

資料庫期末專案 READ ME 文件

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<執行說明>

- [1] 校外請使用 VPN 連線，校內網則可以直接連上資料庫
- [2] 沒有介面的實作，使用 Java 呈現結果(console)
- [3] 程式碼分為 Query.java、Application.java。要使用查詢語句請執行 Query.java；若為不同使用者要使用資料庫的功能則執行 Application.java
- [4] Query.java 內包含期末專案所要求的 5 個查詢語句程式碼
- [5] Application.java 包含 5 個使用者會需要用到的功能，請根據檔案中的指示進行選擇及輸入資料
選擇要使用的功能，分為 5 種：

```
1.customer service --> check inventory at stores
2.call center staff_1 --> lookup customer information
3.call center staff_2 --> quickly enter orders
4.warehouse staff_1 --> update the inventory of product in the warehouse
5.warehouse staff_2 --> insert new product info in the warehouse and product table
** enter 0 exit **
Please enter the command number you want:
```

1. 客戶服務 → 查看各商店的庫存
2. 呼叫中心 → 查看顧客的資訊
3. 呼叫中心 → 快速新增訂單
4. 倉庫 → 紀錄進貨
5. 倉庫 → 更新庫存
6. 輸入 0 結束程式

輸入 1 以查看商店的庫存：

```
<store info>
store name : 高雄1店
telephone : 072152976
address : 高雄市新興區中山二路500號
brand : Bose
name : SoundLink Mini 揚聲器II
inventory : 17
=====
brand : Samsung
name : GalaxyS23
inventory : 10
=====
brand : ASUS
name : TUF Gamin VG249QMIA
inventory : 0
=====
brand : Apple
name : MacBook Air
inventory : 13
=====
<store info>
store name : 高雄2店
telephone : 073663881
address : 高雄市燕巢區深中路62號
brand : Bose
name : SoundLink Mini 揚聲器II
inventory : 0
=====
brand : Samsung
name : GalaxyS23
inventory : 18
=====
brand : ASUS
name : TUF Gamin VG249QMIA
inventory : 0
=====
brand : Apple
name : MacBook Air
inventory : 57
=====
```

```
1
<store info>
store name : 台中店
telephone : 0423015511
address : 台中市西區美村路一段289號
brand : Bose
name : SoundLink Mini 揚聲器II
inventory : 26
=====
brand : Samsung
name : GalaxyS23
inventory : 37
=====
brand : ASUS
name : TUF Gamin VG249QMIA
inventory : 39
=====
brand : Apple
name : MacBook Air
inventory : 5
=====
```

- 可以看到各個分店的存貨狀況，包含產品資訊及庫存數量

輸入 3 以新增訂單：

```
Please enter the command number you want:
3
Is he/she a new customer ? <yes or no>
yes
Please enter the following 3 input :
<customer name> --> string
<product phone number> --> string
<customer address> --> string
** Please separete with space **
=====
```

```
REDVELVET 0920140801 首爾特別市城東區往十里路83-21
here is your insert new customer:
customer id : 7
customer name : REDVELVET
customer phone number : 0920140801
customer address : 首爾特別市城東區往十里路83-21
=====

here is your insert new online customer:
online customer id : 4
customer id : 7
=====
```

- 若為新客戶，則輸入新客戶的資訊為其新增進資料庫，並可看到該筆新增的客戶資料，且會預設為線上客戶(因為是電話訂購視為線上訂購)

```
<product id>: you can choose one of it.
1:
    Type: 音響
    Brand: Bose
    Name: Sound Mini 揚聲器II
    Price: 6900
2:
    Type: 手機
    Brand: Samsung
    Name: Galazy S23
    Price: 28000
3:
    Type: 螢幕
    Brand: ASUS
    Name: TUF Gaming VG249QM1A
    Price: 7000
4:
    Type: 電腦
    Brand: Apple
    Name: MacBook Air
    Price: 30900
=====
Please enter the following 5 input :
<customer id> --> integer
<product id> --> integer(according to the upper content)
<contract id> --> integer or NULL(if it's not contract order then enter NULL)
<order date> --> yyyy/mm/dd
<number> --> integer(number of the product that customer bought)
** Please separete with space **
=====
```

- 接著為新增訂單(或是原本即為舊客戶直接新增訂單也是這部分的步驟)
- 可以從<product id>查看要新增的訂單產品為何者，於下方根據規定依序輸入訂單所需資訊：
<customer id>、<product id>、<contract id>、<order date>、<number>，並以空白鍵隔開

```
7 1 NULL 2023/06/16 1
here is your insert order:
order id : 12
customer id : 6
product id : 1
order date : 2023-06-16
number : 1
total : 6900
contract id : 0
=====
```

