School of Information Technology and Engineering

ITE302 - Database Systems
Lab Cycle Sheet (Fall 2015-16)

Exercise 1

Create a table to store the student information as per the given schema;

STUDENT (REGNO, SNAME, PROGRAM, MAJOR, PERCENTAGE, DOB, ADDRESS, PHONE)

Choose carefully the appropriate data types and size for all the mentioned attributes while you create table.

Write SQL queries to view the required information as given below;

1. To display all the records of Student.

2. To view all the details of students named 'Ravi'.

3. To find the details of student whose phone number is 9955667788.

4. To list all the students' regno, name, program and major of those who scored percentage above 70.

5. To list all the students' phone number of those who scored between 50 and 75.

6. To list the names and programs of those students who have scored above 70 and from 'Chennai'.

7. To find all the details of students who are from 'Mumbai' and of 'ECE' major.

8. To display the student regno and name of all the students who are doing either 'ECE' major or 'CSE' major.

9. To display the student details for those who have satisfied one of the following; regno – '14BIT0001', phone – 9900889900, percentage – greater than or equal to 60.

10. To find the details of student whose name is 'Ram' and his major should not be 'IT'.

11. To find the details of student who belongs to 'CIVIL' major, and whose name is not 'Kesavan'.

12. To find the name and dob of all the students of 'MECH' major and program 'BTech'.

Exercise 2

Create the relational tables for the schemas given below as per the given instructions;

EMP (ENO, EFNAME, ELNAME, JOB_CLASS, HIREDATE)

JOB (JOB_CODE, JOB_CLASS, CHG_HOUR)

PROJECT (PNO, PNAME)

PROJ_EMP (PNO, ENO, HOUR)

Choose carefully the appropriate data types and size for all the mentioned attributes while you create table. Primary keys are underlined. All the columns should be NOT NULL.

Write SQL queries to view the required information as given below;

DDL Statements

1. Add a new attribute OVERTIME_CHG to the JOB table.

2. Add a new constraint which ensures that the CHG_HOUR value must be more than 25.

3. Change the column size of CHG_HOUR attribute to a new value.

4. Add an attribute to the PROJECT table to store Project Locations.

5. Add a constraint Job_Class_Constraint to the table JOB to accept one of the following values for the JOB_CLASS column;

Application designer, Database designer, Electrical Engineer, Programmer, Systems analyst

6. Remove the constraint that you added through the previous query.

7. Add a constraint to PROJ_EMP such that the HOUR values can be in the range of 10 to 100.

8. Rename the CHG_HOUR attribute to CHG_PER_HOUR.

9. Change the NOT NULL constraint to NULL for ELNAME column of EMP table.

10. Add a constraint to JOB table that permits only the JOB_CODE start with the letter 'J'.

DML Statements

1. Find the list of project names that are handled by 'Raman'.

2. Find the project names that contain the substring 'road' and of duration of minimum 50 hours.

3. List the number of employees for every JOB_CLASS.

4. List the details of all employees in the ascending order of their first names.

5. List all the projects details in descending order of the project names.

6. Arrange and list the distinct (unique) employee names which contain 'r' in it. Also, arrange those names in ascending order.

7. List the distinct job classes under which not even a single person is working. [Note: use set difference operator]

8. Find the experience of every employee and display the ENO, EFNAME, and experience in year.

9. Find the senior most employees among all.

10. Display ENO, EFNAME, JOB_CLASS, HIREDATE, and CHG_HOUR for all employees.

UPDATE Statements

1. Change the names of employees that are 'Ram' to 'Ramkumar'.

2. Update the CHG_HOUR value of all the jobs to 75.

3. Modify the HOUR value to 200 for the project 'Air Traffic Control System'.

4. Change the JOB_CLASS of all the employees who have joined before 1st JAN 2010 to 'DBA'. [Note: for doing this you need to modify the constraint on JOB_CLASS which was defined previously]

5. Increase the CHG_HOUR value to a new 150 for the JOB_CLASS 'DBA'.

Exercise 3

Company Database

Employee (SSN, Name (Fname, Minit, Lname), Sex, Address, Salary, DOB, Department, Designation, SupervisorSSN)

Department (Number, Name, ManagerSSN, Location)

Dependent (Name, DOB, Sex, Relationship, SSN)

Project (Number, Name, Location, Controlling_ Department, Budget)

Works_on (SSN, Project Num, Hours)

a. Make the underlined columns as primary key.

b. Insert at least 5 rows to each table.

