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School of Computer Science and Engineering

CSE2004 - Database Management Systems Lab

Cycle Sheet - I

Aim: To study Data Definition and Data Manipulation commands.

Consider the following schema:

Table Name: Employee

Attribute	Data Type
First Name	VARCHAR(15)
Mid Name	CHAR(2)
Last Name	VARCHAR(15)
SSN Number	CHAR(9)
Birthday	DATE
Address	VARCHAR(50)
Sex	CHAR(1)
Salary	NUMBER (7)
Supervisor SSN	CHAR(9)
Department Number	NUMBER (5)

Table Name: Department

Attribute	Data Type
Department Name	Varchar(15)
Department Number	Number(5)
ManagerSSN	CHAR(9)
ManageStartDate	DATE

Table Name: Project

Attribute	Data Type
Project Name	VARCHAR(15)
Project Number	NUMBER(5)
Project Location	VARCHAR(15)
Department Number	NUMBER(5)

Data For Employee Table

FName	Minit	LName	SSN	BDate	Address	Sex	Salary	SuperSSN	DepNo
Doug	E	Gilbert	123	09-JUN-1968	Chennai	M	80000		1
Joyce		PAN	124	07-FEB-1973	Vellore	F	70000		1
Frankin	T	Wong	125	08-DEC-1972	Delhi	M	40000	123	2
Jennifer	S	Wallace	564	20-JUN-1983	Chennai	F	43000	123	2
John	B	Smith	678	09-JAN-1987	Madurai	M	30000	124	1
Ramesh	K	Narayan	234	15-SEP-1985	Bangalore	M	38000	124	3

Data For Department table

DName	DepNo	MgrSSN	MgrStartDate
Administration	2	564	03-Jan-2012
Headquarter	1	678	16-Dec-2014
Finance	3	234	18-May-2013
IT	4	123	12-Jun-2015

Data For Project

PName	PNumber	Plocation	DepNo
ProjectA	3388	Delhi	1
ProjectB	1945	Hyderabad	1
ProjectC	6688	Chennai	2
ProjectD	2423	Chennai	2
ProjectE	7745	Bangalore	3

Exercise-I:

1. Insert the data given above in both employee, department and project tables.
2. Display all the employees' information.
3. Display Employee name along with his SSN and Supervisor SSN.
4. Display the employee names whose bdate is '20-JUN-1983'.
5. Display salary of the employees without duplications.
6. Display the MgrSSN, MgrStartDate of the manager of 'Finance' department.
7. Modify the department number of an employee having fname as 'Joyce' to 2
8. Alter Table department add column DepartmentPhoneNum of NUMBER data type and insert values into this column only.
9. Alter table department to modify the size of DepartmentPhoneNum.
10. Modify the field name DepartmentPhoneNum of departments table to PhNo.
11. Rename Table Department as DEPT.
12. Alter Table department remove column PhNo.
13. Create a table COPYOFDEPT as a copy of the table DEPT.
14. Delete all the rows from COPYOF DEPT table.
15. Remove COPYOF DEPT table.

Exercise: II

Aim: To use constraints and formulate the tables to have consistent data.

Table Name: Employee

Attribute	Data Type	Constraint
First Name	Varchar (15)	Not Null
Mid Name	Char(2)	
Last Name	Varchar (15)	Not Null
SSN Number	Char (9)	Primary Key
Birthday	Date	
Address	Varchar (50)	
Sex	Char(1)	Sex In (M,F,m,f)
Salary	Number (7)	Default 800
Supervisor SSN	Char (9)	Foreign Key Employee (SSN) on delete set null
Department number	Number(5)	Foreign key to department number of department table on delete cascade

Table Name : Department

Attribute	Data type	Constraint
Department Name	Varchar(15)	Not Null
Department number	INT(5)	Primary key
Manager SSN	Char (9)	Foreign key-Employee (SSN) on delete set null
Manage start date	Date	

Table Name: Project

Attribute	Data type	Constraint
Project Name	Varchar2(15)	Not Null
Project number	Number(5)	Primary key
Project Location	Varchar2(50)	
Department Number	Number(5)	Foreign Key –Department (dep no) on delete set null

I. Add the above mentioned constraints to employee, project and department tables using alter table statement.

II. Execute the following Query on the Db to display and discuss the integrity constraints violated by any of the following operations

1. Insert ('Robert', 'F', 'Scott', '235', '21-JUN-1990', 'Bangalore', M, 58000, '100', 1) into EMPLOYEE.
2. Insert ('ProjectF', null, 'Chennai', 3) into Project.
3. Insert ('ProjectF', 1234, 'Chennai', 4) into Project.

III. Alter the tables to

1. Drop Foreign key defined on SuperSSN and add it using Alter table command.
2. Make name of Project as Unique and sex of employee as not null.
3. In the copy table add the columns door no, street, city, State, Continent.
4. Make salary of employee to accept real values.

Exercise: III

Operators and Functions

Aim: To understand different operators and types of function in SQL

1. Find the employee names whose salary lies in the range between 30000 and 70000.
2. Find the employees who have no supervisor.
3. Display the bdate of all employee s in the format 'DDthMonthYYYY'.
4. Display the employee names whose bdate is on or before 1978.
5. Display the department name that starts with 'M'.
6. Display the department names' that ends with 'E'.
7. Display the names of all the employees having supervisor with any of the following SSN 123, 124.
8. Display all the department names in upper case and lower case.
9. Display the first four characters and last four of the department names using substring function.
10. Display the substring of the Address (starting from 5^{th} position to 11 th position) of all employees.
11. Display the Mgrstartdate on adding three months to it.
12. Display the age of all the employees rounded to two digits.
13. Find the last day and next day of the month in which each manager has joined.
14. Print a substring from the string 'Harini'.
15. Replace the string 'ni' from 'Harini' by 'sh'.
16. Print the length of all the department names.
17. Display the date after 10 months from current date.
18. Display the next occurrence of Friday in this month.
19. Display the project location padded with **** on left side.

Exercise: IV (outcome: e)

Group Functions

1. How many different departments are there in the ‘employee’ table
2. For each department display the minimum and maximum employee salaries
3. Print the average annual salary.
4. Count the number of employees over 30 age.
5. Print the Department number and average salary of each department.
6. List out all the department ids with their individual employees strength
7. Display the department number which contains more than 2 employees.
8. Calculate the average salary of employees by department and age
9. List out the employees based on their seniority.

Exercise: V

Sub Query and View

Aim: to understand the concept of Sub queries and logical tables in oracle

1. Find the employee who is getting highest salary in the department head quarters.
2. Find the employees who earn the same salary as the minimum salary for each Department
3. Find the employee whose salary is greater than average salary of department 2
4. Find out the department having highest employee strength
5. List out all the departments and average salary drawn by their employees
6. Create a view to display the employee details who is working in Administration department.
7. Create a logical table to store employee details who is getting salary more than 10000.

Exercise: VI

Joins

Aim: To understand how to relate and access data from multiple tables.

Consider the schema given in exercise 2, and execute the following queries

1. Find the names of all the employees who are directly supervised by ‘Joyce’.
2. Find the names of all the employees who are working in department ‘Headquarter’
3. List the department names and if has a manager then display the manager name too.
4. Retrieve the names of the departments which have more than 2 employees.