**IIT Bhubaneswar**

**Database System Laboratory Test # 1**

**Points: 80 Time: 130 Minutes**

**Date: 22-03-2021**

**Problem Set – 1 [Roll 1001-1017]**

Consider following relations

Book\_stock(**Book\_id**, Title, No of Copies)

Book\_Issue(tr\_id, **card\_no**, cholder\_name, **book\_id**, issue\_date, due\_date)

Book\_Return(tr\_id, **card\_no**, cholder\_name, **book\_id**, return\_date, issue\_date)

1. Write a PL/SQL program for issuing/return of books with following conditions:

The program will take option I(issue) / R(return) along with card\_no from user. Accordingly, insert records in Issue and Return relations. The field Tr\_id must be populated from sequence. Date of issue/return must be populated with SYSDATE. Before issuing book, check the following constraints: A member is not allowed to issue more than 3 books. A member is not allowed to issue more than one copy of same bookid.

After issuing/return of book the no of copies must be updated. If the return date of the book is later than the due date; insert a record in a new table called Fine (card\_no, amt). Assume a fixed late fine amt.

1. List the Book Titles which are out of stock
2. List the book titles which are issued most in a given period, between a start date and end date
3. List the total fine for each card-holder
4. Write a JDBC application for purchase of new book with existing title and new title. The book-stock table should be updated for the same
5. Write a JDBC application that will display list of books currently held (returned books should not be considered) for a given card holder
6. List the name of N/2 most no of book-issuing card-holders (N is the total number of distinct card-holders in Issue table)
7. Write a JDBC application to display the availability of all book titles containing “database”

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**Problem Set – 2 [Roll 1018-1035]**

**Consider student attendance database created**

1. Display list of students whose percentage of attendance is more than a 80% for a given course.
2. Write a JDBC Application to find out the name of the students with their attendance who have registered for a course taken by a given instructor.

**Consider the Company databases created**

1. Write the name of 3rd and 5th highest salary earning employees using cursor (consider total salary as salary + commission)
2. Write a procedure to find out the name of the employee and name of the department for the employee who is the manager for a given employee ID.
3. Write a SQL query to list first JDBC application to show the job title and name of those employees who have been hired after a given date (supplied by user), and who have a manager working in a given department (supplied by user). [Use cursor]
4. Display the EMPNAME as FIRSTNAME||LASTNAME, MONTHLY PAY as SALAY, ANNUAL PAY,

DNAME for each employees in descending order of salary including commission

1. Write the least N/2 salary earners (without sorting) [use nested query]
2. Write a JDBC application to update salary (by 5%) AND job type of a given employee based on empno using prepared statements.

Write and use a trigger for the following:

i. The changes for the employee need to be inserted in a newly created table EMP\_CHANGE with attributes <EMPNO, :old.jobtype, :new.jobtype, :old.salary, :new.salary, change\_date, user>;. “change\_date” is the date of update and “user” who has modified the record.

ii. Check whether the salary of an employee to be updated doesn’t violate the min-max salary constraint of the corresponding job ID. If it violates the constraint, raise an exception.

1. Write a JDBC application for generating a report for the following query and send query results to an external file.

Query: Display deptno, deptname and Total\_salary of those departments which spend >= 100000 in salary

1. Create a view contains the name, job title, commission percent and the annual salary of employees working in the department 20. Increase the salary of the employees by 10% through EMPLOYEES table and observe the details from the view. Update the commission percent of job type CLERK with increase in 10%. Observe the change in annual salary through view.

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**Problem Set – 3 [Roll 1036-1046, 2005-2012]**

Consider Hospital OPD database. The records in OPD\_payments to be automatically updated based on Schedule and Appointment table. If a patient visits twice the same doctor within a week, amt in OPD\_payments will be automatically set to 0. For senior citizen female patients, the fees to be reduced by 50% and entry should be automatically inserted in OPD\_payments table.

