

系級：_____ 學號：_____ 姓名：_____

(請先將所有題目瀏覽一遍再作答)

Part I. E-R Diagram and Relational Database (28%)

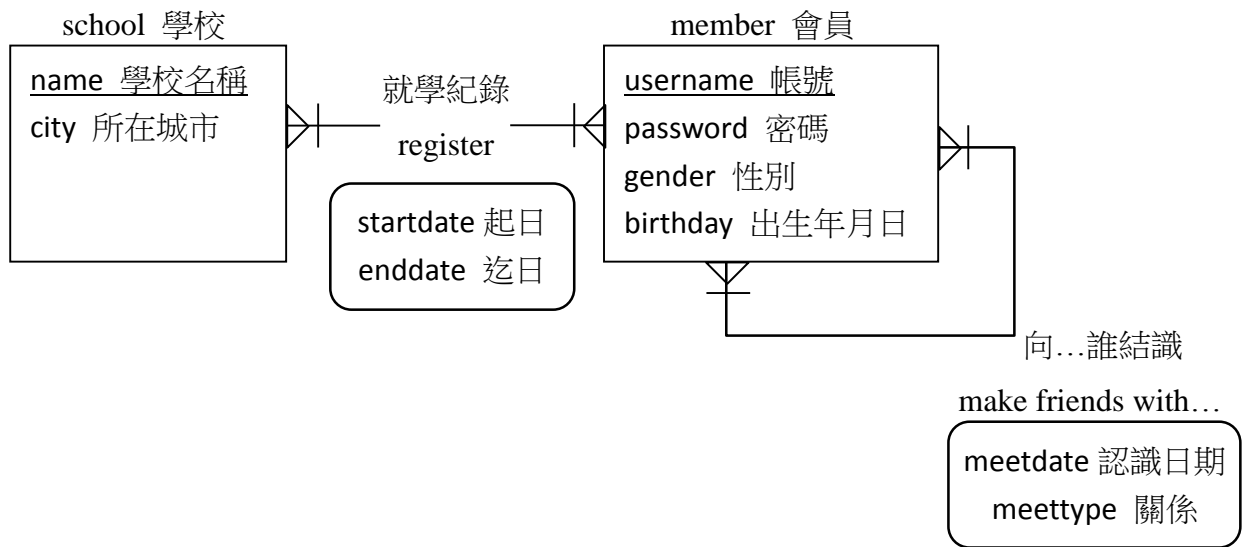
1. DBMS stores shared data in a central repository, and acts as a controlling agent, to manage data in a standardized, convenient form. List briefly at least 3 major disadvantages or problems if processing data without a DBMS.
2. Explain briefly and give an example for each of the following.
 - (a) Composite attribute
 - (b) Derived attribute
 - (c) Weak entity type
3. Draw an example for each of the following:
 - (a) Ternary relationship
 - (b) Unary relationship
4. In a relational database, explain briefly each of the following terms.
 - (a) Identifier
 - (b) Referential integrity
 - (c) Deletion anomaly
 - (d) Partial functional dependency
 - (e) Third normal form
 - (f) Union compatibility

Part II. Exercise

5. According to the following business rules, please draw an E-R diagram, which includes entities, relationships, and cardinalities. (10%)

- There are departments (部門), employees (員工), and various clubs (社團).
- Every department has more than one employee; every employee may work as a manager for only one department.
- Every department must have a manager (經理); any employee may work as a manager for only one department.
- Some departments have more than one clubs, some departments have none; every club must belong to a department.
- Every employee may optionally join a club; every club has more than one employee.

6. You want to develop ‘another Facebook’ as your startup business. According to the following E-R diagram please transform it into a set of relations, and indicate clearly the primary keys, foreign keys, and the referential integrity constraints. (10%)



7. The following relation called GRADE Report for a university.

Table 5-4 Grade Report Relation

<u>Student_ID</u>	Student_Name	Campus_Address	Major	<u>Course_ID</u>	Course_Title	Instructor_Name	Instructor_Location	Grade
168300458	Williams	208 Brooks	IS	IS 350	Database Mgt	Codd	B 104	A
168300458	Williams	208 Brooks	IS	IS 465	Systems Analysis	Parsons	B 317	B
543291073	Baker	104 Phillips	Acctg	IS 350	Database Mgt	Codd	B 104	C
543291073	Baker	104 Phillips	Acctg	Acct 201	Fund Acctg	Miller	H 310	B
543291073	Baker	104 Phillips	Acctg	Mkgt 300	Intro Mktg	Bennett	B 212	A

- (a) Please indicate the functional dependencies in the relation. (8%)
- (b) Decompose the relation into a set of 3NF relations. (8%)

PART III. SQL

8. An internet company hires you as Database administrator for online auction services. (線上拍賣服務). According to the following tables, please write the SQL statement for each requirement. (36%)

Member 會員					Bid_Record 競標紀錄			
會員編號	姓名	門號	銀行帳號	居住地區	會員編號	物品編號	出價時間	出價金額
id	name	phone_no	bank_acct	area	m_id	i_id	bid_time	bid_price
char(10)	char(10)	char(10)	char(10)	char(8)	char(10)	char(10)	char(16)	integer
M01	John	0935000003	8220000003	台北	M04	I01	2012/11/18 09:00	5000
M02	Mary	0935000004	0120000004	台南	M02	I01	2012/11/19 13:00	10000
M03	Bob	0918000005	8220000005	高雄	M04	I01	2012/11/21 09:00	12000
M04	Kevin	0939000006	0150000006	台北	M01	I02	2012/11/17 14:00	6500
					M02	I02	2012/11/20 13:00	8000
					M01	I03	2012/11/18 13:00	10500

Item 物品						
物品編號	類別	名稱	是否為新品	起標價	結標日期	所屬會員
id	type	name	status	price	end_time	m_id
char(10)	char(10)	char(20)	char(2)	char(8)	char(16)	char(10)
I01	手機	IPHONE 4	N	1	2012/11/20 09:00	M01
I02	平板	NEXUS 7	Y	6000	2012/11/30 13:00	M03
I03	手機	HTC J	Y	10000	2012/11/20 09:00	M02
I04	手機	SONY X10	N	5000	2012/11/23 14:00	M02

(a) Write the SQL statement to create table Member. (id is the primary key and can't be null).

寫出建立 Member 表格的 SQL 指令，其中 id 為主鍵且不可無值

(b) Write the SQL statement to add a field 'gender' to table Member.

寫出新增 gender 性別欄位置 Member 表格的 SQL 指令

(c) Write the SQL statement to update the member Bob's phone number to 0918000007.

寫出更改會員 Bob 的手機號碼為 0918000007 的 SQL 指令

(d) List the names and price of the mobile phones, whose starting prices are lower than 6000.

列出起標價低於 6000，類別為手機的物品名稱與價格

(e) List the names of the members, whose phone numbers start with 0935.

列出門號開頭為 0935 的會員姓名

(f) List the number of members for every area, in descending order.

列出各地區的會員人數，由人數多至少排序

(g) List the ids of members, who ever bid two or more times.

列出曾競標 2 次以上的會員編號（不分物品）

(h) List the names of members, who ever bid for item I03.

列出曾對物品 I03 競標的會員姓名

(i) List all the bid records, including the member name, time, price, and item name.

列出所有出價紀錄，包括會員姓名、出價時間、出價金額以及出價之物品名稱

END.