WEB CONNECTION WITH SQLs

Contents

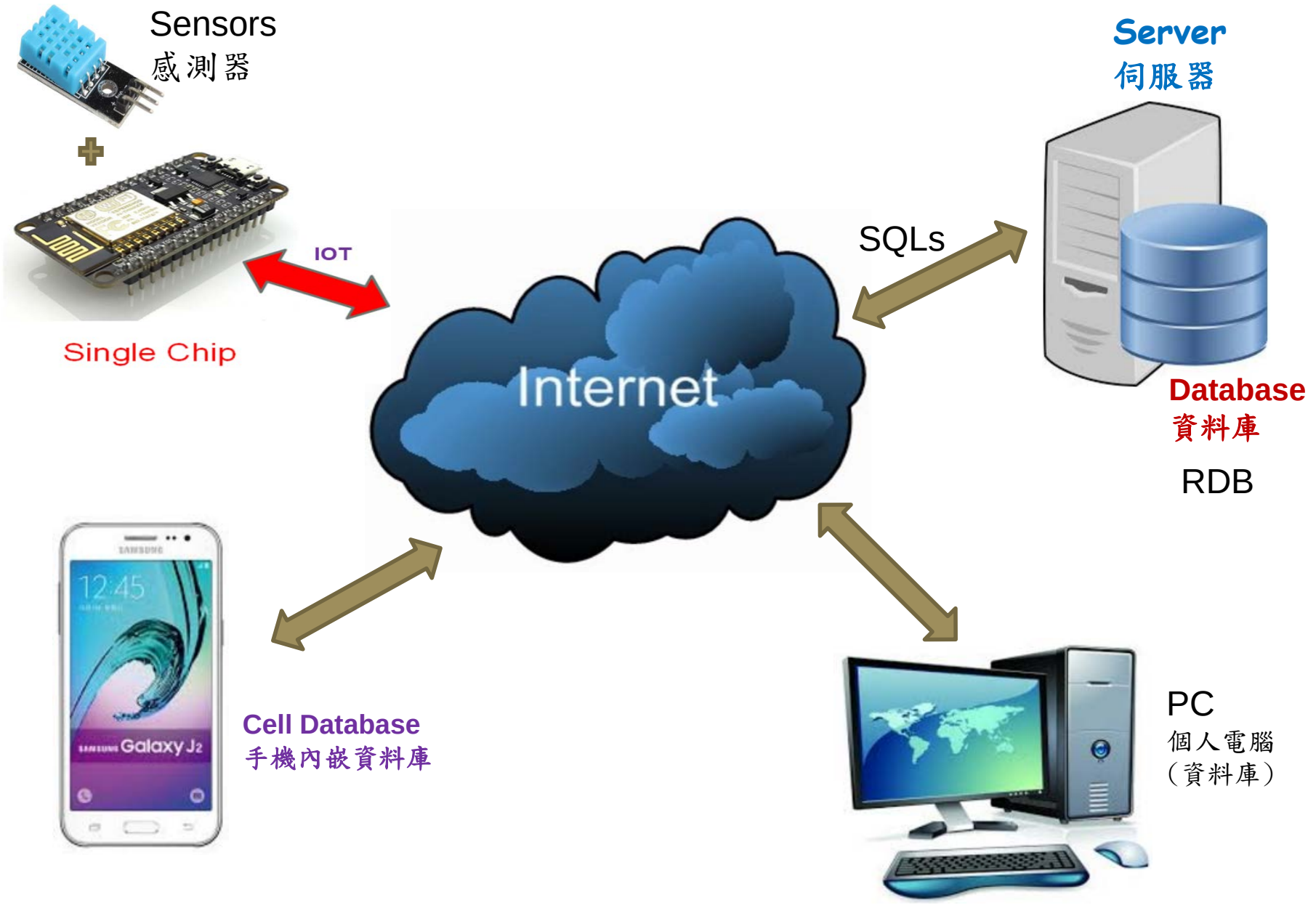
- A html in Apache Server
- Connect to DB by using php and SQL
- Query Execution Plan
- Ajax
- php and file operations for Web
- Connect to DB by using python and SQL

Purpose

- This Chapter is intended to teach you how to use SQLs inside high-level programs that will access relational database and get responses from it for user.