- 最後可看到所新增的訂單資料(由資料庫撈出的資料)

輸入 4 以更新倉庫的庫存：

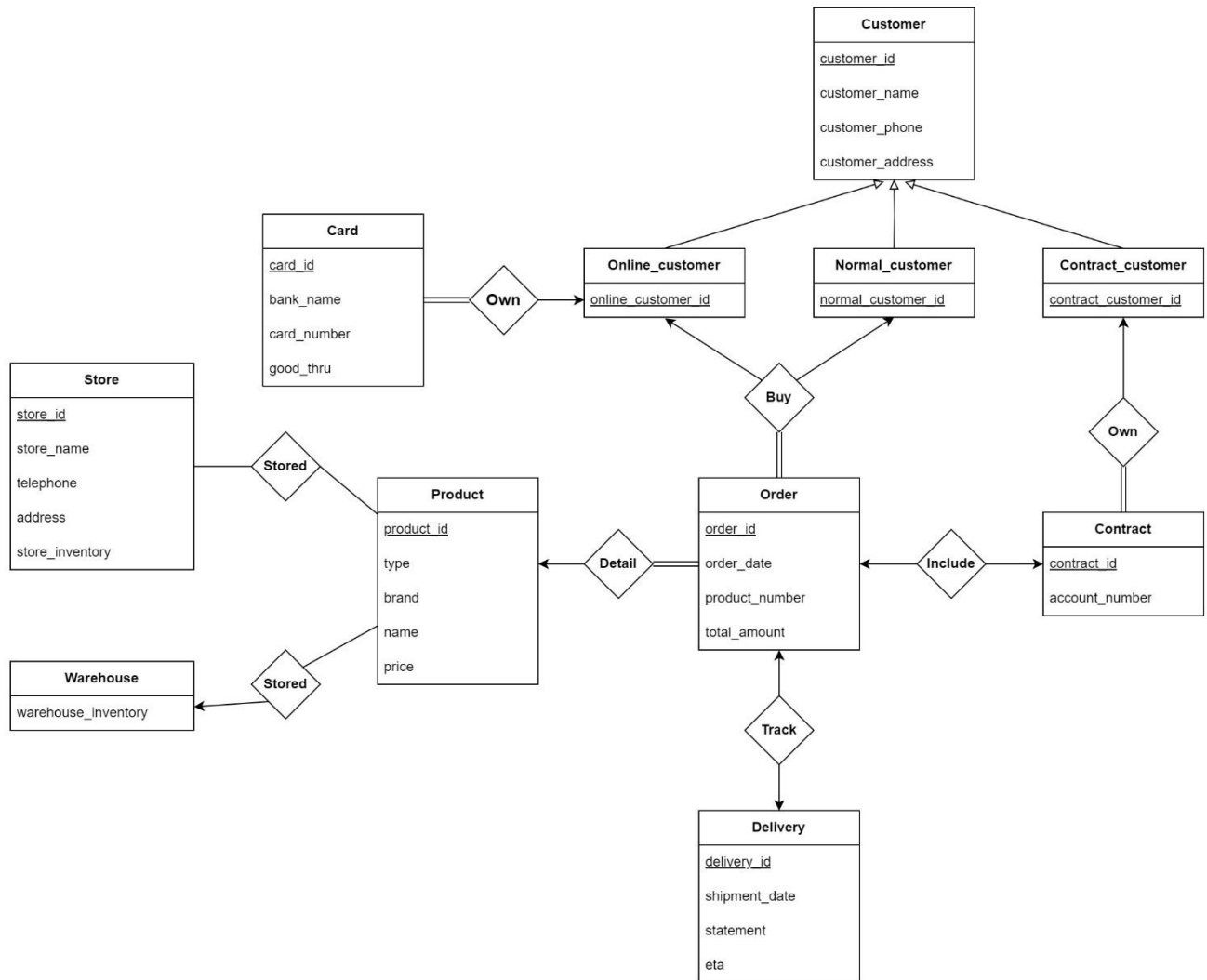
```
4
Products in the warehouse:
product id: 1
inventory: 47
product type: 音響
product brand: Bose
product name: SoundLink Mini 揚聲器II
product price: 6900
=====
product id: 2
inventory: 38
product type: 手機
product brand: Samsung
product name: GalaxyS23
product price: 28000
=====
product id: 3
inventory: 72
product type: 螢幕
product brand: ASUS
product name: TUF Gamin VG249QM1A
product price: 7000
=====
product id: 4
inventory: 20
product type: 電腦
product brand: Apple
product name: MacBook Air
product price: 30900
=====
Please enter the <product id> and <inventory> that you want to update
** <inventory>: please enter the number of incoming shipments **
** Please seperate with space **
=====
```

