COSC 4353 Group 42

In this assignment we will come up with an initial design for a software application that you will build in this semester.
We will not be writing any code in this assignment, but only looking at some initial design ideas and high level architecture.

Description:
A partner of your company has requested to build a software application that will **predict the rate of the fuel based on the following criteria**:
- Client Location (in-state or out-of-state) //user profile
- Client history (existing customer with previous purchase or new) //user
- Gallons requested
- Company profit margin (%)

Software must include following components:
- Login (Allow Client to register if not a client yet)
- Client Registration (Initially only username and Password)
- Client Profile Management (after client registers they should login first to complete profile)
- Fuel Quote Form with Pricing module (Once user enters all required information pricing module calculates the rate provides total cost)
- Fuel Quote History

Answer these questions:

1. **Discuss your initial thoughts in detail on how you will design this application?**

We will start by displaying a webpage to the visitor with a user login area. The client can decide to login/register, upon which they will be greeted with a profile completion form if they just registered, or a homepage where they can view their quote history. At any time, the client can request a new quote which will be generated by the given formula, and all other necessary factors we will gather in the profile completion step.

2. **Discuss what development methodology you will use and why?**
We will be using the agile development methodology which provides 6 steps in the system brainstorming/organization process:
   - Evaluate
   - Meet
   - Plan
   - Design
   - Develop
   - Test

This provides a concise guideline to show how, as a team, we can brainstorm and implement our ideas given the task at hand.

3. **Provide high level design / architecture of your solution that you are proposing?**

Designs provided in attached PDF.

- Presentation Layer
  - Used to render views for user on client side
- Business Layer
  - Consists of various functions based on services layer entities
  - Ex: Registration, Credential Validation, Quote Generator, etc.
- Service Layer
  - Model outlines of services provided to users
- Data Access Layer
  - Allows services to obtain data and work with database
- Data Layer
  - Contains user/client data and general quote data for application and all services; database

MERN Stack

- **M**ongoDB for database requirements and permanent storage of all necessary information.
- **E**xpress for serving web pages, routing API requests & react bundle.
- **R**eact for generating client views.
- **N**ode for backend (handling API requests) and communicating with database services.

4. IMPORTANT: list who did what within the group. TAs should be able to validate in GitHub, otherwise team members who didn't contribute will receive a ZERO.

Fill in this table, provide as much details possible:

Group Member Name	What is your contribution?	Discussion Notes
Saim Ali	Worked on diagram, discussed/planned with group on course of project, worked on question 3	None
Robert Duque	Worked on diagrams, started collab software for diagrams, answered question 2, 3	
Muhaimin Badar	Worked on diagrams, answered question 1	

Vy Nguyen	Worked on diagram, threw ideas for answers, worked on question 3	

NOTE: Include a separate file (may be a scan of hand drawn picture if you like, or a PDF, tiff, word document, etc.) which shows a UML diagram of your design.

Here are some architecture examples:

https://www.edrawsoft.com/software-architecture-example.php

What to turn in:

- Only soft copy uploaded to blackboard before due date.
- Only one submission per group.
- No extensions.
- All group members must contribute equally.