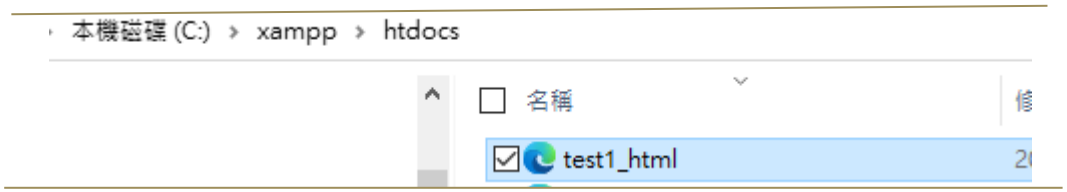
A html in Apache Server

The Data Flow for Server + Database

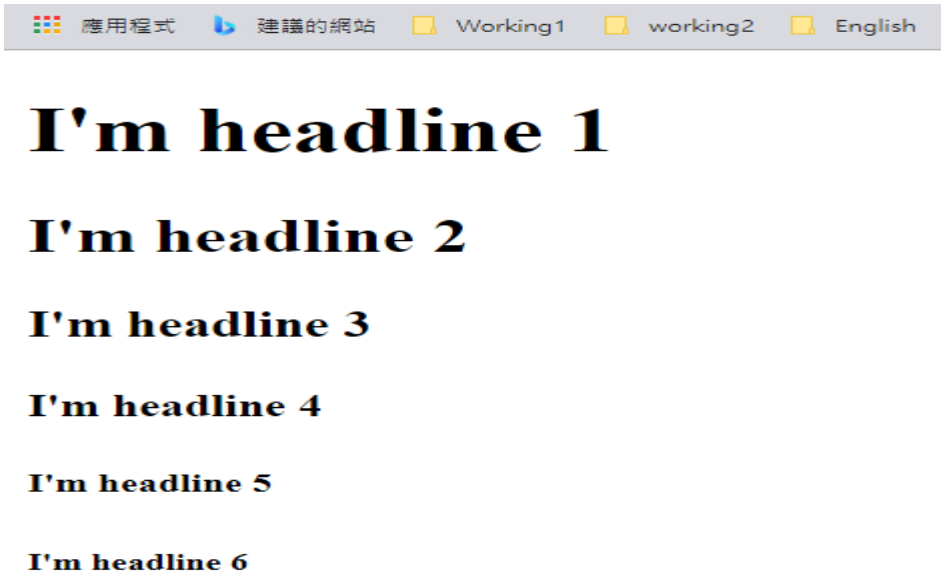


Start-up

- Place the test1.html on C:\xampp\htdocs



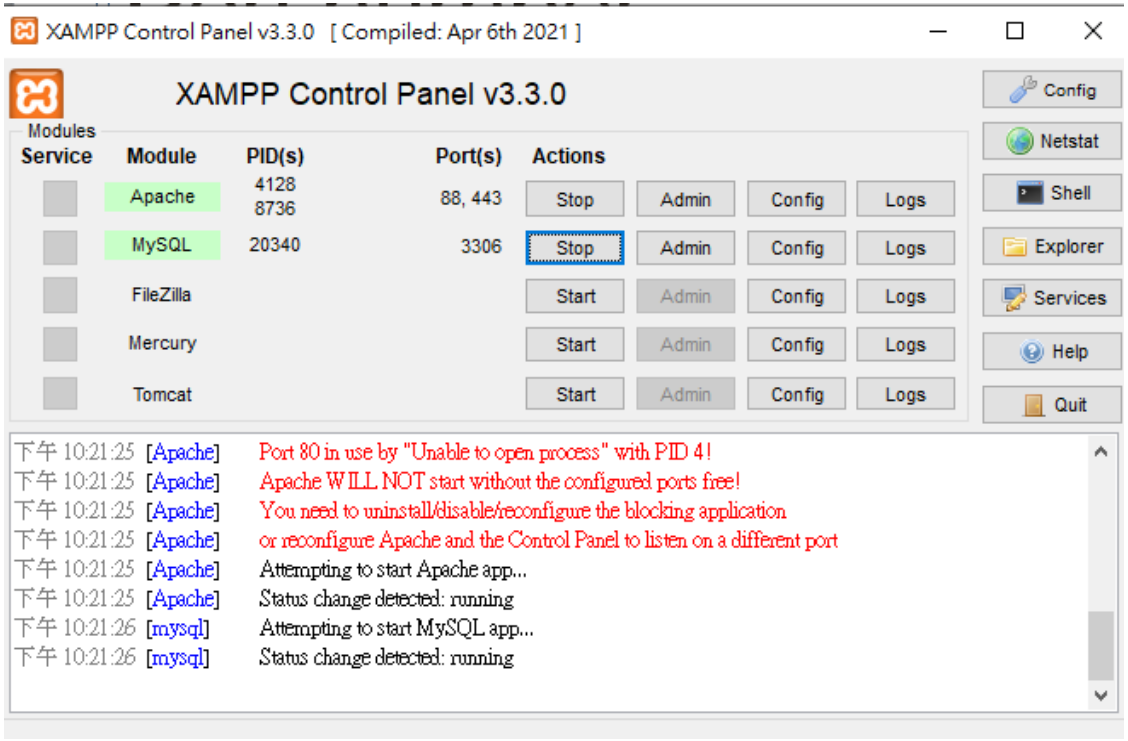
- Invoke the html on the browser under Apache server by typing http://localhost/test1.html



test1.html

Port number

- A port number is **the logical address of each application or process that uses a network or the Internet to communicate**. A port number uniquely identifies a network-based application on a computer.



Connect to the Internet

- What happen based on the current Apache and MySQL environment? Can we connecting to the Internet?

- If you were Bill Gates, what kind of network skills you will use to design **Messanger**?

