
CSCI 4000 Assignment 5

Total estimated time for this assignment: **12 hours** (if you are a good programmer)

The main purpose of this assignments is to apply and implement **MVC** (Model-view-controller) software architectural pattern. It is a continuation of the last assignment (assignment 4). You can copy your code from the last assignment (provided your code is correct and working). If you do not use MVC pattern, you will receive **0 points** for almost all the questions. The description for each question includes images of how the page should appear in a browser, along with specifications.

The main programming language for this assignment should be **PHP** (mixed with HTML and CSS). If you do not use **PHP**, you will get **0 points**. For this assignment, you must use **PDO** (PHP Data Object) to interface with the MySQL database. If you do not use PDO, you will receive 0 points for almost all questions.

When you see “Richard Ricardo” or “richardricardo” in the examples and screen captures, change it to **<your name>**.

When you see “Richard” or “richard” in the example screen captures, change it to **<your first name>**.

If you do not put **<your name>** / **<your first name>** in the above mentioned fields, you will get **0 points** for the question(s).

No two students should submit webpages with exactly the same code, content, layout, or color combination. If found, **both** students will get **0 points**.

Please change the provided example’s layout and color combination (color scheme). **If you use (copy) ANY of the provide example’s color combination, 10 points will be deducted (-10 points).**

Create a folder on your hard disk, name the folder **lastname_firstname_assignment5**. Save all the files from this assignment in this folder.

Use XAMPP web server solution stack package to help debugging PHP code. It will make your debugging process easier. All php files must not produce any error, or any warning (**-2 points for each error, each warning**). Your program must run. A program that does not run will get at most **50% of the possible points**. All files must begin with a **comment** that identifies the author, the course code, and the program date (**- 2 points each question** if found missing). All html, css and php files must be clearly **documented (commented)**. Points will be taken off (**-2 points each question**) for insufficient comments (`<!-- -->`, `/* */`, `//`).

- When you view page source in a web browser, **<!DOCTYPE html>** must be at the top of every page. In other words, all pages must be written in HTML5. (**-20 points** if not)
 - You **can** put php code before **<!DOCTYPE html>**.
 - You **cannot** put html code before **<!DOCTYPE html>**.
- Before adding PHP code, all html files must pass html validation at <http://validator.w3.org/> without any **error** (and with only 1 warning).
- After adding PHP code, the generated html code (Firefox web browser > right-click > view page source) must also pass html validation at <http://validator.w3.org/> without any **error** (and with only 1 warning).
- All css files must pass css validation at <http://jigsaw.w3.org/css-validator/> without any **error**. (**-2 points for each error/warning**, only 1 warning is allowed for html validator)

Question 1 – MVC: PHP Chapter 5, eg010 step 1 (20 points) Estimated time: 2 hours

