PRINCE OF SONGKLA UNIVERSITY

FACULTY OF ENGINEERING

**Final Examination:** Semester 2 **Academic Year:** 2007

**Date:** 25/02/2008 **Time:** 1330-1630

**Subject Number:** 241-212 **Room:** A400

**Subject Title:** Intro to Database and Information

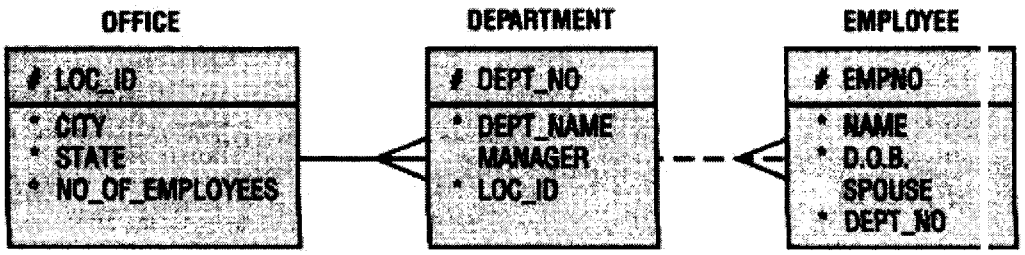
**Instructions:**

- There are ~~9~~ 8 **questions,** ~~4~~ 3 **pages and 100 marks.** Answer all questions.
- Write answers on the answer book.
- **Opened note only one single paper (A4). Books are not allowed.**
- Calculator is allowed.
- Write your name and student code on all pages.
- Clearly number your answer.
- Any unreadable parts will be considered wrong
- Attempt all questions.

**ทุจริตในการสอบมีโทษขั้นต่ำปรับตกในรายวิชานี้ และพักการเรียน 1 ภาคการศึกษา**

**-- โทษสูงสุดคือ ไล่ออก –**

1. Diagram below is an E-R Diagram at physical level. Write SQL corresponding to given requirements. (20 pts)




Additional Information

- EMPLOYEE, the spouse name is optional, whereas the employee name, department, and date of birth are mandatory.
- 'Financial' department has 10 as its DEPT_NO

1.1. Create 'employee' table (all known constraints MUST be given) (5 pts)

1.2. A new employee joins 'Financial' department. (3 pts)

- EMPNO => 4055110
- NAME => 'John Doe'
- D.O.B. => 10/02/1980

1.3. Mr. John Doe who has 4055110 as his EMPNO requests to change his date of birth to 10/02/1981. (3 pts)

1.4. Delete Mr. John Doe information from table Employee. (3 pts)

1.5. Create a view to summarize number of employees in each department under LOC_ID=1. If any department has no employee, 0 shall be displayed. (6 pts)

2. Do you agree with given statements? Also, give your reasons. Your answer must not exceed 3 lines. (15 pts)

2.1. View can increase level of security in DBMS.

2.2. Database re-design should be done only when some mistakes are found.

2.3. Forward engineer should be use to produce data model from a database schema in DBMS.

2.4. In order to allow other transactions to read locked data, exclusive lock must be used.

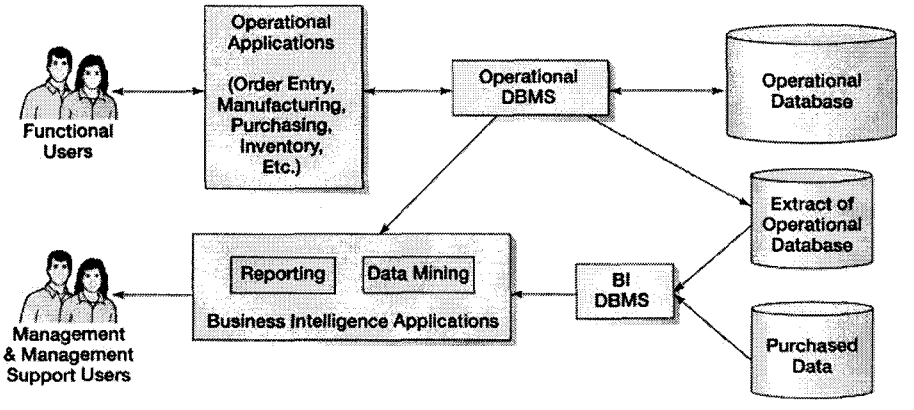
2.5. SQL Injection Attack will not occur if DBA carefully design the database.

3. Write a paragraph that best explains connection between two words. Your answer must not exceed 3 lines. (9 pts)
   3.1. Trigger & Application Logic
   3.2. EXIST & IN
   3.3. Optimistic Lock & Pesimistic Lock

4. Give all 4 attributes of 'Transaction'. Also, explain why they are important. (6 pts)

5. Explain step by step how DBMS can 'undo' an incomplete transaction when it is recovering from a crash. (5 pts)

6. A sale manager of 'ABC' department store would like to know what will happen if he want to sell a new item. Use diagram below to explain how a BI application can suggest such information. (5 pts)




7. Suppose you got a project from SIAM2B Company to develop E-commerce system for selling their products via the internet. The requirements of the data in the database of a store as follows:

   - Each ***product*** is represented. The data about a product consists of 8 main attributes which are **product code, product name, product group, price, discount price, color product category** and the **manufacturer.**
   - From the product entity, product color, product group and manufacturer of the product are the data that often added and modified.
   - Each customer is represented. The data about ***name, address, city, country*** and ***email-address.***
   - Each purchase is represented. The data about an ***order number, ordered date, payment date, delivered date*** and ***order status***

- Each manufacturer is represented. The data about a manufacturer are its **name**, and **addr ss.**

From the given requirements, answer the following questions. (25 pts)

7.1 Draw an ER diagram for the above information. Use ERwin (Crow's Foot) notation **only** to answ er this question. (5 pts)

7.2 Before implementation process you have to transform data models to database designs. There are many steps that you have to concern.

a) Create a table for each entity. You have to specify all necessary information, such as pri nary key, data type, to build a complete table. (5 pts)

b) Verify normalization of each entity (if there is exist) (4 pts)

c) Create relationships by placing foreign key (2 pts)

7.3 What is ODBC? How is ODBC related to the web-based application system?

Write the picture to explain the relation of web server, ODBC and DBMS. (3 pts)

7.4 What is JDBC? , and what issue must be addressed when connecting to MySQL using JDBC? (3 p ts)

7.5 MySQL is easy to use and its features and functions are well implemented. But MySQL lacks so ne features of a modern DBMS. What features that do not support in MySQL? (3 pts)

8. Answer the following questions which relate to **information system** topic. (15 pts)

8.1 What is knowledge management system? Give an example. (3 pts)

8.2 What is the difference between MIS and DSS? (3 pts)

8.3 In system development, there are 5 main steps which are **system investigation, system analysi s, system design, system implementation** and **system maintenance.** Explain the functionality of eacl step. (5 pts)

8.4 What is the role of CIO (Chief Information Officer)? (2 pts)

8.5 The large company like Tesco (Lotus) uses a CRM (Customer relationship management) prograr ıs to improve the performance of company's operations. What is the advantage of CRM to this compan ? (2 pts)