Exercise 1:

```
// 員工 (員工 ID, 姓名, 職位, 地址)
CREATE TABLE employee(
emp_id          char(5) NOT NULL,
emp_name        varchar(20),
position        char(20),
address         varchar(50),
PRIMARY KEY (emp_id)
);
```

```
// 書籍 (ID, 書名, 數量, 價錢)
CREATE TABLE book(
book_id         char(6) NOT NULL,
book_name       varchar(60),
amount          int,
price           numeric(10,3),
PRIMARY KEY (book_id)
);
```

```
// 會員 (ID, 姓名, 主修科, 狀況)
CREATE TABLE member(
member_id       char(5),
member_name     varchar(50),
major           char(20),
status          char(10),
PRIMARY KEY (member_id)
);
```

```
// 借書記錄 (ID, 員工 ID, 書號, 會員 ID, 借書期, 日期)
CREATE TABLE loan_transaction(
loan_id         char(4),
emp_id          char(5) NOT NULL,
book_id         char(6) NOT NULL,
member_id       char(5),
loan_duration   integer,
loan_date       date,
PRIMARY KEY (loan_id)
);
```

Exercise 2 :

A. Insert data into tables like below: 插入以下資料

Table Name: employee 員工

emp_id	Emp_name	position	Address
Emp01		Data Entry	Jurong 12
Emp02	Bill		Pasir Ris 23
Emp03	Chen	Librarian	Suntec 34

Table Name: book

Book_id	book_name	amount	Price
Bk01		15	$45
Bk02	Database	3	$50
Bk03	Hardware	27	$55

Table Name: member 會員

member_id	member_name	major	Status
mb01	Ramesh		Lecturer
mb02	John	Information Systems	Lecturer
mb03	Enya	Arts	Lecturer

Table Name: loan_transaction 借書(交易)紀錄

Loan_id	Emp_id	Book_id	Member_id	duration	Loan_date
A12B	emp03	bk01	mb01	4	2004/02/14
C23F	emp02	bk02	mb02	15	2003/11/08
D45T	emp01	bk03	mb03	2	2002/03/27
A32R	emp01	bk03	mb04	11	2002/08/09

B. 更新資料: 員工 Bill (職位=Librarian, 地址="")

emp_id	Emp_name	position	Address
Emp01		Data Entry	Jurong 12
Emp02	Bill	Librarian	
Emp03	Chen	Librarian	Suntec 34

更新資料: 把借書記錄 C23F 的借出日期改為 2003/01/18

Loan_id	Emp_id	Book_id	Member_id	duration	Loan_date
A12B	emp03	bk01	mb01	4	2004/02/14
C23F	emp02	bk02	mb02	15	2003/01/18
D45T	emp01	bk03	mb03	2	2002/03/27
A32R	emp01	bk03	mb04	11	2002/08/09

更新資料: 把 2 月份借出的書號改為 bk02

Loan_id	Emp_id	Book_id	Member_id	duration	Loan_date
A12B	emp03	bk02	mb01	4	2004/02/14
C23F	emp02	bk02	mb02	15	2003/01/18
D45T	emp01	bk03	mb03	2	2002/03/27
A32R	emp01	bk03	mb04	11	2002/08/09

C. Delete record which loan_duration is smaller or equal to 10 at loan_transaction table. 刪除記錄: 借書期≤10

Loan_id	Emp_id	Book_id	Member_id	duration	Loan_date
~~A12B~~	~~emp03~~	~~bk02~~	~~mb01~~	~~4~~	~~2004/02/14~~
C23F	emp02	bk02	mb02	15	2003/01/18
~~D45T~~	~~emp01~~	~~bk03~~	~~mb03~~	~~2~~	~~2002/03/27~~
A32R	emp01	bk03	mb04	11	2002/08/09

Delete record which the year of loan_date is smaller than 2003. 刪除 2003 年以前的所有借書紀錄