1. Display the list of patients who has visited the same doctor in the hospital more than

2 times during a given time-period <between start\_date and end-date>

1. Display the number of patients visited to the doctors unit-wise and date-wise.
2. Change the date and time (not other field) in OPD\_Schedule of any given doctor

through views

1. Create a OPD log including patient name, age, date\_of\_visits and doctor names for agiven period.
2. Increase the fees of a given doctor through a view
3. Write a JDBC Application to find out the name of the doctors and date of appointments who have appointments for given patient id.
4. Consider the HR/Company database

Write a trigger for the following:

1. If dept number or job type of any employee gets updated in the EMPLOYEES table then insert <EMPNO, :old.jobtype, :new.jobtype, :old.deptno, :new.deptno, change\_date, user, type of change> of those employees in a newly created table EMPLOYMENT\_CHANGE() with required fields. Also incorporate the date of update and user who has modified the record in the EMPLOYMENT\_CHANGE table
2. If an employee record is deleted (resigns the organization), insert (empno, ename, deptno, release date) in a newly created table EXEMPLOYEE() with required fields.
3. Write a PL/SQL procedure to increase the salary of all employees who work in the department given by the procedure's parameter. Use a cursor for update.

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**Problem Set – 4 [Roll 1047-1056, 2001-2004]**

Create a database for migrant workers with the following relational schema:

MIGRANTW (Enroll\_ID, Name, Skill, Address, PJobloc, Ph no, Enroll\_date)

PJobloc is a multivalued attribute holds information about preferred job location of the migrant worker separated by comma. Skill is a multi-valued attribute defines the skill of the migrant worker such as “Electrician”, “Carpenter”, “TV Mechanic”, “Security Guard”, “Cab Driver”, etc separated by comma. You can consider many different types of skills as per your choice. Address must contain state information. All attributes are enforced with NOT NULL constraint.

Write SQL/PL SQL program for the following(s):

1. List the name of all migrant workers along with Skill and Ph who are either Electrician or TV Mechanic or both. The output shouldn’t contain redundant records.

(b) List the name of all migrant workers who are Security Guard and preferred to work in Bangalore

(c) Create a view with Name, Skill, PJobloc ordered by Skill for all the migrants who preferred to work in Delhi or Noida.

(d) Write a JDBC application using prepared statements that takes Skill as input and displays the name, ph no, address and job locations of all migrants.

(e) List state-wise no. of migrants registered. [Assume, state information is part of Address

field]

(f) Create two new relations with following schema.

Company\_Req(cname, job type, job\_location, vacancy, skill\_required)

Place\_Migrant(cname, enroll\_ID, job type, osalary, job\_location, place\_date)

The Company\_Req relation stores available job information where (cname, job type,

job\_location) is primary key. Vacancy represents number of openings available. The Place\_Migrant relation holds placement of migrants in respective companies. The data in this table will be populated automatically using a trigger as and when data inserted in Company\_Req table. The process is as follows:

When a record is inserted in Company\_Req, a trigger will check the records in MIGRANTW

relation to match skill\_required and job\_location. In case, there is match, it will insert first X

number of migrants (sorted by enroll\_date) into Place\_Migrant relation, where X < = “vacancy”. You can consider some value for osalary attribute and place\_date is SYSDATE. You can use cursor to keep migrant details based on matching criteria and use it for inserting X number of records into Place\_Migrant relation. Add an attribute Status in MIGRANTW table. Mark all placed migrants’ status as “P” and rest as “U”

1. Create a view on details of placed Migrants as follows: <Name, Ph No, Company Name,

osalary, job\_location, place\_date>;

Use this view to display company-wise migrants count placed and total\_salary invested for

them.

1. Assume, vacancies of some of the companies are partially filled as suitable skilled migrants

are not available. Write a PL/SQL program for displaying the name of the companies along

with the count of vacancies which are not filled.