- In this question you need to
 - Setup MVC folders
 - Re-create the database if necessary
 - Create a database connection file
 - Create a common header file
 - Create a common footer file
 - Create a database error view file (using common header file and common footer file)
 - Create the first php library file for retrieving data from the database (major table)
- Re-load **create_db.sql** in XAMPP > phpMyAdmin again (if necessary) to re-create the database mentioned in the last Assignment. (1 point)
- Save question 1 files in subfolder “**lastname_firstname_assignment5\q1**:
 - create the following subfolders in this folder: (4 points)
 - **lastname_firstname_assignment5\q1\errors**
 - **lastname_firstname_assignment5\q1\model**
 - **lastname_firstname_assignment5\q1\student_manager**
 - **lastname_firstname_assignment5\q1\view**
- Reuse the text file **create_db.sql**, created in the last Assignment, Q1. Copy the text file to folder **lastname_firstname_assignment5**. (1 point)
 - Note: In the real world, do NOT put sql files in a website folder. Keep it offline and safe.
- You may reuse the **main.css** file from the last Assignment, Q2. Copy the css file to folder **lastname_firstname_assignment5\q1**. (1 point)
- Create file **richard_ricardo_database.php** in folder **lastname_firstname_assignment5\q1\model** (2 points)
 - Hence: **lastname_firstname_assignment5\q1\model\richard_ricardo_database.php**
 - Use this file to connect to the database
 - If there is any connect error, redirect to **lastname_firstname_assignment5\q1\errors\richard_ricardo_database_error.php**
- Split the original **richard_ricardo_database_error.php** (from last Assignment, Q2) into 3 files (and edit code) (3 points)
 - **lastname_firstname_assignment5\q1\view\richard_ricardo_header.php**
 - common header for all view files
 - link to main.css
 - **lastname_firstname_assignment5\q1\view\richard_ricardo_footer.php**
 - common footer for all view files
 - **lastname_firstname_assignment5\q1\errors\richard_ricardo_database_error.php**
 - it should display database connection error message
 - it should “include” **richard_ricardo_header.php** file
 - it should “include” **richard_ricardo_footer.php** file
- Create file **richard_ricardo_major_db.php** in folder **lastname_firstname_assignment5\q1\model** (2 points)
 - Hence: **lastname_firstname_assignment5\q1\model\richard_ricardo_major_db.php**
 - Create this php function in the file
 - `function get_major_name($major_id) { return $major_name; }`
 - This function should take in a major id and return the major name, by querying the database
- Create controller file **index.php** in folder **lastname_firstname_assignment5\q1\student_manager** (6 points)
 - Hence: **lastname_firstname_assignment5\q1\student_manager\index.php**
 - “Require” the following two files:
 - `/model/richard_ricardo_database.php`
 - `/model/richard_ricardo_major_db.php`
 - Create controller code to handle `if $action == 'list_students'` (first time access)

- List \$major_id as “1”, and \$major_name as “Computer Science”, for testing only
- Files created/updated in this question:
 - lastname_firstname_assignment5\q1\errors\richard_ricardo_database_error.php
 - lastname_firstname_assignment5\q1\model\richard_ricardo_database.php
 - lastname_firstname_assignment5\q1\model\richard_ricardo_major_db.php
 - lastname_firstname_assignment5\q1\student_manager\index.php
 - lastname_firstname_assignment5\q1\view\richard_ricardo_footer.php
 - lastname_firstname_assignment5\q1\view\richard_ricardo_header.php

Example: “richard_ricardo_student_db” database and the tables (same as last assignment)

The screenshot shows the phpMyAdmin interface for the database 'richard_ricardo_student_db'. The left sidebar shows the database tree with 'richard_ricardo_student_db' selected, containing tables 'major' and 'student'. The main area displays a table structure summary:

Table	Action	Rows	Type	Collation	Size	Overhead
major	Browse Structure Search Insert Empty Drop	3	InnoDB	latin1_swedish_ci	16 K B	-
student	Browse Structure Search Insert Empty Drop	9	InnoDB	latin1_swedish_ci	32 K B	-
2 tables	Sum	12	InnoDB	latin1_swedish_ci	48 K B	0 B

Below the summary, there is a 'Create table' form with a 'Name' field and a 'Number of columns' dropdown set to 4. A 'Go' button is at the bottom right.

Example: “major” table structure (same as last assignment)

The screenshot shows the phpMyAdmin interface for the 'major' table structure. The left sidebar shows the database tree with 'richard_ricardo_student_db' selected, containing tables 'major' and 'student'. The main area displays the table structure details:

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	majorID	int(11)		No	None	AUTO_INCREMENT		Change Drop Primary More
2	majorName	varchar(255)	latin1_swedish_ci	No	None			Change Drop Primary More

Below the table structure, there are options for adding columns and indexes. The 'Add' dropdown is set to 1 column(s), and the 'After' dropdown is set to 'majorID'. There is a 'Go' button.

The 'Information' tab is active, showing the following details:

Space usage		Row statistics	
Data	16 K B	Format	Compact
Index	0 B	Collation	latin1_swedish_ci
Total	16 K B	Next autoindex	4
		Creation	Sep 16, 2014 at 10:41 PM

Example: “student” table structure (same as last assignment)

The screenshot shows the phpMyAdmin interface for the 'student' table. The table structure is as follows:

#	Name	Type	Collation	Attributes	Null	Default	Extra	Action
1	studentID	int(11)			No	None	AUTO_INCREMENT	Change Drop Primary More
2	majorID	int(11)			No	None		Change Drop Primary More
3	firstName	varchar(255)	latin1_swedish_ci		No	None		Change Drop Primary More
4	lastName	varchar(255)	latin1_swedish_ci		No	None		Change Drop Primary More
5	gender	char(1)	latin1_swedish_ci		No	None		Change Drop Primary More

Below the table structure, there is an 'Information' tab showing space usage and row statistics:

Space usage		Row statistics	
Data	16 KiB	Format	Compact
Index	16 KiB	Collation	latin1_swedish_ci
Total	32 KiB	Next autoindex	12
		Creation	Sep 16, 2014 at 10:41 PM

Example: records in “major” table (same as last assignment)

The screenshot shows the phpMyAdmin interface for the 'major' table. The table contains the following records:

majorID	majorName
1	Computer Science
2	Electrical Engineering
3	Business

The interface also shows a query editor with the following SQL query:

```
SELECT * FROM `major`
```

Below the query editor, there are options for filtering and sorting the data. The 'Number of rows' is set to 25, and the 'Filter rows' field is empty. The 'Sort by key' is set to 'None'.

Example: "records" in student table (same as last assignment)

The screenshot shows the phpMyAdmin interface for the 'student' table in the 'richard_ricardo_student_db' database. The table contains 11 records. The SQL query shown is 'SELECT * FROM `student`'. The table structure is as follows:

studentID	majorID	firstName	lastName	gender
1	1	PO	BLACK	M
2	1	SHIFU	HOFFMAN	M
3	1	TIGRESS	JOLIE	F
4	1	JENNIFER	YUH	F
6	2	MONKEY	CHAN	M
8	2	MANTIS	ROGEN	M
9	3	CRANE	CROSS	M
10	3	OOGWAY	KIM	M
11	3	PING	HONG	M

Example: data privileges for user richardricardo1 (same as last assignment)

The screenshot shows the 'Edit Privileges' page for user 'richardricardo1'@'localhost'. The 'Database-specific privileges' section shows the following table:

Database	Privileges	Grant	Table-specific privileges	Action
richard_ricardo_student_db	SELECT, INSERT, UPDATE, DELETE	No	No	Edit Privileges, Revoke

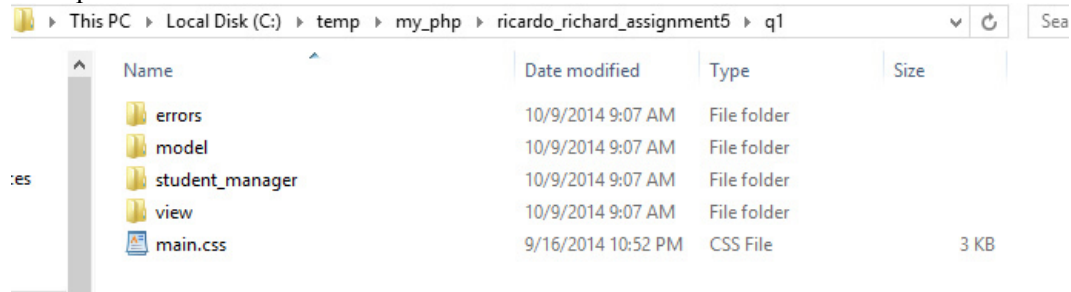
Below the table, there is a field to 'Add privileges on the following database:' with a dropdown menu and a 'Go' button.

Example: folder/file structure

The screenshot shows a Windows File Explorer window displaying the folder structure for the assignment. The path is 'This PC > Local Disk (C:) > temp > my_php > ricardo_richard_assignment5'. The contents are as follows:

Name	Date modified	Type	Size
q1	10/9/2014 9:07 AM	File folder	
q2	10/9/2014 9:07 AM	File folder	
q3	10/9/2014 9:07 AM	File folder	
q4	10/9/2014 9:07 AM	File folder	
q5	10/9/2014 9:07 AM	File folder	
create_db.sql	9/16/2014 10:40 PM	DbVisualizer SQL f...	2 KB

