**DBMS LAB ASSIGNMENT**

***Problem 1:*** *Define the schema for the following databases with specific data type and constraints, the table name and its fields name are to be taken from database description which are given below :*

***Sales information system:***

**A product can be described with a unique product number, product name, manufacturer name, product rate, selling price, product description. The product can sale to a particular client and each client have its own unique client number, client name, client addresses, city, pin code, state and total balance to be required to paid. Each client order to buy product from the salesman. In the order, it has unique sales order number, sales order date, client number, salesman number (unique), billed whole payment by the party or not and its delivery date, total quantity ordered, date of cancel the order. The salesman have the unique id number, name, addresses, city, pin code, state, and salary of the sales man.**

**Write the SQL queries for the following –**

1. Retrieve the list of names and the cities of all the clients.
2. List the various products available.
3. Find the names of all clients having ‘a’ as the second letter in their names.
4. List all the clients who are located in TEZPUR.
5. Find the products whose selling price is greater than 2000 and less than or equal to 5000
6. Add a new column NEW\_PRICE into the product\_master table.
7. Rename the column product\_rate of Sales\_Order\_Details to new\_product\_rate.
8. List the products in sorted order of their description.
9. Display the order number and date on which the clients placed their order.
10. Delete all the records having delivery date before 25th August, 2008.
11. Change the delivery date of order number ON01008 to 16-08-08
12. Change the bal\_due of client\_no CN01003 to 1200
13. Find the product with description as ‘HDD1034’ and ‘DVDRW’
14. List the names, city and state of the clients not in the state of ‘ASSAM’
15. List of all orders that were canceled in the month of March.

***Problem 2:***

**Create the following tables:**

1. **Table Name: EMP**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |  | |
| EMPNO | NUMBER(4) | Make this as primary key after creating table | | |
| ENAME | VARCHAR2(10) |  |  | |
| EJOB | VARCHAR2(9) | CLRK/MGR/A.MGR/GM/CEO, default CLRK |  | |
| MGR\_ID | NUMBER(4) | References EMP | | |
| DATE\_BIRTH | DATE | Must be less than joining Date | |  | |
| SAL | NUMBER(7,2) | More than 20000,default 20001 | |
| COMM | NUMBER(7,2) | DEFAULT 1000 | |  | |
| DEPTNO | VARCHAR2(3) | References DEPT | |  | |
| PRJ\_ID | VARCHAR2(9) | CLRK/MGR/A.MGR/GM/CEO, default CLRK | |  | |
| DATE\_OF\_JOIN | DATE |  |  | |

*Add a primary key constraint to* ***EMP*** *table after creating the table*

1. **Table Name: DEPT**

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| DNO | VARCHAR2(3) | Primary Key and Starts from ‘D’ |
| DNAME | VARCHAR2(10) | Unique |

1. **Table Name: PROJECTS**

Combination of **DNO and PRJ\_NO** is primary key

|  |  |  |
| --- | --- | --- |
| **Column Name** | **Data Type** | **Constraints** |
| DNO | VARCHAR2(3) | References DEPT ,NOT NULL |
| PRJ\_NO | VARCHAR2(5) | Starts from ‘P’ , NOT NULL |
| PRJ\_NAME | VARCHAR2(10) |  |
| PRJ\_CREDITS | NUMBER(2) | Range from 1 to 10 |
| START\_DATE | DATE |  |
| END\_DATE | DATE | END\_DATE > START\_DATE |

Modify the column PRJ\_ID in EMP table. Change the data type from VARCHAR2(9) to VARCHAR2(5) . Drop the constraints and add a foreign key constraint to EMP table on (DeptNo, Proj\_Id) referencing PROJECTS. Indicates an employee from which department is working on which project/s.

Add a column to DEPT table named LOCATIONS with data type VARCHAR2(9). Add constraints on values that values will be BNG/MNG/MUB/HYD/CHN and default BNG.

