

Week 4 Lecture:

- Basics of databases
- Working with MySQL databases
- Managing user accounts, databases and tables
- Working with data records
- Accessing MySQL database with PHP
- Creating and deleting databases and tables
- Creating, updating, selecting and deleting records

Working with the MySQL Monitor

- At the `mysql>` command prompt terminate the command with a semicolon

```
mysql> mysql> select * from inventory;
```

item_number	make	model	price	quantity
1	Yamaha	FG7205	279.99	12
2	Toyato	TG	3000.66	3

```
2 rows in set (0.01 sec)
```

- Without a semicolon, the MySQL Monitor enters a multiple-line command and changes the prompt to `->`

```
mysql> SELECT * FROM inventory  
-> WHERE make = "Toyato";
```

- The SQL keywords entered in the MySQL Monitor are *not* case sensitive

showInventory.php

<?php

```
$DBConnect = @mysqli_connect("feenix-mariadb.swin.edu.au",  
    "s1234567", "ddmmyy", "s1234567_db")  
    or die("<p>Unable to connect to the database server.</p>". "<p>Error code ".  
mysqli_connect_errno().": ". mysqli_connect_error()). "</p>";
```

```
// set up the SQL query string - we will retrieve the whole  
// record that matches the name $SQLstring = "select * from inventory";
```

```
$queryResult = @mysqli_query($DBConnect, $SQLstring)  
    or die("<p>Unable to query the inventory table.</p>". "<p>Error code ".  
mysqli_errno($DBConnect). ": ".mysqli_error($DBConnect)). "</p>";
```

Selecting Records

Retrieving Records into an Indexed Array

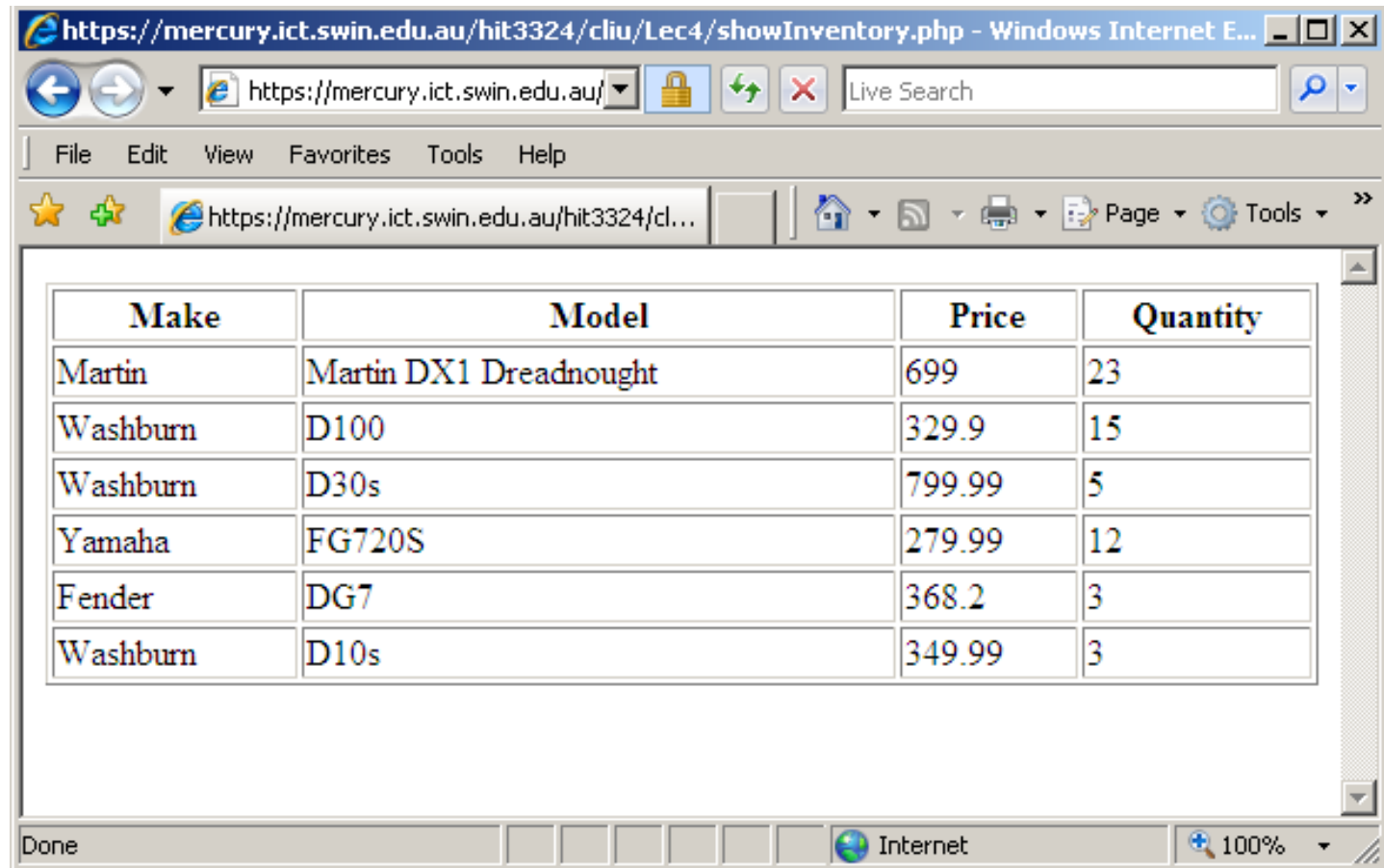
- The `mysqli_fetch_row()` function returns the fields in the current row of a result set into an indexed array and moves the result pointer to the next row

```
$row = mysqli_fetch_row($queryResult);  
while ($row) {  
    echo "<tr><td>{ $row[1] }</td>";  
    echo "<td>{ $row[2] }</td>";  
    echo "<td>{ $row[3] }</td>";  
    echo "<td>{ $row[4] }</td></tr>";  
    $row = mysqli_fetch_row($queryResult);  
}
```