(Check entity integrity constraint and key constraint)

c. Add required foreign keys and insert values to see the referential integrity constraints

 SQL Functions.

1. Print the Employee names with first letter alone in uppercase.

2. Print a substring from the string 'Lake' from Dloaction where Depno=3.

3. Replace the string 'Ram' with 'Din' from the fname of the employee having SSNr= 666884444.

4. Print the length of the dept name where dept number is 2.

5. Print the birth date of employees in the format 25 th May 2007.

6. Display the date after 10 months from current date.

7. Display the next occurrence of Friday in this month.

8. Create an empty table empl with same structure as employee table

9. Write a query to show all the details about constraints

10. Create a table dependent1 with same contents as dependent table

11. Insert a record into Works_on table by assigning NULL value in Hours field. Write a query to view number of hours worked by each employee (NULL should be replaced by zero)

12. Find the last day of this month.

13. Convert SSN of employee to Number format and display.

14. Display the project location padded with **** on left side.

15. Remove the word 'Project' from the project name and display it.

16. Select the SSN of the employee whose dependent name is either Michael or Abner.

17. Find the Name of the employee whose dependent name is Roma and Jony.

18. Display the employee's names whose address does not end with 'UT'.

19. Display the employees SSNNumber whose work on the project does not lie in the range of 10 hrs to 20 hrs.

20. Display the employee names who has no supervisor.

Exercise 4

Group functions in SQL

1. Find the sum of the salaries of all employees of the 'Finance' department, as well as the maximum salary, minimum salary and the average salary in this department.

2. Retrieve the total number of employees in the company and the number of employees in the 'R&D' department.

3. Find the number of distinct salary values in the employees table.

4. For each department retrieve the department number, the number of employees in that department and their average salary.

5. Display the number of people having same supervisor.

6. Find the number of female dependents for each employee.

7. Find the oldest and the youngest employee's names.

8. Determine the number of managers.

9. Retrieve SSN, project number and total number of hours worked by each employee on that project.

10. Find the number of project locations for each project.

Exercise 5

Views and Joins

1. Create a view that has the department name, manager name, and manager salary for every department.

2. Create a view that has the employee name, supervisor name and employee salary for each employee who works in 'Research' department.

3. Create a view that has the project name, controlling department name, number of employees and total hours worked per week on the project for each project.

4. Select all the details of employees who have supervisors as well as who doesn't have supervisors.

5. Select employee name , project name on which they work and also show those employee names if they do not work on any project.

Miscellaneous

1. Retrieve the employee names who have at least two dependents.

2. List the managers who have at least one dependent.

3. Retrieve the project number, project name and the number of employees working on that project.

4. Retrieve the department number and number of employees for which more than five employees are working with salary > 40000.

5. Retrieve the first two rows from employee table.

6. Write a query to delete duplicate rows from the table.

7. Examine the contents of dual table.

Exercise 6

PL/SQL

1. Write a PL/SQL block to display the reverse of numbers between 1 and 100.

2. Create a PL/SQL block to accept an empno and display the salary of the person.

3. Write a procedure to generate the Fibonacci series

4. Write a function to find the factorial of a given number.

5. Write a cursor to give the details of all the projects.

6. Write a cursor to give department details that range between 1234 and 1900.

7. Write a procedure to accept a employee name and display his dependent names, relationship and project names, controlling department.

8. Write a function to give the number of projects for a given department name.

9. Write a function to return the department name which is controlling highest number of projects.

10. Write a function to return the number of employees working in the department which is making the highest revenue form the sponsored projects.

11. Write a trigger to update the department number in employee table when parent table is updated.