



In-Semester Test-1
IT 214 Database Management Systems

Time: 75 minutes

Max Points: 90

IMPORTANT NOTE:

1. Write answers neat and clean. Answers that are difficult to read may simply be discarded.
2. Answer all queries in order. If you want to defer answering a query, may move to next by leaving sufficient blank space. You may follow a strategy of not answering more than two queries on a page.
3. Each query is for 10 points, and awarding strategy will be discrete (i.e., 0, 5, and 10).
4. You may have to pay penalty for lengthier query expressions.
5. All queries are to be answered in Relational Algebra. No marks will be awarded if answered in SQL.

1. Consider following relation schema **Company**:

DEP(dno, dname, head_eno)

-- attribute **head_eno** is emp no of the head of the department and refers into EMP relation

EMP(eno, name, gender, category, salary, supervisor_eno, dno)

-- attribute **supervisor_eno** is emp no of the employee's supervisor and refers to **eno** of EMP itself.

-- attribute **cat** is employee category and has domain of {worker, manager, engineer, staff}

PROJ(pno, pname, dno)

-- attribute **dno** is FK referring into DEP relation

WORK_HOURS(eno, pno, hours_per_month)

-- Attributes **eno** and **pno** are FKs referring into EMP and PROJ respectively.

1. Give Average Salary of workers.
2. List (eno, name) of all female supervisors.
3. List (eno, name) of all department heads who are engineers.
4. List Female Supervisors (name, and number of employees that it supervises) who supervise more than 3 employees.
5. Suppose (for this query only) there is a rule in the company that employees that are of manager category can only be head of a department. Write query expression that checks if there are heads that are not from manager category.
6. Compute Average salary for each category of employees.
7. Compute total salary for each employee category for each department.
8. List (eno, name, salary, average salary of its supervisees) for all employees of the company.
9. Suppose average cost per man hour to the company is Rs 2000. Provide (department name and monthly expenditure on projects that it controls) for each department of the company.

Vadhu
Dary
01/10/2020