The assignment is to be turned in before Midnight (by 11:59pm) on January 18th. You should turn in the solutions to this assignment as a PDF file through the TEACH website. The solutions should be produced using editing software programs, such as LaTeX or Word, otherwise they will not be graded.

1: Relational Model and SQL (8 points)

Consider the following relational schema:
Emp(*eid*:integer, *ename*:string, *age*:integer, *salary*:real)
Works(*eid*:integer, *did*:integer, *pc_time*:integer)
Dept(*did*:integer, *dname*:string, *budget*:real, *managerid*:integer)

The underlined attributes are keys for their relations. Note that a manager is an employee as well and their manager id and employee id are the same. An employee can work in more than one department. The pct_time field of the Works relation shows the percentage of time that a given employee works in a given department. Write the following queries in SQL.

(a) Print the *did* and *dname* of the departments with at least one full-time (100%) employee. (1 point)

(b) Print the names and ages of each employee who works in both the "Hardware" department and the "Software" department. (1 point)

(c) Print the name of each employee whose salary does *not* exceed the budget of any department that he or she works in. (2 point)

(d) If a manager manages more than one department, he or she controls the sum of all the budgets for those departments. Find the managerids of managers who control more than $5 million. (2 points)

(e) For each department with more than 4 full-time-equivalent employees (i.e., where the part-time and full-time employees add up to at least that many full-time employees), print the did together with the number of employees that work in that department. (2 points)