Example: folder/file structure

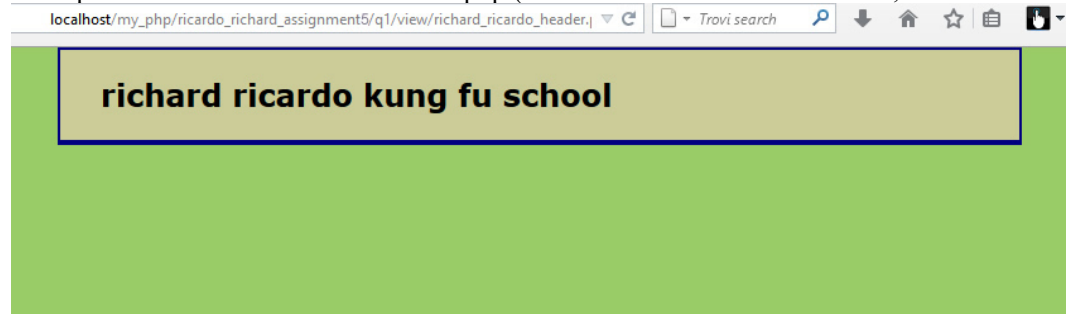


Name	Date modified	Type	Size
errors	10/9/2014 9:07 AM	File folder	
model	10/9/2014 9:07 AM	File folder	
student_manager	10/9/2014 9:07 AM	File folder	
view	10/9/2014 9:07 AM	File folder	
main.css	9/16/2014 10:52 PM	CSS File	3 KB

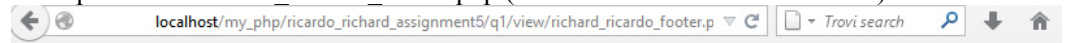
Example: \model\richard_ricardo_database.php (shows nothing, only has php code)



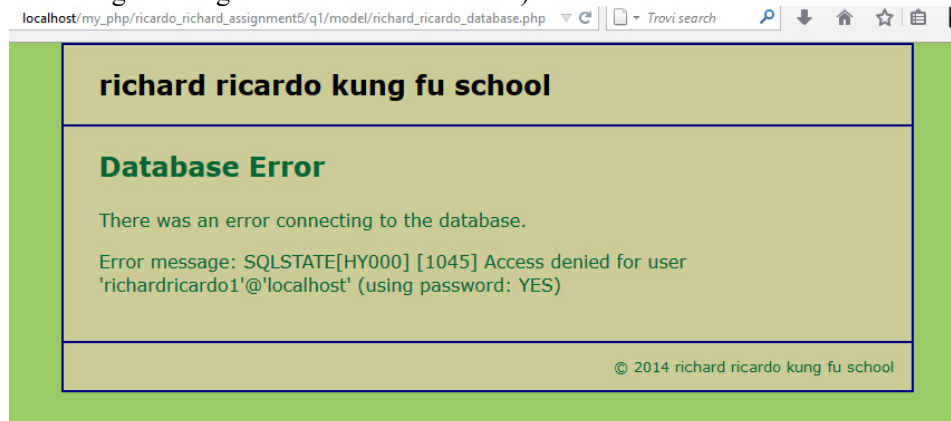
Example: \view\richard_ricardo_header.php (common header for all view files, link to main.css)



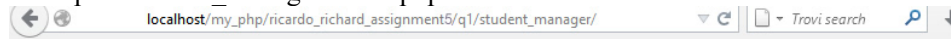
Example: \view\richard_ricardo_footer.php (common footer for all view files)



Example: `\model\richard_ricardo_database.php` (it shows `\errors\richard_ricardo_database_error.php`, if something is wrong with database connection)



Example: `\student_manager\index.php`



1
Computer Science

Question 2 – MVC: PHP Chapter 5, eg010 step 2 (20 points) Estimated time: 2 hours