Connect to DB by using php and SQL

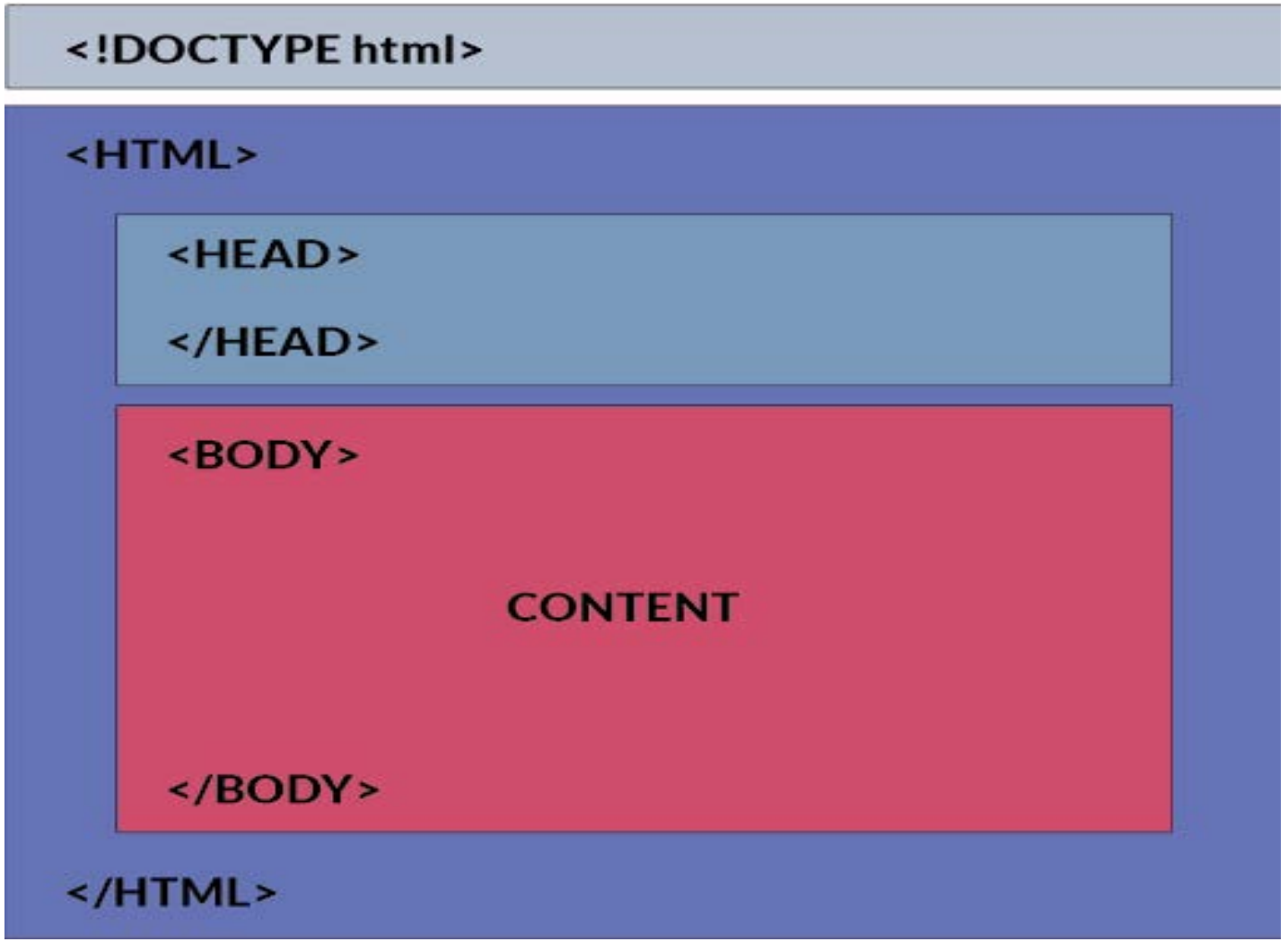
php

- php web framework
  - Laravel : MVC
  - CodeIgniter: MVC
    - **MVC** is a software approach that separates application logic from presentation.
- Traditional way

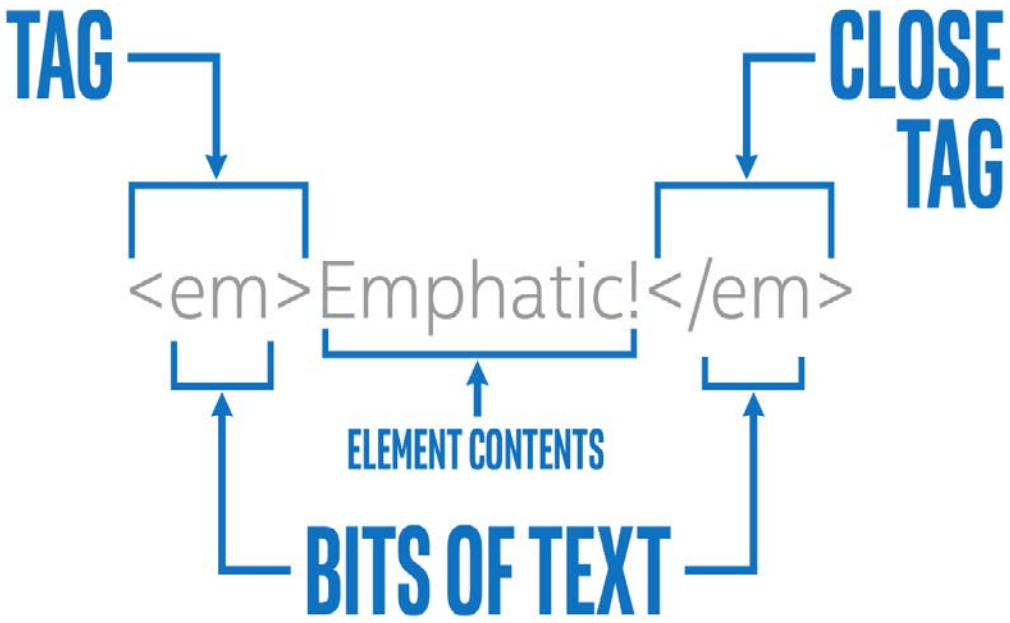
Connection

- Put *html* code and *php* code together in a file
- Separate *html* code and *php* code ← This handout uses this way.
- html: front-end code (前端程式)
- php: back-end code (後端程式)

html code (*.html*)

