

Assignment4

Part 1

Model View Controller (MVC) is a framework that divides an application's implementation into three discrete component roles: models, views, and controllers.

Moreover, in computer science and information technology, separation of concerns (SoC) is a design principle for separating a computer program into distinct sections (or layers), with each section addressing a separate concern: e.g., presentation layer, business logic layer, data access layer, and persistence layer.

Model: - The "business" layer. how do we represent the data? Defines business objects, and provides methods for business processing (e.g., Customer and CustomerDB classes).

Controller: Directs the application "flow"—using servlets. Generally, reads parameters sent from requests, updates the model, saves data to the data store, and forwards updated model to JSPs for presentation (e.g., CustomerServlet).

View: How do I render the result? Defines the presentation—using .html or .jsp files (e.g., index.html, index.jsp, customerform.jsp, thanks.jsp).

1. Review previously cloned **lis4368_student_files** [Bitbucket](#) repo subdirectories and files:
 - a. Review subdirectories and files, especially **META-INF** and **WEB-INF**.
 - b. Each assignment *must* have its own **global** subdirectory.

Part 2

1. **Helper videos:**
 - a. http://qcitr.com/vids/LIS4368_A4.mp4
 - b. Debugging (***required*** before seeking assistance): https://youtu.be/Y060J5_V4yg
2. Add the below server-side validation (see screenshots below)

Important! (BOTH PC and Mac users): below, use ***your* servlet-api.jar** path accordingly.

Compiling servlet files:

Important! These are ONLY Examples: (*your* paths most likely will differ):

3. Compile the following class and servlet files:

Windows: cd to **C:\tomcat\webapps\lis4368\WEB-INF\classes**

javac -cp . crud/business/Customer.java

javac -cp .;c:\tomcat\lib\servlet-api.jar crud/admin/CustomerServlet.java

Mac: cd to **/Applications/tomcat/webapps/lis4368/WEB-INF/classes**

javac -cp . crud/business/Customer.java

javac -cp ./Applications/tomcat/lib/servlet-api.jar crud/admin/CustomerServlet.java

4. Use git to push ***all*** **lis4368** files and changes to **your** remote **course** [Bitbucket](#) repo
5. **Helper instructions:**
Lesson 7 - Regular Expressions: <http://www.qcitr.com/usefullinks.htm#lesson7>

Note:

Special consideration to be aware of when completing thanks.jsp:

- 1) In **thanks.jsp** file:

```
<%@ taglib prefix="c" uri="http://java.sun.com/jsp/jstl/core" %>
```


That is, it should list **uri**, not url.

Note: Individuals providing server-side validation **identical** to the client-side validation requirements of **Project1** will receive **20 additional pts.** (***must*** use regular expressions).

Deliverables:

1. Provide **Bitbucket** read-only access to **lis4368** repo, include links to the other assignment repos you created in **README.md**, using Markdown syntax (**README.md** must also include screenshots as per above.)
2. **Blackboard Links:** lis4368 **Bitbucket** repo

Failed Validation

QCITR™  CRSXXX A1 A2 A3 A4 A5 P1 P2 Test

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My Online Portfolio

ALL TEXT BOXES REQUIRED EXCEPT NOTES.

Display Customers

FName:

LName:

Street:

City:

State:

Zip:

Phone:

Email:

Balance:

Total Sales:

Notes:

Submit

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My Online Portfolio

Thanks for joining our customer list!

Here is the information that you entered:

FName: John

LName: Doe

Street: 123 Main St.

City: Tallahassee

State: FL

Zip: 32304

Phone: 8505551212

Email: jdoe@aol.com

Balance: 100

Total Sales: 500

Notes: testing

To enter another record click Return.

Return

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Part 3

Answer the following questions (Chs. 11, 12):

1. CREATE DATABASE and DROP DATABASE are
 - a.result sets
 - b.MySQL commands
 - c.foreign keys
 - d.SQL statements
2. Connection pooling improves database performance because
 - a.it provides one connection for each thread of a servlet
 - b.it only opens connections when they are needed
 - c.a pool of connections are available for users of the application to share
 - d.a pool of servlet threads are allowed to access the database at one time
3. If ps is a PreparedStatement object and product is a Product object, then the following statement `ps.setDouble(3, product.getPrice());`
 - a.sets the third column in the prepared statement to the value that's returned by the getPrice method
 - b.sets the third parameter in the prepared statement to the value that's returned by the getPrice method
 - c.sets the Price variable to a value of 3
 - d.sets the Price column to a value of 3
4. In a SQL injection attack, an attacker can attempt to
 - a.execute SQL statements against your database
 - b.modify data
 - c.delete data
 - d.all of the above
5. In a left outer join, the result set includes
 - a.matched rows in both tables and unmatched rows in the second table
 - b.all rows in the second table and matched rows in the first table
 - c.matched rows in both tables and unmatched rows that don't contain nulls
 - d.all rows in the first table and matched rows in the second table
6. MySQL is a/an _____ that can manage one or more databases.
 - a.Structured Query Language (SQL)
 - b.relational database management system (RDMS)
 - c.Data Definition Language (DDL)
 - d.Data Manipulation Language (DML)
7. The INSERT statement that follows inserts
`INSERT INTO Download (UserID, DownloadDate, DownloadFilename, ProductCode)
VALUES (1, NOW(), 'jr01_filter.mp3', 'jr01')`
 - a.four rows and four columns into the Download table
 - b.one row and four columns into the Download table
 - c.four rows and one column into the Download table
 - d.one row and three columns into the Download table
8. The getXXX methods can be used to return _____ of the eight primitive types.
 - a.one
 - b.two
 - c.all
 - d.none

9. The result set retrieved by the following SELECT statement contains rows that have

```
SELECT Balance, Num  
FROM Accounts  
WHERE Balance < 0
```

- a. one column from the Balance table where the Num column is less than 0
- b. two columns from the Balance table where the Num column is less than 0
- c. all columns from the Accounts table where the Balance column is less than 0
- d. two columns from the Accounts table where Balance column is less than 0

10. To execute the DELETE statement that follows, which statement would you use?

```
String query = "DELETE FROM Invoices " +  
              "WHERE InvoiceTotal = 0 ";  
Statement statement = connection.createStatement();
```

- a. statement.executeQuery(query);
- b. statement.executeUpdate(query);
- c. statement.executeDelete(query);
- d. statement.executeStatement(query);

11. To specify how the result set should be sorted, you use the _____ clause.

- a. WHERE
- b. FROM
- c. ORDER BY
- d. SELECT

12. When you code a script that contains more than one statement, you must code a/an _____ at the end of each statement.

- a. semicolon
- b. colon
- c. comma
- d. period

13. Which is **not** true about MySQL?

- a. it supports SQL
- b. it can protect access to your data so only authorized users can view the data
- c. it does not support referential integrity or transaction processing.
- d. all of the above

14. To get information about a result set like the number of columns and names of the columns, you can use the methods of the

- a. Statement object
- b. ResultSet object
- c. Connection object
- d. ResultSetMetaData object

15. To move the cursor through a result set, you can use the methods of the

- a. Statement object
- b. ResultSet object
- c. Connection object
- d. ResultSetMetaData object