- In this question you need to
 - Create model functions to retrieve major records and student records from the database
 - Update controller code to list students
 - Create code to display students (using common header file and footer file)
- Copy what you have done in question 1 (all folders/files) from the question 1 subfolder to the question 2 subfolder “`lastname_firstname_assignment5\q2\`”.
- Save question 2 files in subfolder “`lastname_firstname_assignment5\q2\`”:
 - Add files to / editing existing files in the subfolders:
 - `lastname_firstname_assignment5\q2\errors\`
 - `lastname_firstname_assignment5\q2\model\`
 - `lastname_firstname_assignment5\q2\student_manager\`
 - `lastname_firstname_assignment5\q2\view\`
- Update file `lastname_firstname_assignment5\q2\model\richard_ricardo_major_db.php` (4 points)
 - Create this php function in the file
 - ```
function get_majors() { return $majors; }
```
  - This function should return all major names sorted by majorID, by querying the database
- Create file `richard_ricardo_student_db.php` in folder `lastname_firstname_assignment5\q2\model\` (4 points)
  - Hence: `lastname_firstname_assignment5\q2\model\richard_ricardo_student_db.php`
  - Create this php function in the file
    - ```
function get_students_by_major($major_id){return $students;}
```
 - This function should return all student names sorted by studentID, in a particular major (take in a particular majorID), by querying the database
- Update file `lastname_firstname_assignment5\q2\student_manager\index.php` (6 points)
 - “Require” the following additional file:
 - `/model/richard_ricardo_student.php`

- Update controller code to handle if `$action == 'list_students'` (first time access)
- Retrieve all students' records by using some functions in
 - `model\richard_ricardo_student_db.php`
 - `model\richard_ricardo_major_db.php`
- “Include” a new file **richard_ricardo_student_list.php** to display all students
- Create file **richard_ricardo_student_list.php** in folder **lastname_firstname_assignment5\q2\student_manager** (6 points)
 - Hence: `lastname_firstname_assignment5\q2\student_manager\richard_ricardo_student_list.php`
 - This file is related to the `index.php` from the last assignment
 - It should “include” `richard_ricardo_header.php` file
 - It should “include” `richard_ricardo_footer.php` file
 - It should display all students by a major
- Files created/updated in this question:
 - `lastname_firstname_assignment5\q2\model\richard_ricardo_major_db.php`
 - `lastname_firstname_assignment5\q2\model\richard_ricardo_student_db.php`
 - `lastname_firstname_assignment5\q2\student_manager\index.php`
 - `lastname_firstname_assignment5\q2\student_manager\richard_ricardo_student_list.php`

Example: `\student_manager\index.php` (first major is selected/clicked)

localhost/my_php/richard_ricardo_assignment5/q2/student_manager/

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Computer Science

Student ID	First Name	Last Name	Gender	
1	PO	BLACK	M	Delete
2	SHIFU	HOFFMAN	M	Delete
3	TIGRESS	JOLIE	F	Delete
4	JENNIFER	YUH	F	Delete
5	OX	STORMING	M	Delete

[Add Student](#)

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Example: \student_manager\index.php (second major is selected/clicked)

localhost/my_php/ricardo_ricardo_assignment5/q2/student_manager/?major_id: ▾

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Electrical Engineering

Student ID	First Name	Last Name	Gender	
6	MONKEY	CHAN	M	Delete
7	VIPER	LIU	F	Delete
8	MANTIS	ROGEN	M	Delete

[Add Student](#)

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Example: \student_manager\index.php (third major is selected/clicked)

localhost/my_php/ricardo_ricardo_assignment5/q2/student_manager/?major_id: ▾

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Business

Student ID	First Name	Last Name	Gender	
9	CRANE	CROSS	M	Delete
10	OOGWAY	KIM	M	Delete
11	PING	HONG	M	Delete

[Add Student](#)

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Question 3 – MVC: PHP Chapter 5, eg010 step 3 (20 points) Estimated time: 2 hours

- In this question you need to
 - Create model function to delete a student record from the database
 - Update controller code to handle student record deletion
