1. (10%)What mechanisms DBMSs generally prodide to enforce integrity consraints or business rules? Describe them briefly.

2. (10%)What is a database trigger? Describe one example where you need database triggers.

3. (20%)Given a company database schema where DNO references DNUMBER as follows:

EMPLOYEE

FNAME	LNAME	SSN	BDATE	SEX	SALARY	SUPERSSN	DNO

DEPARTMENT

DNAME	DNUMBER	MGRSSN	MGRSTARTDATE

Write expressions in SQL for the database queries, database definition, and database manipulation below:

(a) Create table Employee and Department with primary key constraints and foreign key constraints.

(b) Insert the following facts into the database:

Employee John(FName) Smith (LName): ssn=123456789, Sex=M, Salary=50000, No supervisor, and works for department 5 (DNO=5).

(c) Retrieve the average salary and number of employees for each department.

(d) Retrieve the names of employees who works for research department.

4. (10%) The table below maintains the authorship information of acaemic papers. A paper with a paper ID and a title can be written by multiple authors. The table also records the address of each author. Please describe the main pronblems of the schema design and how you redesign the table to avoid such problems.

PaperAuthors:

Paper ID	Paper with	Author 1 Name	Author 2 Name	Author 3 Name	Author 1 Address	Author 2 Address	Author 3 Address

5. (10%)Consider the following relation:

CAR_SALE(Car#, Date_sold, Salesman#, Commision%, Discount_amt)

Assume that a car may be sold by multiple salesmen and hence {CAR#, SALESMAN#} is the primary key. Additional dependencies are: Date_sold ->Discount_amt and Salesman# ->commission%. Based on the given primary key, is this relation in 1NF, 2NF, or 3NF? Why or why not? How would you successively normalize it into 3NF completely?

注意：背面有試題

6. (20%) 以下(a)-(j)是以ASP連結資料庫常用的指令，請描述其作用(每小題2分):

(a) Set Conn = Server.CreateObject("ADODB.Connection")

(b) Conn.Open "Driver={MySQL}; Datebase= mydb; Server=140.115.135.100; UID=john; PWD=johnpw"

(c) Set RS = Conn.Execute("select FName, LName from employee where salary>50000")

(d) RS("FName")

(e) RS.EOF

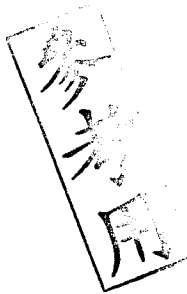(f) RS.Fields.Count

(g) RS(i).Name

(h) RS(i)

(i) RS.MovePrev

(j) RS.MoveFirst

7. (10%) Name two algorithms that can be used to obtain classification rules from data.

8. (10%) If we set minimal support = 0.5 and minimal confidence = .5, what association rules can we find from the database below:

Transaction ID	Items bought
20	A, B, C
10	A, C
40	A, D
50	B, E, F