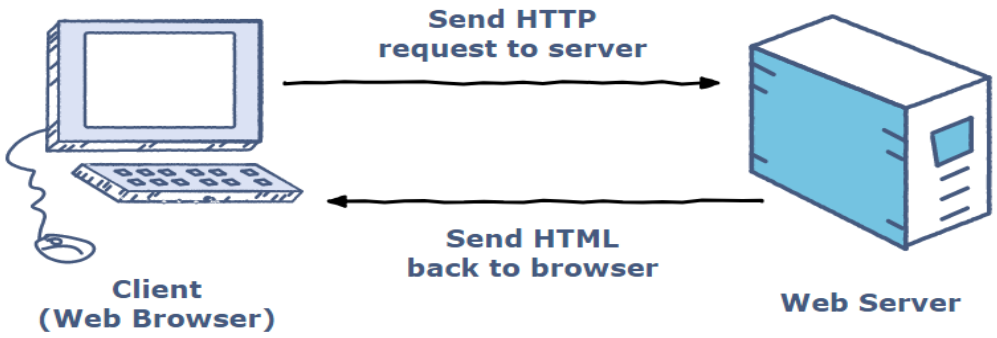


Html Tag (標籤)v.s. Element(元素)

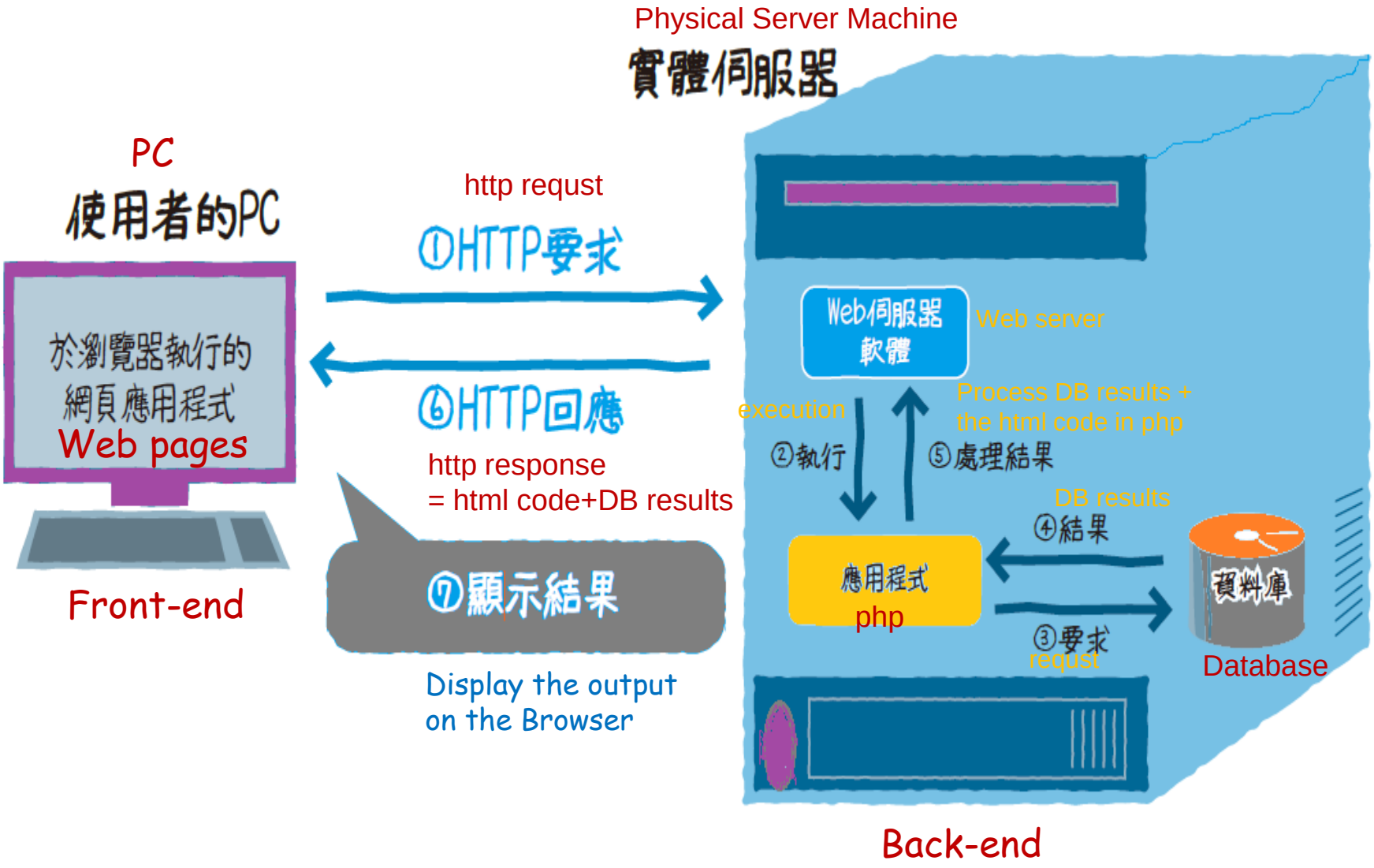


Structure of php code

- PHP is an embedded scripting language; this means that it is possible to write PHP code into an HTML file. Since web browsers can only process HTML files, the web-server converts and embeds the PHP code into one HTML file before sending it to the browser.



- Or, write HTML code into PHP file for response messanges. In this handout with *.html* and *.php*, *.html* is the front-end code. *.php* is the back-end code.
- Web browser process HTML files (the front-end), then send it to the server. The server invoke the corresponding *php* (the back-end) which is linked and set up in the html file. The *php* code requests data to DB. Then, get the DB results and embedded html code returned from the server


Physical Server Machine
實體伺服器
PC
使用者的PC
於瀏覽器執行的
網頁應用程式
Web pages
Front-end
http requst
①HTTP要求
⑥HTTP回應
http response
= html code+DB results
⑦顯示結果
Display the output
on the Browser
Web伺服器