- Copy what you have done in question 2 (all folders/files) from the question 2 subfolder to the question 3 subfolder “`lastname_firstname_assignment5\q3\`”.
- Save question 3 files in subfolder “`lastname_firstname_assignment5\q3\`”:
 - Add files to / editing existing files in the subfolders:
 - `lastname_firstname_assignment5\q3\errors\`
 - `lastname_firstname_assignment5\q3\model\`
 - `lastname_firstname_assignment5\q3\student_manager\`
 - `lastname_firstname_assignment5\q3\view\`
- Update file `lastname_firstname_assignment5\q3\student_manager\index.php` (10 points)
 - Update controller code to handle `if $action == 'delete_student'`
 - Delete a student’s record by using function `delete_student` in
 - `model\richard_ricardo_student_db.php` (to be created next)
- Update file `lastname_firstname_assignment5\q3\model\richard_ricardo_student_db.php` (10 points)
 - Create php function in the file
 - `function delete_student($student_id){}`
 - This function should delete a student record by taking in the student ID, by updating the database
 - This function should be called by `index.php`
- Files created/updated in this question:
 - `lastname_firstname_assignment5\q3\model\richard_ricardo_student_db.php`
 - `lastname_firstname_assignment5\q3\student_manager\index.php`

Example: `\student_manager\index.php` (before deletion, click on the delete button on Student ID 5)

localhost/my_php/ricardo_ricardo_assignment5/q3/student_manager/ Trove search

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Computer Science

Student ID	First Name	Last Name	Gender	
1	PO	BLACK	M	Delete
2	SHIFU	HOFFMAN	M	Delete
3	TIGRESS	JOLIE	F	Delete
4	JENNIFER	YUH	F	Delete
5	OX	STORMING	M	Delete

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Example: \student_manager\index.php (after deletion, Student ID 5 was deleted)

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Computer Science

Student ID	First Name	Last Name	Gender	
1	PO	BLACK	M	Delete
2	SHIFU	HOFFMAN	M	Delete
3	TIGRESS	JOLIE	F	Delete
4	JENNIFER	YUH	F	Delete

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Question 4 – MVC: PHP Chapter 5, eg010 step 4 (20 points) Estimated time: 2 hours

- In this question you need to
 - Update controller code to add a student
 - Create code to display a form to allow adding a student (using common header file and footer file)
- Copy what you have done in question 3 (all folders/files) from the question 3 subfolder to the question 4 subfolder “`lastname_firstname_assignment5\q4\`”.
- Save question 4 files in subfolder “`lastname_firstname_assignment5\q4\`”:
 - Add files to / editing existing files in the subfolders:
 - `lastname_firstname_assignment5\q4\errors\`
 - `lastname_firstname_assignment5\q4\model\`
 - `lastname_firstname_assignment5\q4\student_manager\`
 - `lastname_firstname_assignment5\q4\view\`
- Update file `lastname_firstname_assignment5\q4\student_manager\index.php` (10 points)
 - Update controller code to handle if `$action == 'show_add_form'`
 - Retrieve all majors' records by using a function in
 - `model\richard_ricardo_major_db.php`
 - The records will be used to create dropdown list in the next step
 - “Include” a new file `richard_ricardo_student_add.php` to display a form to add student
- Create file `richard_ricardo_student_add.php` in folder `lastname_firstname_assignment5\q4\student_manager\` (10 points)
 - Hence: `lastname_firstname_assignment5\q4\student_manager\richard_ricardo_student_add.php`
 - This file is related to the `richard_ricardo_add_student_form.php` from the last assignment
 - It should “include” `richard_ricardo_header.php` file
 - It should “include” `richard_ricardo_footer.php` file
 - It should display a form to allow users to add a student

- Files created/updated in this question:
 - lastname_firstname_assignment5\q4\student_manager\index.php
 - lastname_firstname_assignment5\q4\student_manager\richard_ricardo_student_add.php

Example: \student_manager\index.php (it actually shows "include" richard_ricardo_student_add.php)

localhost/my_php/ricardo_richard_assignment5/q4/student_manager/?action=show_add_form

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Add Student

Major:

First Name:

Last Name:

Gender:

[View All Students](#)

