FULL STACK WEB DEVELOPMENT II(CPSC 2650)

Final Group Project

Due Date: August 5, 2023

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- This final group project requires you to build a full-stack website using
  - Front-end languages (HTML5, CSS3, and JavaScript ES6)
  - Bootstrap front-end framework
  - Node.js back-end framework
  - MongoDB back-end database and HTTP (web) server

Part-I
Design Patterns

(45 marks)

1. At least the following three design patterns must be used

(a) The module design patter (5 marks)

(b) The Model-View-Controller (MVC) design pattern to develop your full-stack website using the (see figure 1 on page 3) (30 marks)

(i) Appropriate modules in models directory (10 marks)

(ii) Appropriate modules in views directory (10 marks)

(iii) Appropriate modules in controllers directory (10 marks)

(c) The factory method to generate the mapper objects of your data (10 marks)

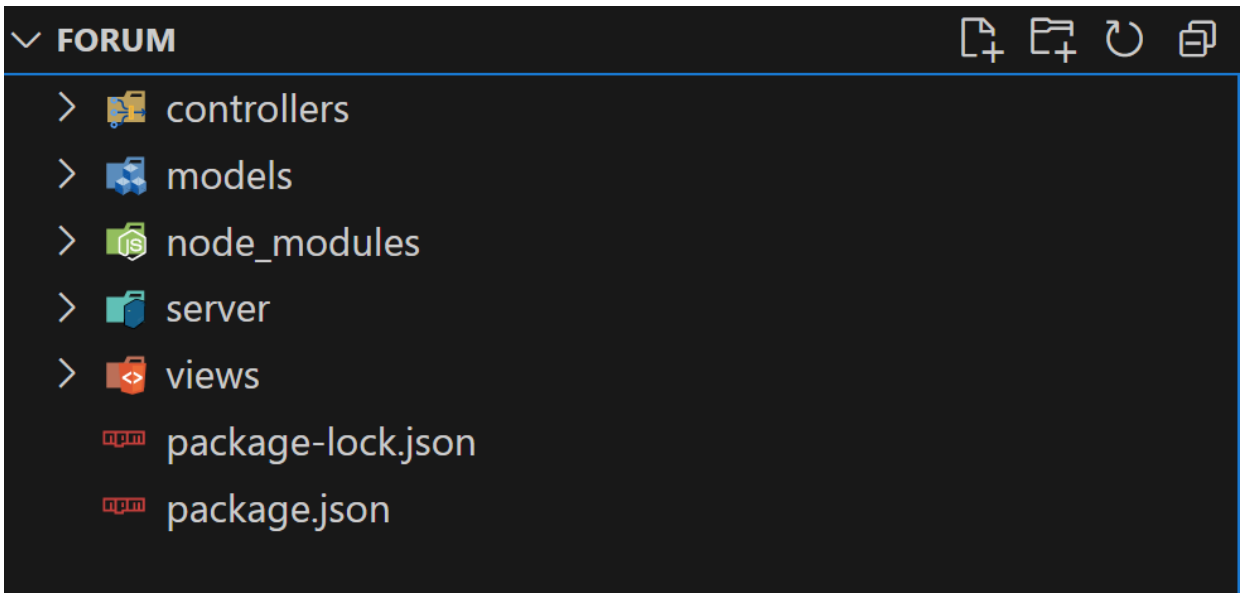

Figure 1: MVC Folder Structure

Part-II
Authentication, Authorization, and Accountability (AAA)

(30 marks)

1. Your full-stack website must provide authentication, authorization, and accountability (AAA)

(a) Authentication: To access your content, users must be authenticated using a username and password (10 marks)

(b) Authorization: Implement authorization by adding three roles: admin, member, and guest (10 marks)

(c) Accountability: generates a collection in MongoDB that stores key information for all requests/responses (see figure 2 on page 4) (10 marks)

