

*employee (ID, person\_name, street, city)*  
*works (ID, company\_name, salary)*

Figure 1

1. (40%) Use MariaDB to declare the two relations in Figure 1, where the primary keys are underlined.

  - (1) For each relational schema, choose an appropriate domain for each attribute. Define the attribute “person\_name” as “not null”. Other attributes except primary keys can have null values.
  - (2) Declare the primary key of each relation. Note that the primary key of the *works* relation consists of two attributes. After finishing steps (1)-(2), capture the corresponding Web page as the answer. (所抓之圖如 PHP&MariaDB 教學手冊 (lab25.pdf) 第 20 頁下方之圖).

The screenshot shows two phpMyAdmin sessions side-by-side.

**Employee Table Structure:**

#	名稱	類型	編碼與排序	屬性	空值(NULL)	預設值	備註	額外資訊	動作
1	<u>ID</u>	int(10)		否	無				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>
2	person_name	varchar(30)	utf8_general_ci	否	無				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>
3	street	varchar(50)	utf8_general_ci	是	NULL				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>
4	city	varchar(50)	utf8_general_ci	是	NULL				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>

**Works Table Structure:**

#	名稱	類型	編碼與排序	屬性	空值(NULL)	預設值	備註	額外資訊	動作
1	<u>ID</u>	int(10)		否	無				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>
2	company_name	varchar(50)	utf8_general_ci	否	無				<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>
3	salary	int(10)		UNSIGNED	是	NULL			<a href="#">修改</a> <a href="#">刪除</a> <a href="#">更多</a>

**Index Definition for Works Table:**

動作	鍵名	類型	獨一	緊湊	標位	基數	編碼與排序	空值(NULL)	備註
<a href="#">編輯</a>	<a href="#">重新命名</a>	<a href="#">刪除</a>	PRIMARY	BTREE	是	0	A	否	
			company_name		否	0	A	否	

- (3) Declare the attribute “ID” of the “works” relation as a foreign key referencing the “employee” relation. Please choose the option “restrict” for deletion and choose the option “cascade” for update. After declaration, capture the corresponding Web pages as the answers. (所抓之圖如教學手冊第 23 頁最下方之圖)

The screenshot shows the phpMyAdmin interface for the 'thrid\_homework' database. In the 'works' table structure, an external constraint named 'Has\_no\_id\_in\_employee' is being created. The constraint is defined as:

```
ALTER TABLE `works` ADD CONSTRAINT `Has_no_id_in_employee` FOREIGN KEY (`ID`) REFERENCES `employee`(`ID`) ON DELETE RESTRICT ON UPDATE CASCADE;
```

The 'Constraints' tab is selected, and the 'External' section is active. The constraint details are as follows:

- 動作**: 刪除 (Delete) - Has\_no\_id\_in\_employee
- ON DELETE**: RESTRICT
- ON UPDATE**: CASCADE
- 欄位**: ID
- 資料庫**: thrid\_homework
- 資料表**: employee
- 欄位**: ID

- (4) Insert at least five tuples into the two relations, respectively. Capture the corresponding Web pages as the answers. (所抓之圖如教學手冊第 18 頁下方之圖)

The screenshot shows the 'employee' table in the 'thrid\_homework' database. The data grid displays the following records:

ID	person_name	street	city
1	Tom	Maple Street	Taipei
2	Alice	Oak Avenue	Taipei
3	Jane	Pine Lane	Chicago
4	Clara	Cedar Drive	Houston
5	Daniel	Elm Boulevard	Phoenix

顯示第 0 - 4 列 (總計 5 筆, 查詢用了 0.0002 秒。)

SELECT \* FROM `works`

	ID	company_name	salary
<input type="checkbox"/>	1	FirstBank	100000
<input type="checkbox"/>	2	TSMC	50562
<input type="checkbox"/>	3	SmallBank	70856
<input type="checkbox"/>	4	TSMC	78453
<input type="checkbox"/>	5	FirstBank	95482