Loan_id	Emp_id	Book_id	Member_id	duration	Loan_date
C23F	emp02	bk02	mb02	15	2003/01/18
~~A32R~~	~~emp01~~	~~bk03~~	~~mb04~~	~~11~~	~~2002/08/09~~

D. Alter Table 更改表格結構

Add one column 'telephone' at employee table which data type is char and field size is 15. 新增欄'telephone' (文字,15 字元)

emp_id	Emp_name	position	Address	Telephone
Emp01		Data Entry	Jurong 12	NULL
Emp02	Bill	Librarian		NULL
Emp03	Chen	Librarian	Suntec 34	NULL

E. Drop the table of loan_transaction 移除資料表格

SQL Exercises/The warehouse 貨倉

```
// 貨倉(代碼,地點,容量)
CREATE TABLE Warehouses (
Code INTEGER PRIMARY KEY NOT NULL,
Location VARCHAR(255) NOT NULL ,
Capacity INTEGER NOT NULL
);
```

```
// 包裹(代碼,貨品內容,價值,貨倉)
CREATE TABLE Boxes (
Code VARCHAR(255) PRIMARY KEY NOT NULL,
Contents VARCHAR(255) NOT NULL ,
Value REAL NOT NULL ,
Warehouse INTEGER NOT NULL
);
```

Sample dataset

```
INSERT INTO Warehouses VALUES
(1,'Chicago',3),
(2,'Chicago',4),
(3,'New York',7),
(4,'Los Angeles',2),
(5,'San Francisco',8);
```

```
INSERT INTO Boxes VALUES
('0MN7','Rocks',180,3),
('4H8P','Rocks',250,1),
('4RT3','Scissors',190,4),
('7G3H','Rocks',200,1),
('8JN6','Papers',75,1),
('8Y6U','Papers',50,3),
('9J6F','Papers',175,2),
('LL08','Rocks',140,4),
('P0H6','Scissors',125,1),
('P2T6','Scissors',150,2),
('TU55','Papers',90,4);
```

Exercises 3

1. Select all warehouses. 貨倉

SELECT

2. Select all boxes with a value 價值 larger than $150.

SELECT

3. Select all distinct contents 貨品內容 in all the boxes 包裹.
SELECT
4. Select the average value 平均價值 of all the boxes 包裹.
SELECT
5. Select the warehouse code and the average value of the boxes in each warehouse. 每個貨倉的包裹平均價值
SELECT
6. Same as previous 同上 exercise, but select only those warehouses where the average value 平均價值(>150) of the boxes is greater than 150.
SELECT
7. Select the code of each box, along with the name of the city the box is located in.每盒包裹(貨品)及貨倉地區名稱
SELECT
8. Select the warehouse codes, along with the number of boxes in each warehouse. 每個貨倉及包裹數量

/* Not taking into account empty warehouses 不包括空倉 */
SELECT/* Taking into account empty warehouses 包括空倉 */
SELECT
9. Select the codes of all warehouses that are saturated 飽和 (a warehouse is saturated if the number of boxes in it is larger than the warehouse's capacity). 飽和=包裹總數量>貨倉容量
SELECT
10. Select the codes of all the boxes located in Chicago. 所有芝加哥包裹
SELECT
11. Create 建立 a new warehouse 新貨倉 in New York with a capacity for 3 boxes.
INSERT
12. Create 建立 a new box 新包裹, with code "H5RT", containing "Papers" with a value of $200, and located in warehouse 2.
INSERT
13. Reduce the value of all boxes by 15%. 所有包裹價值減少 15%
UPDATE
14. Apply a 20% value reduction to boxes with a value larger than the average value of all the boxes. 包裹的價值若高於平均值，則價值減少 20%

UPDATE
15. Remove all boxes with a value lower than $100. 移除少於$100 的包裹
DELETE
16. Remove all boxes from saturated warehouses. 若該貨倉已飽和，移除所有包裹
DELETE