**Homework 4 Solution**

**Maximum:** 100pts  
**Note:** This homework is to be done by each student individually.   
**Purpose of homework:** To become familiar with the foundations of relational database querying

**Problem 1: SQL Queries About Employment.** [100 pts]

Relation Emp

eid Integer,

ename Char Width 255,

age Integer,

salary Float

PRIMARY KEY (eid)

relation Works

eid Integer,

did Integer,

pct\_time Integer

PRIMARY KEY (eid,did),

FOREIGN KEY (eid) REFERENCES Emp (eid),

FOREIGN KEY (did) REFERENCES Dept (did);

relation Dept

did Integer,

dname Char Width 255,

budget Float,

managerid Integer,

PRIMARY KEY (did)

First, you need to download the dataset HW4 Data from your assignment in canvas and extract the files.

Using the same method given in Problem 1 Homework 3, Create tables in SQLDeveloper and import the data in the tables.

You have to import the data in 3 different tables.

1. Find the names and ages of each employee who works in both the Hardware department and the Software department.

ENAME AGE

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Mary Johnson 44

Stanley Browne 23

Select E.ename, E.age

From Emp E, Works W, Dept D

Where E.eid = W.eid

AND D.did = W.did

AND D.dname = 'Hardware'

AND E.eid IN

(SELECT E2.eid

FROM Emp E2, Dept D2, Works W2

WHERE E2.eid = W2.eid

AND D2.did = W2.did

AND D2.dname = 'Software');

alternative answers:

Select E.ename, E.age

From Emp E, Works W, Dept D

Where E.eid = W.eid

AND D.did = W.did

AND D.dname = 'Hardware'

INTERSECT

Select E.ename, E.age

From Emp E, Works W, Dept D

Where E.eid = W.eid

AND D.did = W.did

AND D.dname = 'Software';

Select E.ename, E.age

From Emp E, Dept D1, Dept D2, Works W1, Works W2

Where E.eid = W1.eid

AND D1.did = W1.did

AND D1.dname = 'Hardware'

AND E.eid = W2.eid

AND D2.did = W2.did

AND D2.dname = 'Software';

2. For each department with more than 10 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.

DID COUNT

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6 22

2 26

Select D.did, COUNT (\*)

FROM Dept D, Works W

WHERE D.did = W.did

GROUP BY D.did

HAVING SUM(W.pct\_time) >= 2000;

3. Retrieve the name of each employee whose salary exceeds the budget for all of the departments that he or she works in.

ENAME

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Patricia Jones

Linda Davis

SELECT E.ename

FROM Emp E

WHERE E.salary > (SELECT Max(D.budget)

FROM Works W, Dept D

WHERE E.eid = W.eid

AND D.did = W.did

);

alternative answers:

SELECT E.ename

FROM Emp E

WHERE E.salary > All (SELECT D.budget

FROM Works W, Dept D

WHERE E.eid = W.eid

AND D.did = W.did

);

4. Find the managerids of managers who manage only departments with budgets greater than $1 million.

MANAGERID

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578875478

489456522

287321212

548977562

SELECT Distinct managerid

FROM Dept

Group By managerid

Having Min(budget) > 1000000;

alternative answers:

SELECT Distinct managerid

FROM Dept

WHERE budget > 1000000

AND managerid NOT IN (SELECT Distinct managerid

FROM dept

WHERE budget < 1000000

);

SELECT Distinct D.managerid

FROM Dept D

WHERE 1000000 < All (SELECT budget

FROM Dept D2

WHERE D2.managerid = D.managerid

);

5. Find the enames of managers who manage the departments with the largest budgets.

ENAME

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Linda Davis

SELECT E.ename

FROM Emp E, Dept D

WHERE E.eid = D.managerid

AND D.budget = (SELECT MAX(budget)

FROM Dept

);