

University of the West Indies – Cave Hill Campus, Barbados
COMP 3385 – Framework Development for Advanced Web Applications
Semester I: October 23, 2023
Course Assignment 2
Due Date & Time: November 24, 2023, 11:59pm

IMPORTANT SUBMISSION INSTRUCTIONS

- Only the following files and directories must reside in a directory **that has your student id as its name and is not web accessible**:
 - The HTML template files are stored in the **tpl** directory.
 - The concrete classes for the models, views and controllers are stored in the **app** directory.
 - Configuration files are stored in a **config** directory.
 - The base classes and interfaces that form the framework are stored in the **framework** directory.
 - Any CSS and JavaScript files are stored in a **css** and **js** directory respectively.
- **Create a git repository on either Github or Bitbucket** and submit the link to your repo using the submission link provided in the eLearning system. The dates of the files in your repository will be used to determine whether you submitted your assignment on time.
- Ensure that your scripts can access your image, CSS and fonts directories from your subdirectory.
- Failing to follow these instructions will mean that in all likelihood your assignment will not work in *my* system, and you will be significantly penalized. If you are unclear about anything, ask questions **well before the deadline**.

Plagiarism

- Students are reminded that plagiarism is a serious offence. **Any student caught plagiarizing will receive zero for the assignment.**
- Simply cutting and pasting code found on the web, attributing it to the author and then submitting it as a completed assignment in no way benefits you. While you may pass the assignment, rest assured you will fail the course simply because you would not have understood the thought process that went into developing the code and will be unable to reproduce a similar answer under examination conditions. **Do yourself a favour... do your own work!**

Early and On-time Submissions

- Students who submit their assignments on time, that is, ***before*** midnight on November 24, 2023, will receive an extra **15 assignment marks** as an early submission bonus ***if and only if*** they score at least 70% on their assignment. Any early assignment that fails to reach that score will not be awarded the early submission bonus marks.

Late Submissions

- **Late assignments will be accepted until November 27, 2023, 11:59 p.m.**

Assignment Details

You are building functionality for the online Research Study Management System from Assignment 1. The goal of this assignment is to learn how to build a PHP framework based on the Model-View-Controller design pattern that will enable developers to build applications based on a three-tiered architecture. You must implement the MVC using a **three-tier architecture**.

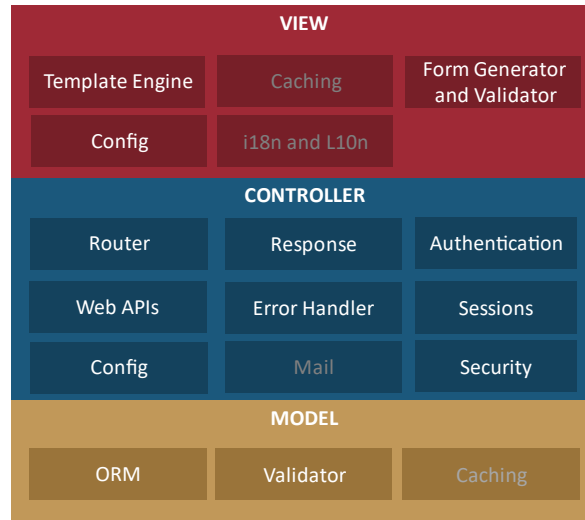


Figure 1: A simplified framework that uses the MVC design pattern as its basis.

1. You are to design a framework to meet the following **minimum** requirements. You can use the simplified architecture shown in Figure 1 above to help name the classes, interfaces and abstract classes that make up your framework. You are responsible for defining the methods that make their interfaces. **[50 marks]**
 - a. The only web-accessible files and directories in the framework are to be the user-facing controllers and the **css** and **js** directories. No other files or directories are allowed in the web directory.
 - b. The framework must be built using a three-tiered architecture that will allow you to construct pages for the Research Study Management application.
 - c. The framework consists of the components. You must create the appropriate interfaces, and abstract classes and place them in the framework directory. The only concrete classes your framework should allow a programmer to subclass if they desire are the Session Manager and the Model and Form Validation components.
 - i. The Router object is used as the basis for user-facing controllers to handle user requests. Helper objects for the Router object that handles the request can include *but are not limited to*, the Validator and Session objects.
 - ii. Business logic controllers are implemented using a Response object. The Response object should use as many other controllers, and model objects as necessary to fulfill the request. The Response object produces data that is passed to the Template Engine, which generates the appropriate HTML for the View.
 - d. The framework must use an autoloader and namespaces.
 - e. Configuration files for the framework can be stored either as INI files or as a file of define() statements

- f. It must provide session management seamlessly. That is, pages that require session management should be able to call appropriate methods to store and retrieve session data without any additional configuration required in the script.
- 2. You are also to create the login, dashboard and logout functionality from Assignment 1 using the framework you have built. **[50 marks]**

You will be awarded full marks for this question once you have at least one page that uses all of the functionality described above.

BONUS: Create an API controller that would allow a user to log into the system using an authenticated token via a RESTful API.