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Example: \student_manager\index.php (dropdown list shows all majors)

localhost/my_php/ricardo_richard_assignment5/q4/student_manager/?action=show_add_form

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Add Student

Major:

First Name:

Last Name:

Gender:

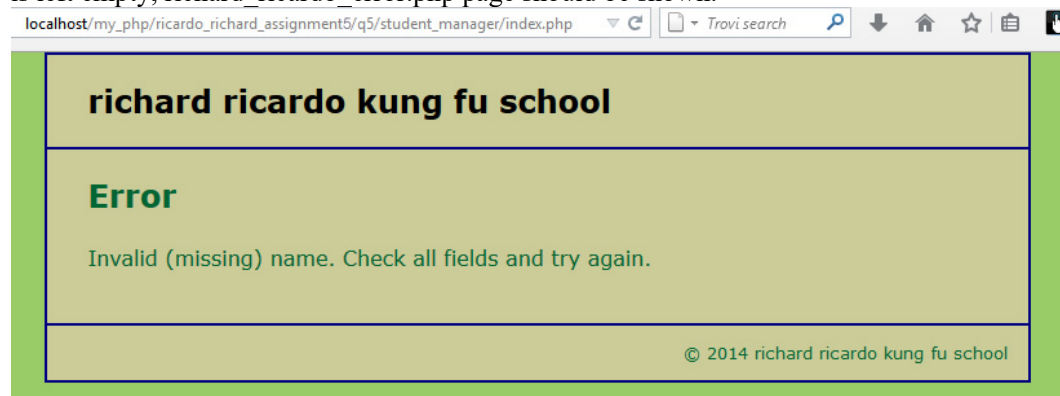
[View All Students](#)

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Question 5 – MVC: PHP Chapter 5, eg010 step 5 (20 points) Estimated time: 2 hours

- In this question you need to
 - Update controller code to add a student
 - Check if user filled in all form fields
 - Create code to display error message (using common header file and footer file) if any form field is left empty
 - Update model code to add a student
- Copy what you have done in question 4 (all folders/files) from the question 4 subfolder to the question 5 subfolder “**lastname_firstname_assignment5\q5**”.
- Save question 5 files in subfolder “**lastname_firstname_assignment5\q5**”:
 - Add files to / editing existing files in the subfolders:
 - **lastname_firstname_assignment5\q5\errors**
 - **lastname_firstname_assignment5\q5\model**
 - **lastname_firstname_assignment5\q5\student_manager**
 - **lastname_firstname_assignment5\q5\view**
- Update file **lastname_firstname_assignment5\q5\student_manager\index.php** (7 points)
 - Update controller code to handle if `$action == 'add_student'`
 - Retrieve all forms filed passed from `richard_ricardo_student_add.php` (last question)
 - If any form field is empty, create error message and “include” a new file **\errors\richard_ricardo_error.php** to display error message
 - If all form fields are filled, call function `add_student` in
 - `model\richard_ricardo_student_db.php` (to be created next)
- Create file **richard_ricardo_error.php** in folder **lastname_firstname_assignment5\q5\errors** (6 points)
 - Hence: `lastname_firstname_assignment5\q5\errors\richard_ricardo_error.php`
 - This file is related to the `richard_ricardo_error.php` from the last assignment
 - It should “include” `richard_ricardo_header.php` file
 - It should “include” `richard_ricardo_footer.php` file
 - It should display an error message from `index.php`
- Update file `lastname_firstname_assignment5\q5\model\richard_ricardo_student_db.php` (7 points)
 - Create this php function in the file
 - `function add_student($major_id, $firstname, $lastname, $gender) {}`
 - This function should add a student record by taking in the above arguments, and by updating the database
 - This function should be called by `index.php`

Example: `\student_manager\index.php` (it actually shows/”include” `richard_ricardo_error.php`): If any textbox is left empty, `richard_ricardo_error.php` page should be shown.



Example: \student_manager\index.php (it actually shows "include" richard_ricardo_student_add.php): user input

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Add Student

Major:

First Name:

Last Name:

Gender:

[View All Students](#)

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Example: \student_manager\index.php: after successfully adding a student record

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Student List

Majors

[Computer Science](#)

[Electrical Engineering](#)

[Business](#)

Computer Science

Student ID	First Name	Last Name	Gender	
1	PO	BLACK	M	<input type="button" value="Delete"/>
2	SHIFU	HOFFMAN	M	<input type="button" value="Delete"/>
3	TIGRESS	JOLIE	F	<input type="button" value="Delete"/>
4	JENNIFER	YUH	F	<input type="button" value="Delete"/>
12	JENNY	CHAN	F	<input type="button" value="Delete"/>

[Add Student](#)

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Important:

1. If you do not put `<your name>` / `<your first name>` in the above mentioned fields (as shown in the examples), you will get **0 points** for the question(s).
2. **No two students** should submit webpages with exactly the same code, content, layout, or color combination. If found, both students will get **0 points**.
3. When you view page source in a web browser, `<!DOCTYPE html>` must be at the top of every page. In other words, all pages must be written in HTML5. (**-20 points** if not)
 - You **can** put php code before `<!DOCTYPE html>`.
