

## CS443/G Assignment 3

**Due in class on Thursday, September 21<sup>st</sup>.**

1. PHP and MySQL (or any database and web programming language)

Design two web pages, the first one asks user input project number and there is a submit button. After user clicks submit button, the second page will show “the names of all employees who work on that project” in table format and a back button to go back to the first page.

Submit the code and screenshots for all pages.

2. Specify the following queries using relational algebra operations on the COMPANY relational database schema shown in class. Also show the result of each query as it would apply to the original database state (given in class).

(1) Retrieve the names of employees in department 5 who work more than 10 hours per week on the 'ProductX' project.

(2) Retrieve the names of employees who work on every project.

(3) Retrieve the names of employees who do not work on any project.

(4) For each department, retrieve the department name, and the average salary of employees working in that department.

3. Consider the two tables  $T1$  and  $T2$  shown below. Show the results of the following operations:

**TABLE T1**

| P  | Q | R |
|----|---|---|
| 10 | a | 5 |
| 15 | b | 8 |
| 25 | a | 6 |

**TABLE T2**

| A  | B | C |
|----|---|---|
| 10 | b | 6 |
| 25 | c | 3 |
| 10 | b | 5 |

(1)  $T1 \bowtie_{T1.P=T2.A} T2$

(2)  $T1 \bowtie_{T1.Q=T2.B} T2$

(3)  $T1 \bowtie_{T1.P=T2.A \text{ AND } T1.Q=T2.B} T2$

(4)  $T1 \cup T2$

(5)  $T1 \times T2$