//we have 5 columns \$row[0], \$row[1], \$row[2], \$row[3], \$row[4]

Note: `item_number` in `$row[0]` is not displayed

Output of the Inventory Table



The screenshot shows a web browser window with the address bar displaying <https://mercury.ict.swin.edu.au/hit3324/cliu/Lec4/showInventory.php>. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The toolbar contains various icons for navigation and actions. The main content area displays a table with the following data:

| Make | Model | Price | Quantity |
|----------|------------------------|--------|----------|
| Martin | Martin DX1 Dreadnought | 699 | 23 |
| Washburn | D100 | 329.9 | 15 |
| Washburn | D30s | 799.99 | 5 |
| Yamaha | FG720S | 279.99 | 12 |
| Fender | DG7 | 368.2 | 3 |
| Washburn | D10s | 349.99 | 3 |

The status bar at the bottom shows 'Done' on the left, 'Internet' in the center, and '100%' zoom on the right.

Example – Searching Skillful People

The screenshot shows a web browser window with the address bar displaying `https://mercury.ict.swin.edu.au/hit3324/cliu/Lec4/searchSkill.php?language=php&year=3`. The browser's menu bar includes File, Edit, View, Favorites, Tools, and Help. The address bar also shows a search bar with the text "Live Search".

The main content area of the browser displays the following text:

List employees who have experience in a programming language.

Please select a language:

Please input the minimum year required:

List of Employees who have at least 3 years in php.

| First Name | Last Name | Language | Year |
|------------|-------------|----------|------|
| Liang | Yao | php | 10 |
| Sira | Yongchareon | php | 6 |

The browser's status bar at the bottom shows "Internet" and "100%".

Generating User Interface

```
<html>
<body>
<H3>List employees who have experience in a programming language.<br/></H3>
<?php
$DBConnect = @mysqli_connect("feenix-mariadb.swin.edu.au", "<user>", "<pwd>",
"<user>_db")
    Or die ("<p>Unable to connect to the database server.</p>". "<p>Error code ".
        mysqli_connect_errno().": ". mysqli_connect_error()). "</p>";
// get language names from db
$SQLstring = "select language from Languages";
$queryResult = @mysqli_query($DBConnect, $SQLstring)
    Or die ("<p>Unable to query the table.</p>". "<p>Error code ".
        mysqli_errno($DBConnect). ": ".mysqli_error($DBConnect)). "</p>";
echo "<form>Please select a language: <select name='language'>";
$row = mysqli_fetch_row($queryResult);
while ($row) {
    echo "<option value='".$row[0]."'>".$row[0]."</option>";
    $row = mysqli_fetch_row($queryResult);
}
echo "</select><br/>Please input the minimum year required: <input type='text'
name='year'/><input type='submit' value='Search'/></form>";
mysqli_close($DBConnect);
```