軟體
Web server
execution
②執行
⑤處理結果
Process DB results +
the html code in php
DB results
④結果
應用程式
php
③要求
requst
資料庫
Database
Back-end

- There are HTML tags for PHP code to indicate the start and end of PHP code in an HTML file or PHP file, such as

  `<?php` php-code-here `?>`

- The start tag and end tag for PHP code are the ones most recommended and widely used.
- **Commenting for PHP:** # and // are used to comment out a single line of code, while /* and */ indicate the start and end of a commented block of code.
- Place ";" on the end of PHP statement

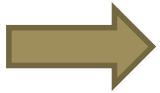
```php
<?php

print "Hello";
echo " World!\n";

/* Commenting out a block of code
    echo 'This line won't execute.\n';
*/

# The last line does not require a semicolon
print "The last line."

?>
```



Output

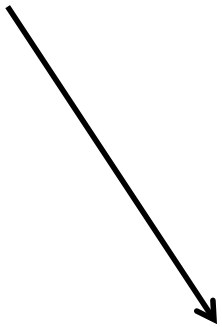
```
Hello World!
The last line.
```

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



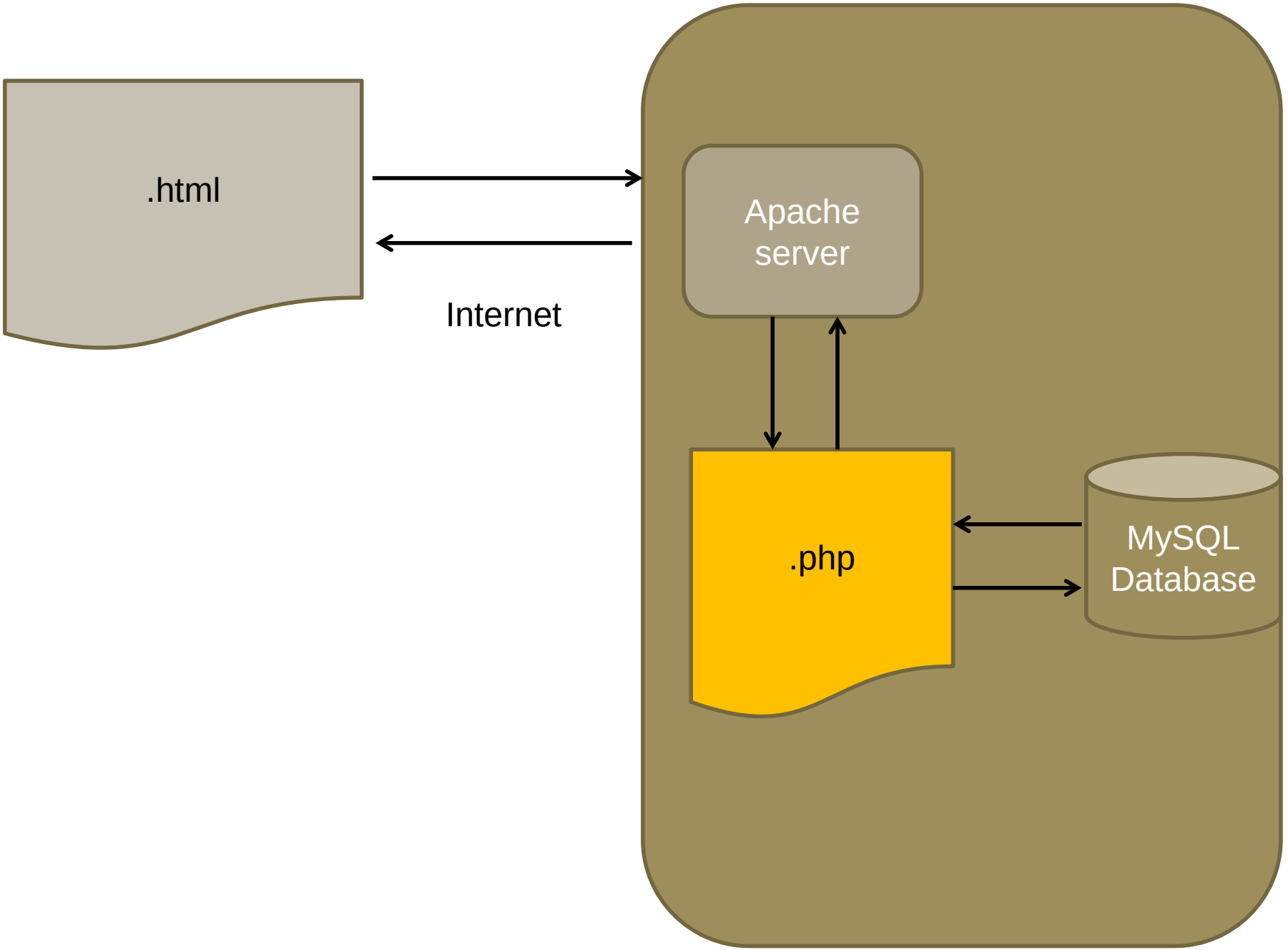
ksu_std_table: the number of students as follows:

Department	the number of students
	5
CS	5
IE	3
IM	2
QQ	1

records found!

Back

ksu_select3en.html
ksu_select3en.php


.html
Internet
Apache server
.php
MySQL Database

Key Points

```php
$db_host = "localhost";
$db_name = "ksu_database";
$db_table = "ksu_std_table";
$db_user = "root";
$db_password = "";
```

PHP variables

```php
echo "<table border='1'>
<tr>
  <th> Department </th>  <th> the number of students </th>
</tr>";
```

HTML code is embedded
In PHP code.

```php
$result = mysqli_query($conn,
  "SELECT ksu_std_department, count(1) FROM ksu_std_table group by ksu_std_department");
```

SQL statement is embedded
In PHP code.

```php
while($row = mysqli_fetch_array($result))
{
  echo "<tr>";
  echo "<td>" . $row['ksu_std_department'] . "</td>";
  echo "<td>" . $row['count(1)'] .   "</td>";
  echo "</tr>";
}
```

Database column name is
embedded in PHP code.

ksu_select3en.html

Link to php program

```
<!doctype html>
<html>
<head>
   <meta charset="utf-8">
   <title>Select exercise</title>
</head>
<body>
   <h3> ksu select operation </h3>
   <!--不對字符編碼 -->
   <form enctype="multipart/form-data" method="post"
         action="ksu_select3en.php">
     Query ksu_std_table for the number of students from every department
     <br/>
     <br/>
     <input type="submit" name="sub" value="Query"/>
   </form>
</body>
</html>
```