***Insert the following Records***

In the following records take any valid values to the columns left blank, columns with null must be entered with null values only

***Insert records into EMP table***

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Empno** | **Ename** | **Job** | **MgR\_ID** | **Date\_of\_**  **Birth** | **Sal** | **comm** | **Dept no** | **Prj\_**  **Id** | **Date\_of \_join** |
| 100 | Ravi | MGR | 111 | 10-10-1985 | 32000 |  | D1 | P1 | 2-10-2001 |
| 102 | Raviraj | CLRK | 100 | 10-12-1980 | 24000 |  | D1 | P3 | 12-11-2000 |
| 111 | Raghu | GM | 150 | 10-12-1974 | 45000 | 15000 | null | null | 3-12-1985 |
| 150 |  | CEO | null | 10-12-1970 | 60000 | 30000 | null | null | 3-12-1990 |
| 103 |  | A.CLRK | 111 | 10-12-1980 |  |  | D1 | P1 | 2-10-2001 |
| 103 |  | CLRK | 111 | 2-10-1980 |  |  | D1 | P3 | 2-10-2002 |
| 125 | Manu | A.MGR | 150 | 10-12-1980 |  |  | D4 | P2 | 2-10-2002 |
| 104 |  | CLERK | 100 | 2-10-1980 |  |  | D2 | P1 | 2-10-2005 |
| 106 |  | MGR | 100 | 2-10-1986 |  |  | D2 |  | 2-10-1985 |
| 123 | Mahesh | CLRK | 106 | 10-12-1974 | 25000 |  | D3 | P2 | 2-10-2002 |
| 108 |  | CLRK | 106 | 10-12-1970 |  |  | D9 |  | 2-10-1985 |
| 103 |  | CLRK | 111 | 10-12-1980 |  |  | D1 | P3 | 2-10-2001 |
| null |  | CLRK | 106 | 10-12-1980 | 18000 |  |  |  | 10-12-1980 |

Write the reason if some records are not inserted.

Insert your own 5 records

***Insert records into DEPT table***

|  |  |  |
| --- | --- | --- |
| **DNO** | **DName** | **Locations** |
| D1 | Marketing | CHN |
| D2 | Research | MNG |
| D3 | Administrator | BNG |
| D4 |  | BGG |
| D5 | IT | BNG |
| Null | Corporate | HYD |

Write the reason if some records are not inserted. Insert your own 2 records

**Insert records into PROJECTS**

|  |  |  |  |
| --- | --- | --- | --- |
| **Dno** | **Prj\_No** | **Prj\_Name** | **Prj\_Credits** |
| D1 | P1 |  | 2 |
| D2 | P1 |  | 2 |
| D3 | P2 |  | 7 |
| D1 | P3 |  | 5 |
| D4 | P2 |  | 7 |

Insert your own 2 records

**Answer the SQL Queries**

***SET-I***

1. Display all records from EMP,DEPT and PROJECTS table
2. Display records of Employees who have salary more than 25000 or working in department D2
3. Delete employee records working on project P2 and confirm the result. Type **ROLLBACK** to restore records back if records are deleted.
4. Delete department *Marketing* from DEPT table, confirm the result with reason. Type **ROLLBACK** to restore records back if records are deleted.
5. Delete records of employees working under Manger with ID 100 and in project P1.
6. Update the DNO of first record in PROJECTS to D5, confirm the result with reason.
7. Update the Job of employee with EmpNo 123 to MGR, salary to 35000 and his manager as 111.
8. List all employee names and their salaries, whose salary lies between 25200/- and 35200/- both inclusive.
9. List all employee names reporting to employees 100,125,150
10. List all employees whose name starts with either M or R.
11. List the name of employees whose name do not starts with M.
12. List all kind jobs available in employee table, avoid displaying duplicates.
13. List minimum, maximum, average salaries in company.
14. Display the number of employees working in each project.
15. List the Employees name and their manager’s names
16. List Employees Name, their department name and Projects Name in which they are working.
17. List the employee names, salary of employees whose first character of name is R, 2nd and 3rd characters are ‘v’,’i’ and remaining characters are unknown.