Searching and Listing the Result

```
If (isset($_GET['language']) && isset($_GET['year'])) {
    $DBConnect = @mysqli_connect("mysql.ict.swin.edu.au", "<user>", "<pwd>", "<user>_db")
    Or die ("<p>Unable to connect to the database server.</p>". "<p>Error code ".
        mysqli_connect_errno().": ". mysqli_connect_error()). "</p>";
    $SQLstring = "select e.first_name,e.last_name,l.language,x.years FROM Employees e,
        Experience x,Languages l where e.employee_id=x.employee_id and x.language_id =
        l.language_id and l.language='".$_GET['language']."' and x.years>=".$_GET['year'];
    $queryResult = @mysqli_query($DBConnect, $SQLstring)
    Or die ("<p>Unable to query the $TableName table.</p>". "<p>Error code ".
        mysqli_errno($DBConnect). ": ".mysqli_error($DBConnect)). "</p>";
    echo "<p>List of Employees who have at least ", $_GET['year'], " years in ",
    $_GET['language'], "</p>";
    echo "<table width='100%' border='1'>";
    echo "<th>First Name</th><th>Last Name</th><th>Language</th><th>Year</th>";
    $row = mysqli_fetch_row($queryResult);
    while ($row) { echo "<tr><td>{$row[0]}</td>"; echo "<td>{$row[1]}</td>"; echo
    "<td>{$row[2]}</td>";
        echo "<td>{$row[3]}</td></tr>"; $row = mysqli_fetch_row($queryResult);
    }
    echo "</table>"; mysqli_close($DBConnect);
}
?>
</body>
```



```

$SQLstring = "select language from Languages";
$queryResult = @mysqli_query($DBConnect, $SQLstring)
$row = mysqli_fetch_row($queryResult);
//we have: row[0] ← "php"; only have one column
while ($row) {
    echo "<option value='".$row[0]."'>".$row[0]."</option>";
    $row = mysqli_fetch_row($queryResult);
}
//we have only one column
// first: $row[0]="php"
// 2nd: $row[0]="javascript"
// 3rd:...
// .....

```

```

----- html <option tag -----
<select>
    <option value="php">php</option>
    <option value="javascript"> javascript </option>
    <option value="java">java</option>
    <option value="c++">c++</option>
    .....
</select>

```

Many-to-Many Relationship (continued)

Employees table

employee_id	last_name	first_name	address	city	state	zip
101	Blair	Dennis	204 Spruce Lane	Brookfield	MA	01506
102	Hernandez	Louis	68 Boston Post Road	Spencer	MA	01562
103	Miller	Erica	271 Baker Hill Road	Brookfield	MA	01515
104	Morinaga	Scott	17 Ashley Road	Brookfield	MA	01515
105	Picard	Raymond	1113 Oakham Road	Barre	MA	01531

Languages table

language_id	language
10	JavaScript
11	ASP.NET
12	Java
13	C++

Experience junction table

employee_id	language_id	years
101	10	5
101	11	4
102	10	3
102	11	2
102	12	3
103	10	2
103	11	3
103	12	6
103	13	3
104	10	7
104	11	5
104	12	8
105	10	4
105	11	2

**Many-to-many
relationship**

\$SQLstring = "select e.first_name,e.last_name,l.language,x.years FROM Employees e, Experience x,Languages l where e.employee_id=x.employee_id and x.language_id =
l.language_id and l.language='\$_GET['language'].'" and x.years>="\$_GET['year'];

We want: and l.language='\$_GET['language']' and x.years >= \$_GET['year']

That is: “and l.language=' "\$_GET['language'].'" and x.years>="\$_GET['year'];

- 1:and l.language='**
- 2: \$_GET['language']**
- 3: ' and x.years>=**
- 4: \$_GET['year']**

Selecting Records

- Use the SELECT and WHERE keywords with the `mysqli_query()` function
`mysqli_query(connection, query)`
- The WHERE keyword determines which records to select in the table. If no WHERE keyword, all records are selected

Be careful when constructing query:

```
$make = "Holden";  
$sqlString = "SELECT model, quantity FROM  
$dbTable WHERE model = $make";
```



Use:

```
$sqlString = "SELECT model, quantity FROM  
$dbTable WHERE model = '$make' ";
```