ksu_select3en.php

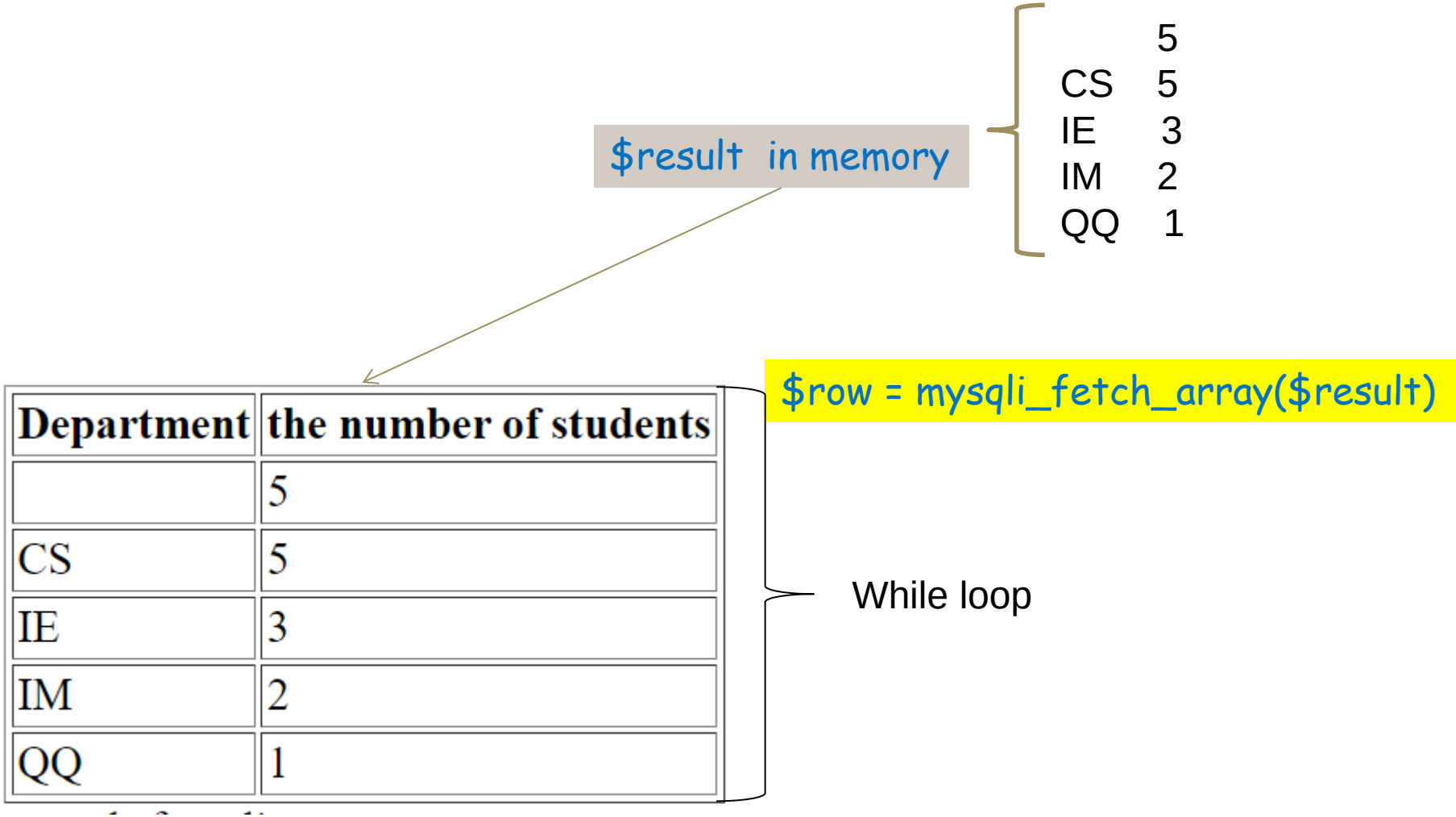
```php
<?php
$db_host = "localhost";
$db_name = "ksu_database";
$db_table = "ksu_std_table";
$db_user = "root";
$db_password = "";
// check connection
$conn = mysqli_connect($db_host, $db_user, $db_password);
if(empty($conn)){
   print  mysqli_error ($conn);
   die ("Unable to connect to DB ! " );
   exit;
}
if(!mysqli_select_db( $conn, $db_name)){
   die("DB is not existed");
   exit;
}
//main scope
mysqli_set_charset($conn,'utf8');

echo "ksu_std_table: the number of students as follows:". "<br/><br/>";
$result = mysqli_query($conn,
  "SELECT ksu_std_department, count(1) FROM ksu_std_table group by ksu_std_department");
echo "<table border='1'>
<tr>
  <th> Department </th>  <th> the number of students </th>
</tr>";

//use mysqli_fetch_array() takes the data from DB
while($row = mysqli_fetch_array($result))
{
  echo "<tr>";
  echo "<td>" . $row['ksu_std_department'] . "</td>";
  echo "<td>" . $row['count(1)'] .   "</td>";
  echo "</tr>";
}
echo "</table>";
echo "records found!"."<br/><br/>";
?>
<form enctype="multipart/form-data"  method="post" action="ksu_select3en.html">
<input type="submit" name="sub" value="Back"/>
</form>
```

SQL

Link to html program



Department	the number of students
	5
CS	5
IE	3
IM	2
QQ	1

Example – Warming up

- Make a minor change in your **php** program

ksu select operation

Query all students from ksu_std_table

Query

The students' information from ksu_std_table:

Department	the number of students	age
QQ	John1	33
CS	John1	22
CS	John Sieg	22
IE	John Sieg	44
IE	Canning	33
IE	Mike Fire	32
IM	Mary Wee	34
IM	WuBer Eat	22
CS	Foot Penny	27
CS	John Sieg	24
CS	1John	22
	33	0
	Mike	0
	Taiwan	0
	sss	0
	dddd	0

records found!

返回

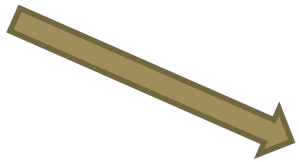
ksu_select3aen.html
ksu_select3aen.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

Department	the number of students
	5
CS	5
IE	3
IM	2
QQ	1

5 records found!

Back

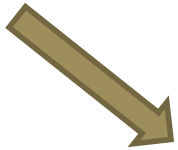
ksu_select4en.html
ksu_select4en.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

Department	the number of students
	5
CS	5
IE	3
IM	2
QQ	1

5 records found!

Back

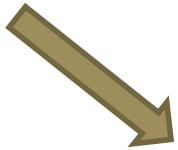
ksu_select4aen.html
ksu_select4aen.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

Department	the number of students
	5
CS	5
IE	3
IM	2
QQ	1

1 records found for empty column!

5 records found!

Back

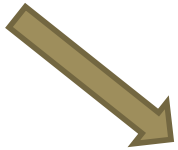
ksu_select4ben.html
ksu_select4ben.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

Department	the number of students
CS	5
IE	3
IM	2
QQ	1

0 records found for empty column!
4 records found!

Back

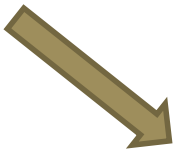
ksu_select4cen.html
ksu_select4cen.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

department	name	grade	memo
	dddd	100	
	sss	100	
	Taiwan	100	
	Mike	100	
	33	100	
CS	1John	100	
CS	John Sieg	55	Failed
CS	Foot Penny	44	Failed
CS	John Sieg	100	
CS	John1	100	
IE	Mike Fire	77	
IE	Canning	100	
IE	John Sieg	99	
IM	WuBer Eat	33	Failed
IM	Mary Wee	80	
QQ	John1	100	

16 records found!

