INFO20003 Tutorial – Week 5

(Tutorial: Relational algebra and translation to SQL)

Objectives:

This tutorial will cover:

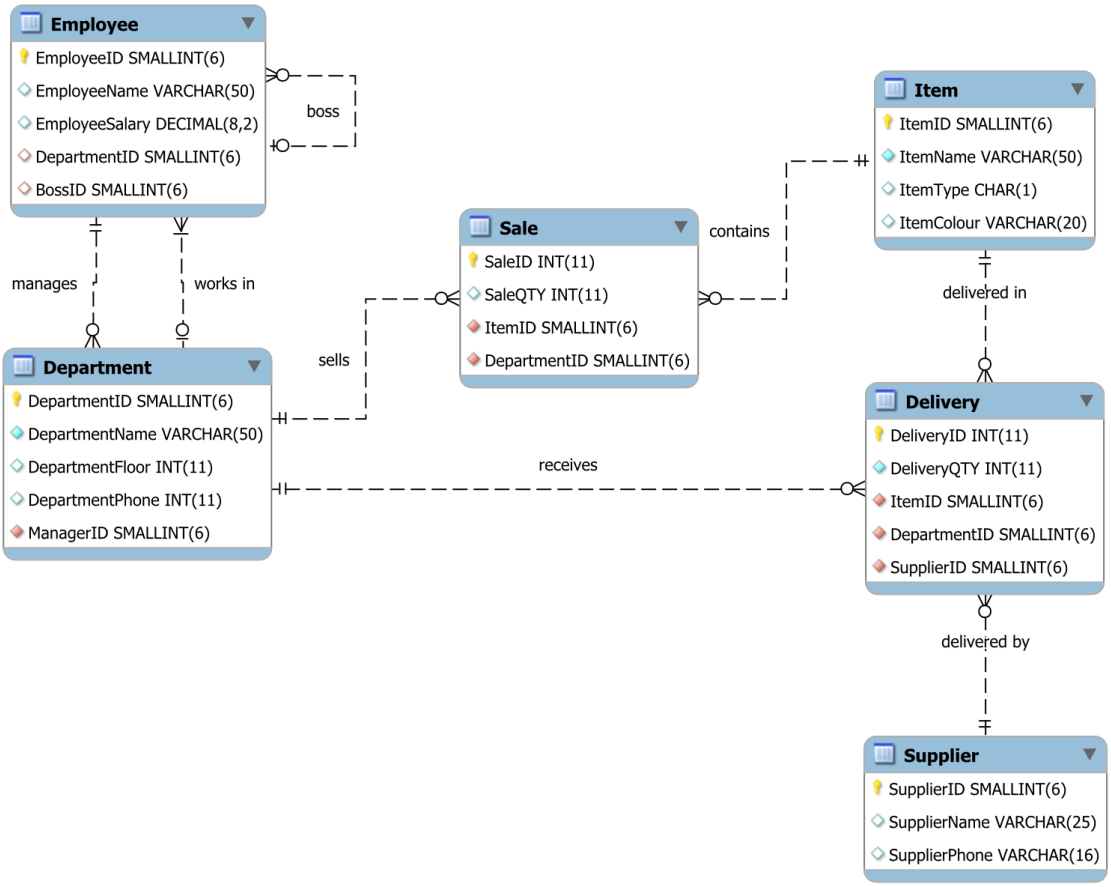
I. Relational algebra (RA) review – 15 mins
II. Relational algebra and SQL statements – 35 mins

Exercises:

1. RA review

- Fundamental operations
  - Removal operators: Selection (σ) and Projection (π)
  - Set operators: Set-difference (–) and Union ($\cup$)
  - Combine the rows from two relations: Cross Product ($\times$)
- Compound operations
  - Intersection ($\cap$)
  - Natural Join ($\bowtie$)
  - Condition Join (Theta/Inner Join)

2. Consider the following schema:



Solve the following problems using relational algebra (RA) and translate to SQL statements:

a. Find the names of all employees.
b. Find the names of all employees in department number 1.
c. List the names of green items of type C.
d. Find the items sold by the departments on the second floor (only show ItemID).
e. Find the names of brown items sold by the Recreation department.
f. Find the employees whose salary is less than half that of their managers.