (use Now) must get saved to Employees\_Audit table.

(refer <https://www.mysqltutorial.org/create-the-first-trigger-in-mysql.aspx> website)

**Assignment -12** Introduction to PLSQL programming

Refer

<https://www.w3resource.com/mysql/mysql-procedure.php>

Write theory of Pl/SQL block, execution in short

Write IF,Loop,Case structure.

#### Assignment:

write PL/SQL program for the following

1. Display list of Empname and Job name
2. Display sum of Salary using loop
3. Display sum of salary for clark job using loop and if statement

**Assignment -13** Cursor using PLSQL

Write theory on cursor and application in short

Use EMP table

|  |  |  |
| --- | --- | --- |
| EmpNo | EmpName | Salary |
| E0001 | Mamta | 6000 |
| E0003 | Hansel | 6500 |
| E0005 | Ashwini | 6000 |

Create cursor using EMP table to display the concatenated list of Empname.

Refer :- https://www.javatpoint.com/mysql-cursor

**Assignment -14** Stored Procedure, Exception Handling using PLSQL

Theory

Write short theory on procedure ,IN,Out and INOUT parameter and Exception handling.

# Assignment-14

# EMP (Empid,Ename,Job,Deptid,Salary,DOJ,DOB)

# Write short theory on procedure,IN,Out and Inout parameter in short by using EMP table.

# 1. create a stored procedure to display data from Emp table.

# 2. By using Emp table with IN parameter display the list of all employees who are working in dept 20.

# 3 Create procedure with IN and OUT parameter and display the informatrion that

# 1.how many clarks are

# 2. How much is the total salary for 'Manager'

# 3. How many 'Salesman' in dept =20

# 4.Write a SP using INOUT parameter to display total no of employee in all department

# Refer:

# https://www.dbrnd.com/2015/05/mysql-error-handling/#prettyPhoto

# https://www.mysqltutorial.org/stored-procedures-parameters.aspx

# https://www.mysqltutorial.org/mysql-error-handling-in-stored-procedures/

# https://flylib.com/books/en/1.142.1/exception\_handling.html