***SET-II***

1. List the Projects name undertaken by *Marketing* Department.
2. Display current date, 53, absolute value of -45 and current date as date with format MONTH-YY.
3. Display the employees name and salary in descending order by salary.
4. List the name of departments which are working with more than 1 project
5. Display department name, Max salary and Min salary in each department.
6. List the employees whose experience is more than 5 years.
7. List the Employees number, Name and their Age and retirement date(assume 60 years retirement age).
8. List the Employees who born on December month.
9. List the Employees names who born on a given year.
10. List the Employees names who joined on day 12.
11. List the Employees names having service experience more than 10 years.
12. List the projects which have duration more than 1 year.
13. List the Employees Name who is working at Locations (BNG,MUB,HYD)
14. Update the COMM column of EMP table based on the SAL. Use COMM = CMM + SAL \* 10/100
15. List employee names, padded to right with a series of three periods and space up to a width of 30, and project credits of projects in which they are working.(Use RPAD,LPAD)
16. List the name of employees who are working in project with credit more than 7 and display name with only first letter capital and replace the character ‘a’(if present) in the name by ‘$’.
17. Display department Name and Total amount spent on each department by the company as Salary.
18. List Employee numbers, SAL \*12 (rename as ANNUAL\_SAL), SAL\*12 \*0.1 (as TAX) , display ANNUAL\_SAL and TAX in the format of $12,34,456.90.

***SET-III***

1. List Job category and total salary paid for the each jobs category by the company
2. Display name of the department from which maximum number of employees are working on project P1
3. Display department names and number of CLRK working in the departments.
4. Display Employee names who are not working in any of the projects.
5. Create a View EMP\_PRJ\_VW to display records of employees of ‘marketing’ department and project in which they are working.
6. Display employee names and projects in which they are working using View EMP\_PRJ\_VW
7. Insert a record into View EMP\_PRJ\_VW and check the underlying tables for result and confirm result with reason.
8. Create an unique index on the column name DNAME on DEPT table
9. Create an index on the columns (name and job) on EMP table.
10. Create a Sequence STUD\_SEQ which starts from 100 to 999 with increments of 3.
11. Create a table STUD with columns ROLLNO and Name. Insert ROLLNO values by taking values from STUD\_SEQ.
12. Display Location of department and Employees name working in Marketing department or Research (using set operator).
13. Display the names of the Departments undertaking both projects P1 and P3 (using set operator).

***SET-IV***

1. Display the details of those who do not have any person working under them?
2. Display those who are not managers and who are manager any one?
3. Display those employees whose salary is more than 3000 after giving 20% increment?
4. Display the name, monthly salary, daily salary and Hourly salary for employees. Assume that the Sal column in the table is the monthly salary, that there are 22 working days in a month, and that there are 8 working hours in a day. Rename the columns as monthly, daily and hourly.
5. Display employee name, dept name, salary and comm. For those sal in between 2000 to 5000 while location is Chicago?
6. Display those employees whose salary is greater than his manager salary?
7. Display those employees who are working in the same dept where his manager is working?
8. Display employees name for the dept no D1 or D3 while joined the company before 31-dec-82?
9. Update the salary of each employee by 10% increment who are not eligible for commission?
10. Find out the top 5 earners of the company?
11. Display name of those employees who are getting the highest salary in their department.
12. Select count of employees in each department where count greater than 3?
13. Display dname where at least 3 are working and display only department name?
14. Display those managers name whose salary is more than average salary of his employees?
15. Display those employees whose salary is **odd** value?
16. List of employees who do not get any commission.
17. Display those employees whose salary contains atleast 3 digits?
18. Delete those employees who joined the company 10 years back from today?
19. Display the name of employees who joined on the same date?
20. Display the manager who is having maximum number of employees working under him?

***SET -V***

1. Print a list of employees displaying “Just Salary” if more than 1500 if exactly 1500 display “On target” if less ‘Below target’?
2. Define a variable representing the expression used to calculate on employees total Annual Remuneration.
3. Find out how many managers are there without listing them?
4. List out the lowest paid employees working for each manager; exclude any groups where minimum salary is less than Rs.1000. Sort the output by salary?
5. Find out the all employees who joined the company before their managers?
6. List out the all employees by name and number along with their manager’s name and number; also display “KING” who has no manager?
7. Find out the employees who earn the highest salary in each job type. Sort in descending salary order?
8. Find out the employees who earn the minimum salary for their job in ascending order?
9. In which year did most people join the company. Display the year and number of employees?
10. Display average salary figure for the department?
11. Display employees who can earn more than lowest salary in department no 30?
12. Display the half of the ename’s in upper case & remaining lower case?
13. Create a copy of emp table without any data(records)
14. List the details of the employees in Departments D1 and D2 in alphabetical order of Name.
15. List all rows from Emp table, by converting the null values in comm Column to 0.
16. Give SQL command to find the average salary per job in each Dept.
17. Find the job with the highest average salary.

