ASHESI UNIVERSITY

CS424 ADVANCED DATABASE SYSTEMS

Summer 2024 –MIDTERM EXAM (100 pts, 12.5 pts each)

Consider the following relational schema. An employee can work in more than one department; the *pct_time* filed of the Works relation shows the percentage of time that a given employee works in a given department.

Emp(*eid:* **integer**, *ename:* **string**, *age:* **integer**, *salary:* **real**)
Works(*eid:* **integer**, *did:* **integer**, *pct_time:* **integer**)
Dept(*did:* **integer**, dname: **string**, *budget:* **real**, *managerid:* **integer**)

Write the following queries in SQL:

a. Print the names and ages of each employee who works in both the Hardware department and the Software department.
b. For each department with more than 20 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.
c. Print the name of each employee whose salary exceeds the budget of all of the departments that he or she works in.
d. Find the *managerids* of managers who manage only departments with budgets greater than $1 million.
e. Find the *enames* of managers who manage the departments with the largest budgets.
f. 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.
g. Find the *managerids* of managers who control the largest amounts.
h. Find the *enames* of managers who manage only departments with budgets larger than $1 million, but at least one department with budget less than $5 million.