- 會先顯示倉庫中目前所存的商品及數量，可作為下面輸入的參考
- 輸入要更改的<product_id>、<inventory>，對新進的貨物做數量上的更改，並以空白鍵隔開

```
4 5
here is your update:
product id : 4
inventory : 25
product type : 電腦
product brand : Apple
product name : MacBook Air
product price : 30900
=====
```

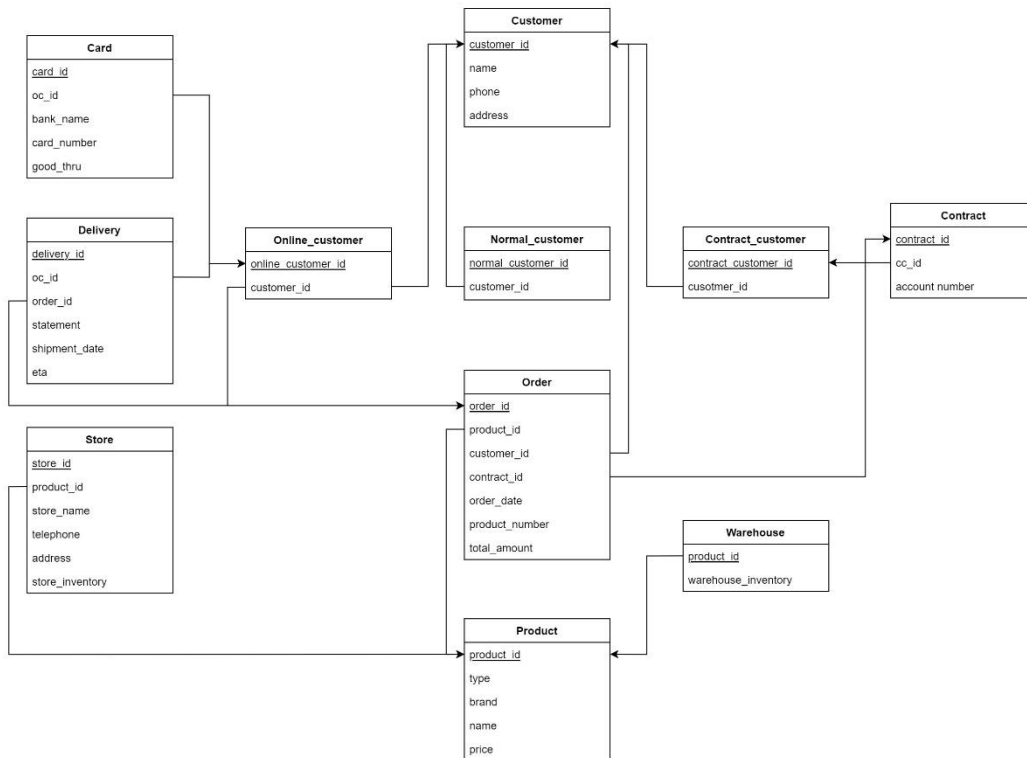
- 最後可看到所更改的存貨資料(由資料庫撈出的資料)

< ER Diagram >



- 訂單跟客戶之間存在『購買』關係，為一對多的關係(一位客戶可以有許多筆訂單)，且訂單為 total participation
- 訂單跟商品存在『細節』關係，為一對多的關係(一筆訂單可以有許多樣商品)，且訂單為 total participation
- 訂單跟貨運存在『追蹤』關係，為一對一的關係
- 商品跟商店與倉庫各自存在『儲存』關係，為多對多以及一對多的關係(只有一個倉庫)
- 線上客戶跟信用卡存在『擁有』關係，為一對多的關係(一位客戶可以有許多張信用卡)，且信用卡為 total participation
- 合約客戶跟合約存在『擁有』關係，為一對多的關係(一位客戶可以有許多筆合約)，且合約為 total participation
- 合約跟訂單存在『包含』關係，為一對一的關係

< Relational Schema >



- Customer :
 - customer_id (INT)
 - name (VARCHAR)
 - phone (VARCHAR)
 - address (VARCHAR)
- Online_customer :
 - online_customer_id (INT)
 - customer_id (INT)
- Normal_customer :
 - normal_cusomer_id (INT)
 - customer_id (INT)
- Contract_customer :
 - contract_customer_id (INT)
 - customer_id (INT)
- Contract :
 - contract_id (INT)
 - cc_id (INT)
 - account_number (VARCHAR)
- Card :
 - card_id (INT)
 - oc_id (INT)
 - bank_name (VARCHAR)
 - card_number (VARCHAR)
 - good thru (DATE)