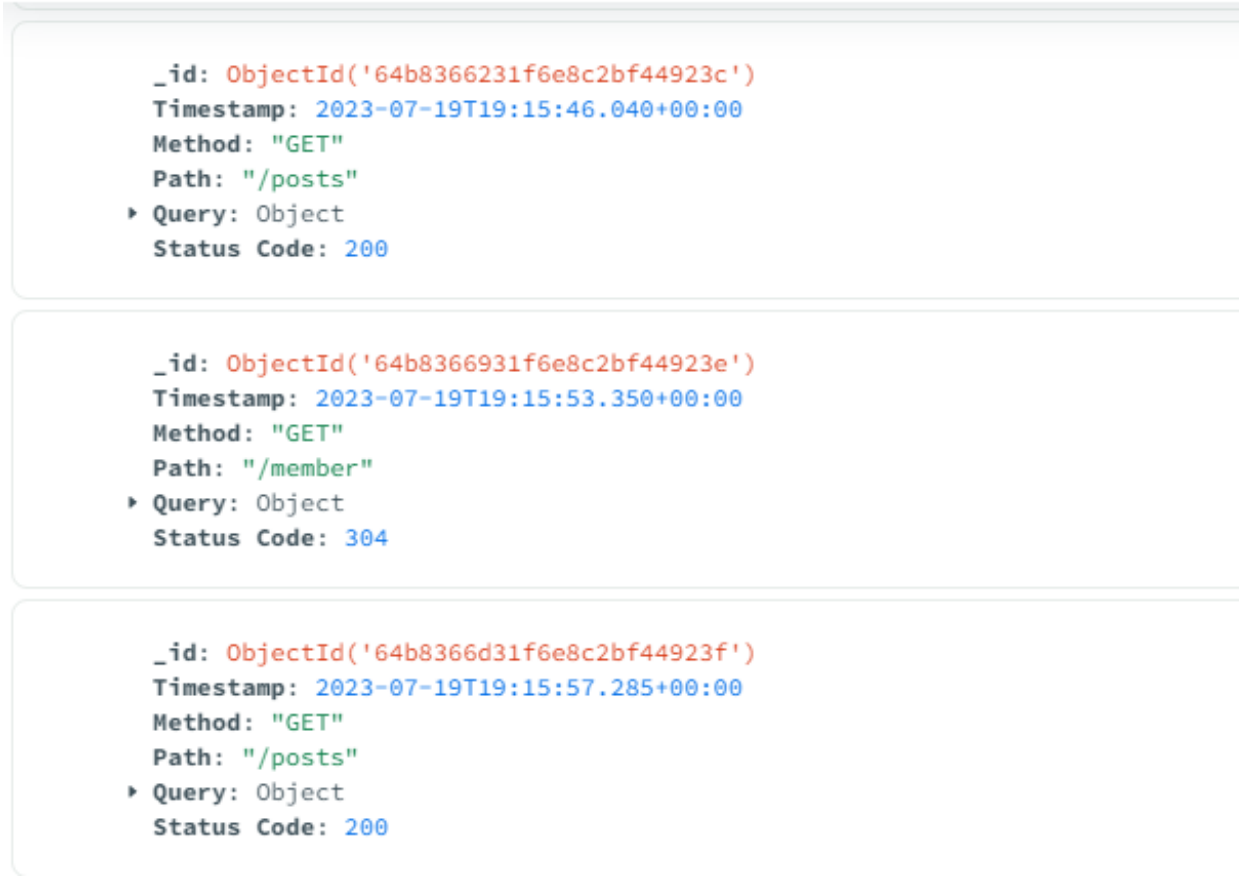

Figure 2: Sample MongoDB Log Collection

Part-III
Web APIs

(15 marks)

1. At least one Web API must be used. This web API can be called by passing latitude and longitude as arguments

Listing 1: Example of Web API using Geolocation

```
https://api.openweathermap.org/data/3.0/onecall?lat={lat}&lon={
    lon}&exclude={part}&appid={API key}
```

(a) Add appropriate utility function to connect to both local and remote MongoDB server (5 marks)

(b) Add appropriate utilities functions to implement CRUD operations (10 marks)

Part-IV
Git Version Control System (VCS)

(20 marks)

1. Use Git VCS with a remote repos[1]

(a) Each group member must contribute and commit her/his contributions (10 marks)

(b) Effective use of Git VCS (10 marks)

[1] Either you can my remote server repos or use a different remote repos and provide me with access to it.

Part-V
Minimum Modules Usage

(20 marks)

1. This project can be completed with the following minimum external modules

- ➦ **express**
- ➦ **mongoDB**

2. texttt-**5** marks will be deducted from using any extra module

Marking Scheme

Task	Marks
Design Patterns	45
AAA	30
Web APIs	15
Git VCS	20
Minimum Modules Usage	20
Usability & Accessibility	20
Total	**150**

Submission

✎ Upload a text file to Brighspace that provides information how to access your remote repos