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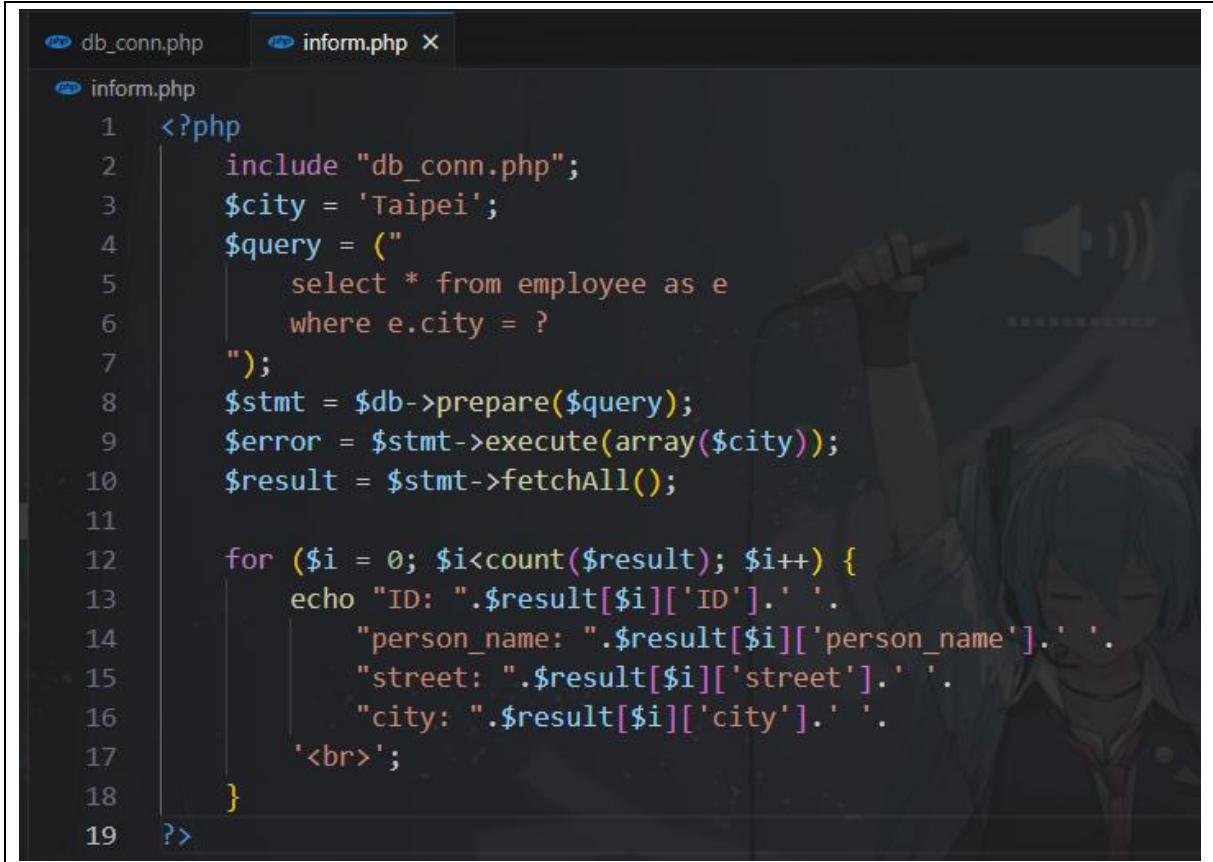
2. (60%) Write a PHP program to show all the content of the “employee” relation for those who live in Taipei. The data should be displayed in a table. (注意：需用 **prepared statement** 的寫法，部分程式可參考教學手冊第 30、32、37 頁所示)

(1) Give the program listing.

```

db_conn.php x inform.php
db_conn.php
1 <?php
2     $user = 'root';
3     $password = '123456789';
4     try {
5         $db = new PDO ('mysql:host=localhost;dbname=thrid_homework;charset=utf8',$user,$password);
6         $db->setAttribute (PDO::ATTR_ERRMODE, PDO::ERRMODE_EXCEPTION);
7         $db->setAttribute (PDO::ATTR_EMULATE_PREPARES, false);
8     }
9     catch (PDOException $e) {
10         Print "Error!: ".$e->getMessage();
11         die();
12     }
13 ?>

```



```
db_conn.php inform.php
inform.php
1 <?php
2     include "db_conn.php";
3     $city = 'Taipei';
4     $query = (
5         select * from employee as e
6         where e.city = ?
7     );
8     $stmt = $db->prepare($query);
9     $error = $stmt->execute(array($city));
10    $result = $stmt->fetchAll();
11
12    for ($i = 0; $i < count($result); $i++) {
13        echo "ID: ".$result[$i]['ID'].''.
14            "person_name: ".$result[$i]['person_name'].''.
15            "street: ".$result[$i]['street'].''.
16            "city: ".$result[$i]['city'].''.
17            '<br>';
18    }
19 ?>
```

- (2) Capture the screen which shows the answer based on your database content. (Your answer of Question 1(4).) (注意：畫面必須擷取到網址)



localhost/inform.php/

ID: 1 person\_name: Tom street: Maple Street city: Taipei  
ID: 2 person\_name: Alice street: Oak Avenue city: Taipei

繳交作業方式：

1. Please submit your homework in a **single PDF** file to TronClass by 11/23 11:59pm.
2. 第2題依**學號末碼**區分，請同學注意勿答錯題。
3. 注意：若作業答案有一模一樣者，則皆為零分，不論你是不是原始創作者。