➤ Order :

- order_id (INT)
- product_id (INT)
- customer_id (INT)
- contract_id (INT)
- order_date (DATE)
- product_number (INT)
- total_amount (INT)

➤ Product :

- product_id (INT)
- type (VARCHAR)
- brand (VARCHAR)
- name (VARCHAR)
- price (INT)

➤ Delivery :

- delivery_id (INT)
- oc_id (INT)
- order_id (INT)
- statement (VARCHAR)
- shipment_date (DATE)
- eta (DATE)

➤ Warehouse :

- product_id (INT)
- warehouse_inventory (INT)

➤ Store :

- store_id (INT)
- product_id (INT)
- store_name (VARCHAR)
- telephone (VARCHAR)
- address (VARCHAR)
- store_inventory (INT)

< Table 資料量：count(*) >

customer_008 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.customer r;
```

Page 1 Read 1 rows in 17.75 sec

	count(*)
1	6

normal_customer_004 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.normal_customer r;
```

Page 1 Read 1 rows in 0.35 sec

	count(*)
1	2

online_customer_006 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.online_customer r;
```

Page 1 Read 1 rows in 0.31 sec

	count(*)
1	3

card X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.card d;
```

Page 1 Read 1 rows in 0.45 sec

	count(*)
1	1

contract_customer_008 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.contract_customer r;
```

Page 1 Read 1 rows in 0.03 sec

	count(*)
1	2

contract_003 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.contract t;
```

Page 1 Read 1 rows in 0.85 sec

	count(*)
1	2

order_015 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.order r;
```

Page 1 Read 1 rows in 0.75 sec

	count(*)
1	10

product_002 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.product t;
```

Page 1 Read 1 rows in 0.04 sec

count(*)

4

delivery_011 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.delivery y;
```

Page 1 Read 1 rows in 0.73 sec

count(*)

5

warehouse X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.warehouse e;
```

Page 1 Read 1 rows in 0.12 sec

count(*)

4

store_010 X

File Edit Inherit SQL Run Query Run Script Explain Stop Commit Rollback Help

```
1 SELECT
2   count(*)
3 FROM
4   '411077008'.store e;
```

Page 1 Read 1 rows in 0.05 sec

count(*)

12

< 查詢結果截圖 >

```
Query1:
customer id : 2
customer name : ITZY
total : 65900
=====
```

```
Query3:
brand : ASUS
name : TUF Gamin VG249QM1A
=====
```

```
Query2:
product id : 4
type : 電腦
brand : Apple
name : MacBook Air
total : 154500
=====
product id : 2
type : 手機
brand : Samsung
name : GalaxyS23
total : 56000
=====
product id : 3
type : 螢幕
brand : ASUS
name : TUF Gamin VG249QM1A
total : 56000
=====
```

```
Query4:
order id : 7
brand : Bose
name : SoundLink Mini 揚聲器II
=====
order id : 9
brand : Bose
name : SoundLink Mini 揚聲器II
=====
order id : 8
brand : Apple
name : MacBook Air
=====
```

```
Query5:
資料更新前:
order id : 1
product id : 4
statement : 未出貨
shipment date : null
eta : 2023-06-21
warehouse inventory : 25
=====
order id : 6
product id : 3
statement : 已到貨
shipment date : 2023-02-08
eta : 2023-02-19
warehouse inventory : 72
=====
order id : 7
product id : 1
statement : 運輸中
shipment date : 2023-06-08
eta : 2023-06-08
warehouse inventory : 47
=====
order id : 8
product id : 4
statement : 未出貨
shipment date : null
eta : 2023-01-13
warehouse inventory : 25
=====
order id : 9
product id : 1
statement : 損壞/遺失
shipment date : 2023-05-31
eta : 2023-06-13
warehouse inventory : 47
=====
```

```
資料更新後:
order id : 1
product id : 4
statement : 未出貨
shipment date : null
eta : 2023-06-21
warehouse inventory : 25
=====
order id : 6
product id : 3
statement : 已到貨
shipment date : 2023-02-08
eta : 2023-02-19
warehouse inventory : 72
=====
order id : 7
product id : 1
statement : 運輸中
shipment date : 2023-06-08
eta : 2023-06-08
warehouse inventory : 47
=====
order id : 8
product id : 4
statement : 未出貨
shipment date : null
eta : 2023-01-13
warehouse inventory : 25
=====
order id : 9
product id : 1
statement : 損壞/遺失
shipment date : 2023-05-31
eta : 2023-06-13
warehouse inventory : 47
=====
```