返回

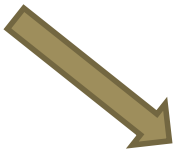
ksu_select5en.html
ksu_select5en.php

Example

ksu select operation

Query ksu_std_table for the number of students from every department

Query



ksu_std_table: the number of students as follows:

department	name	grade	memo
CS	1John	100	
CS	John1	100	
CS	John Sieg	100	
CS	John Sieg	55	Failed
CS	Foot Penny	44	Failed
IE	Mike Fire	77	
IE	Canning	100	
IE	John Sieg	99	
IM	Mary Wee	80	
IM	WuBer Eat	33	Failed
QQ	John1	100	

11 records found!
The number of CS students found is : 5

返回

ksu_select5aen.html
ksu_select5aen.php

Example

ksu select operation

Query ksu_std_table for ...

Department alias: CS

Query

ksu_std_table information is as follows:

Name	Grade	Memo
Foot Penny	44	make up
John Sieg	55	make up
John1	100	
John Sieg	100	
1John	100	

5 records found!

返回

ksu_select6en.html
ksu_select6en.php

Example

ksu select operation

Query ksu_std_table for the following information...

Department alias: CS

Grade: 100

Query

ksu_std_table information is as follows:

Name	Grade	Memo
John1	100	
John Sieg	100	
1John	100	

3 records found!

返回

ksu_select6 aen.html
ksu_select6aen.php

Example

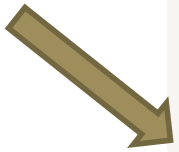
ksu select operation

按查詢ksu_std_table, 查詢底下字串,查到後用 Taiwan取代
(Query ksu_std_table with the following string
that would be replaced with "Taiwan"

For example, The string found out is "John Sieg"
in which "Sieg" is the one you are searching.
And, it will be replace with "Taiwan". And
After the replacement,
"John Taiwan" would be displayed on the browser.

Student name: Sleg

Query



The ksu_std_table information is below:

Original Name	updated name	grade	Memo
John Sieg	John Sieg	100	
John Sieg	John Sieg	99	
John Sieg	John Sieg	55	make up

3 records found!

Back

ksu_select71en.html
ksu_select71en.php

Example

Update Options: Update student name with a student ID in ksu_std_table.

Student ID: 33

New Student Name: William Wang

Update

Student ID --- New Name
33 --- William Wang
record(s) updated

Back

ksu_std_id	ksu_std_name
2323E1	Bill Gate
4040w1	John1
D01	John Sieg
D02	John Sieg
IE01	Canning
IE02	Mike Fire
IE03	Mary Wee
IM01	WuBer Eat
IM02	Foot Penny
IM05	John Sieg
ss	1John
33	William Wang
9898	Mike
777	Taiwan
s	sss
ddd	dddd

ksu_update1en.html
ksu_update1en.php

Example

Update Options: Update student name with a student ID and department ID in ksu_std_table.

(在 ksu_std_table中, 根據學號 與系代號, 尋找對應的學生, 並改其姓名)

Student ID: ss

department ID: CS

new student name: Jacky Chen

Update

ksu_update2en.html
ksu_update2en.php

Student ID --- new name --- department ID
ss --- Jacky Chen --- CS
record(s) updated

Back

ksu_std_id	ksu_std_name
2323E1	Bill Gate
4040w1	John1
D01	John Sieg
D02	John Sieg
IE01	Canning
IE02	Mike Fire
IE03	Mary Wee
IM01	WuBer Eat
IM02	Foot Penny
IM05	John Sieg
ss	Jacky Chen

Example

Update Options: Please update the stuent name with student ID in ksu_std_table.
If cannot be updated, please insert the following data into
student ID and name columns
(若無法更新ksu_std_table, 則加入此學號與 新姓名.
而ksu_std_table其他欄位值, 先不加入)

student ID: sss

new student name: Wonderful Fire

update

sss Wonderful Fire

Cannot find out the sstudent ID: sss
But, inserted into ksu_std_table by the way

student ID --- new name
sss Wonderful Fire
1 record inserted

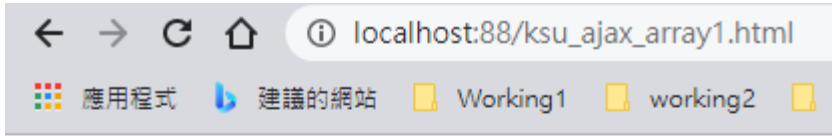
Back

ksu_update+insert1en.html
ksu_update+insert1en.php

Query Execution Plan

Ajax

Example



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Entered Course name:

Search your favourite tutorials:

a

Entered Course name: Android, Apple

Search your favourite tutorials:

appl

Entered Course name: Apple

ksu_ajax_array1.html
ksu_ajax_array1.php

Example

Select a student ID:

Student infomation will be listed here...

IE01

Search the data in the ksu_std_table...

student ID	name	age	grade
IE01	Canning	33	100

IM02

Search the data in the ksu_std_table...

student ID	name	age	grade
IM02	Foot Penny	27	44

ksu_ajax_db1.html
ksu_ajax_db1.php