 - You **cannot** put html code before `<!DOCTYPE html>`.
4. Before adding PHP code, all html files must pass html validation at <http://validator.w3.org/> without any **error** (and with only 1 warning).
5. After adding PHP code, the generated html code (Firefox web browser > right-click > view page source) must also pass html validation at <http://validator.w3.org/> without any **error** (and with only 1 warning).
6. All css files must pass css validation at <http://jigsaw.w3.org/css-validator/> without any **error/warning**.
7. If your files do not pass the html and css validations, **2 points will be deducted for each html or css error/warning** found (1 warning allowed for html validator).
8. Document (comment) your HTML files (`<!-- -->`), CSS files (`/* */`), and PHP files (`/* */` OR `//`). **Points will be taken off** for insufficient comments (`<!-- -->`, `/* */`, `//`).

Submission instructions:

- You need to test all document(s).
- Do screen capture(s) of the **input** and the related **output(s)**. Use any graphic editing software (e.g. Microsoft Paint, Adobe Fireworks, GIMP, or Microsoft Expression Design etc) to cut out the browser output (from the screen capture), paste them into a word document.
- Provide **2 different test cases** for each question. In other words, for **each question**, you may need to have **2 input** screen captures and **2 related output** screen captures.
- Do NOT need to do screen capture(s) of html validation results and css validation results for this assignment.
- Save the word document as a pdf file.

You need to submit the following:

1. A pdf file containing the screen capture(s) of the web browser input and output pages, name the file **lastname_firstname_assignment5.pdf**.
2. All html file(s), php file(s), css file(s), and other related files (e.g. image files). Zip your file folder (**lastname_firstname_assignment5**) into a single zip file (or rar file) **lastname_firstname_assignment5.zip**. In the above example, the zip file should contain the following files and subfolders. If there is any image, there should be a `\images\` subfolder.

- lastname_firstname_assignment5\q1*. * (all files created in question 1)
- lastname_firstname_assignment5\q2*. * (all files created in question 1 & 2)
- lastname_firstname_assignment5\q3*. * (all files created in question 1, 2 & 3)
- lastname_firstname_assignment5\q4*. * (all files created in question 1, 2, 3 & 4)
- lastname_firstname_assignment5\q5\main.css
- lastname_firstname_assignment5\q5\errors\richard_ricardo_database_error.php
- lastname_firstname_assignment5\q5\errors\richard_ricardo_error.php.php
- lastname_firstname_assignment5\q5\model\richard_ricardo_database.php
- lastname_firstname_assignment5\q5\model\richard_ricardo_major_db.php
- lastname_firstname_assignment5\q5\model\richard_ricardo_student_db.php
- lastname_firstname_assignment5\q5\student_manager\index.php
- lastname_firstname_assignment5\q5\student_manager\richard_ricardo_student_add.php
- lastname_firstname_assignment5\q5\student_manager\richard_ricardo_student_list.php

- lastname_firstname_assignment5\q5\view\richard_ricardo_footer.php
- lastname_firstname_assignment5\q5\view\richard_ricardo_header.php

Please submit the above mentioned **two files** (.pdf and .zip) to D2L digital dropbox.

Grading guidelines (programming questions):

Your programs will be judged on several criteria, which are shown below.

- Correctness (50%): Does the program compile (run) correctly? Does the program do what it's supposed to do?
- Design (20%): Are operations broken down in a reasonable way (e.g. classes and methods)?
- Style (10%): Is the program **indented** properly? Do variables have **meaningful names**?
- Robustness (10%): Does the program handle erroneous or unexpected input gracefully?
- Documentation (10%): Do all program files begin with a **comment** that identifies the author, the course code, and the program date? Are all the classes, methods and data fields clearly **documented (commented)**? Are unclear parts of code **documented (commented)**? (Some items mentioned may not apply to some languages)

A program that does not compile (run) will get at most **50% of the possible points**.