***Problem 1:[HINTS]***

**Data to be Insert**

**product**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| product\_id | product\_name | manufacturer\_name | product\_rate | sell\_price | product\_ description |
| p001 | lux\_soap | Lux\_international | 15.67 | 20.43 | soap |
| p002 | copy | times\_copy\_org | 14.80 | 16.40 | copy |
| p003 | marry\_biscuit | marigold\_org | 2218.80 | 2220.40 | buiskit |
| p004 | mitsubisi\_pen | pen\_international | 2015.67 | 2120.43 | pen |
| p005 | learn\_books | book\_world | 5104.80 | 5116.40 | book |
| p006 | tata\_steel | tata\_org | 5118.80 | 5120.40 | tata |
| p007 | seagate hdd | seaget\_world | 5104.80 | 5116.40 | HDD1034 |
| p008 | dvd writer | frontec\_org | 5118.80 | 5120.40 | DVDRW |

**client**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| client\_id | client\_name | address | city | pin | state | bal\_due |
| cn01001 | alak roy | b.d.para | amarpur | 799101 | tripura | 390.90 |
| cn01002 | suman roy | puk para | agartala | 799102 | tripura | 2390.90 |
| cn01004 | priya das | chora para | kamalpur | 799301 | tripura | 1390.90 |
| cn01005 | mita mia | kamal para | singur | 799721 | tripura | 190.90 |
| cn01006 | pulak roy | bircity | sonitpur | 799141 | assam | 110.90 |
| cn01007 | munni das | nappam | sonitpur | 799152 | assam | 190.90 |
| cn01008 | kusum roy | city\_dos | tezpur | 799141 | assam | 110.90 |
| cn01009 | mina das | pachmile | tezpur | 799152 | assam | 190.90 |
| cn01003 | moytree nayak | pachmile | tezpur | 799152 | assam | 9990.90 |
| cn01010 | pauri mia | pachmile | tezpur | 799152 | assam | 2990.90 |
| cn01011 | manali das | satmile | tezpur | 799154 | assam | 3990.90 |

**salesman**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| salesman\_id | salesman\_name | address | city | pin | state | salary |
| s001 | Rohan das | nappam | Tezpur | 79970 | Assam | 8000.00 |
| s002 | Rohan das | nappam | Tezpur | 799170 | Assam | 8000.00 |
| s003 | Smita das | nirjuli | itanagar | 799701 | Arunachal | 9000.00 |
| s004 | Kabir bora | nappam | Tezpur | 799703 | Assam | 8500.00 |
| s005 | Neha singh | borbota | sonitpur | 795970 | assam | 9600.00 |
| s006 | Priya agarwal | gandhi road | 32 distric | 799750 | delhi | 9900.00 |
| s007 | Ashok Paul | filmcity | munnabari | 799740 | mumbai | 8900.00 |

**sales\_order\_details**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| sales\_ order\_ no | sales\_ order\_ date | client\_id | salesman\_ id | bill\_ payby\_ party | delivery\_ date | product\_ rate | tot\_ quantity\_ order | cancel\_date |
| on01001 | 01-Aug-08 | cn01001 | s001 | yes | 20-Aug-08 | 2220.40 | 50 |  |
| on01002 | 12-Aug-08 | cn01004 | s001 | yes | 23-Aug-08 | 2220.40 | 15 |  |
| on01003 | 12-Aug-08 | cn01005 | s003 | yes | 26-Aug-08 | 2220.40 | 10 |  |
| on01004 | 13-Aug-08 | cn01004 | s001 | yes | 20-Aug-08 | 2220.40 | 15 |  |
| on01005 | 14-Aug-08 | cn01002 | s002 | no | 30-Aug-08 | 2220.40 | 52 | 28-march-2008 |
| on01006 | 15-Aug-08 | cn01001 | s001 | yes | 31-Aug-08 | 2220.40 | 53 |  |
| on01007 | 16-Jan-08 | cn01003 | s004 | yes | 28-Aug-08 | 2220.40 | 54 |  |
| on01008 | 01-Feb-08 | cn01004 | s003 | no | 28-Aug-08 | 8220.40 | 54 | 18-march-2008 |