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COSC4353
2/5/2021

Assignment 1

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

Our group initially went over the required data that needed to be collected and stored by our program, and the required functions that needed to be implemented. The collected data includes client location, client history, gallons of fuel requested by client, and lastly our profit margin if the fuel is sold to the client. The functions of our software include login for client, client registration, client profile management, fuel quote form with pricing module (calculates rate of fuel and total cost), and fuel quote history. The collected data and functions of this program will be used to complete the main purpose of our program, which is to predict the rate of the fuel. After looking over the details of the application, we decided that the best way to design this software is by developing a web application that the client can access through a browser. We will use Wamp Server to create our web application. Wamp is a solution stack for Microsoft Windows that supports HTML, Python, and MySQL. This is perfect for our group, as we want to use these supported languages to build our web app. Our application will initially display an option to log in or register an account if a client does not have one already. If a client does not have an account, we will redirect them to another page to create one with their inputted information. Once created, it'll again redirect the client back to the login screen. Once the client logs into their account, it'll take them to a page where they can input fuel information and our application will calculate the price and rate of fuel for that client. All this information will also be stored into a database so the client can view their information in the future.

2) Discuss what development methodology you will use and why?

There were many types of software development models that were introduced in this course, so to find the model that would best fit our project goals, we decided to start broad and look into the general positives and negatives of Prescriptive (Traditional) Models and Agile (Modern) Models. The prescriptive model is based on an orderly approach to software engineering, and as a group we initially liked this alot. However, problems with this model start to occur when changes to the project goals are introduced during software development. Each assignment in this semester's class has our group implement more functions or features to our program, which could lead to many changes to our initial goals with our project. Agile methods are the most effective to change, so we decided to narrow our choices to models within that category. Next we needed to pick a specific model, which didn't take much time as we all liked the ideas behind Test Driven Development (TDD). The major benefit behind this method is that test cases are written first before actually coding. This is important as it not only reduces the time of software development, but also allows code flexibility and easier maintenance. TDD relies on repetition of short development cycles, which helps aid in flexibility when goals of the project are changed. Tests are initially made and then a minimum amount of code is produced to pass those tests. This part of the process helps reduce the development time. After passing test cases, refactoring of the code is done. TDD is the development model of our choice when moving forward with our future assignments.

3) Provide a high level design / architecture of your solution that you are proposing?

Swimlane Diagram → Fitting UML into Software Requirements Analysis
Class Diagram → Fitting UML into Software Design

Note: All designs are attached to the file!

4) list who did what within the group?

Shahenshah Meghani - Designed Swimlane Diagram for question #3
Andrew Nguyen - Writer for question #1 and #2
Syed Aziz - Designed Class Diagram for question #3
*Note: All group members contributed to every question, work was split by who should write specific questions.