CS421 Final Project

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CS421 Advance Web Application Development

Objective

The objective of this project was to create a functional website capable of various features such as a sign up/sign in system for users, including creating a username/password, as well as adding menu items to cart/placing and order, and including manager functionality to use admin services on the website. In this case, the website was an online coffee shop application.

Program

The project was written in multiple files under the folder cs421project-main. The following outlines were taken to complete the assignment:

- Create HTML Documents in accordance with each page required (home page, sign up, orders, etc.)
- Creating a sign in/sign up page for users with the ability to be stored into a database (SQLITE)
- Creating a unique key for manager privileges to the website that is otherwise hidden to the rest of the users, allowing for manager functionality tools
- Creating a python file to retrieve database information of inventory, as well as storing users information
- Creating a python file for back end services, tying in all the functionality

Code Design

The following is the design and implementation of the program:

- Templates
    - Templates contained all the page files, written in HTML. The files were divided into 10 different pages. With an initial start page, users are redirected to sign up or log in. #Fill In
- The Python code sets up a web application using the Flask framework to manage the shop. The functionalities are as follow:
    - **Imports and Configuration** – Importing the necessary modules like Flask, SQLAlchemy, and WTForms.
    - **Database Models**: Three classes (**Food**, **User**, and **Orders**) are defined as SQLAlchemy models representing the database tables for food items, users, and order information. These classes define the structure of each table and their relationships.
    - **Web Forms**: Two FlaskForm classes (**SignupForm** and **LoginForm**) are created using WTForms to handle user sign-up and login forms

    - **Database Creation and Initialization**: The code creates the necessary tables and initializes the database with some sample food items and a user
    - Routing and Views:
        - '/signup': Handles user sign-up. Validates form input and adds a new user to the database.
        - '/login': Handles user login. Validates form input and checks user credentials against the database.
        - '/home': Displays the home page, differentiating between managers and regular users.
        - '/menu': Displays the coffee shop menu, reading the food items and prices from the database.
        - '/thankyou': Processes user orders, calculates the total price, and updates the inventory in the database. It then shows a thank-you page.
        - '/orders': Shows all the orders placed so far.
        - '/inventory': Displays the inventory of food items, reading it from the database.
        - '/updatedInventory': Updates the inventory and prices of food items in the database
    - **Global Variables**: The code uses a global variable **manager** to differentiate between regular users and the manager
- The Database code creates the SQLAlchemy database model.
    - **Database Model**: The code defines a class named **Food** as a SQLAlchemy model. This class represents the structure of the **foods** table in the database. Name, inventory, price are included.
        - **__init__ -** method to initialize instances of the Food class
        - **__repr__** - method to provide a string representation of the class instances.
    - **Database Configuration**: Creates a Flask application and configures the database URI to **data.sqlite**.
        - **SQLALCHEMY_TRAC_MODIFICATIONS: False -** to suppresses modification tracking. Additionally,
        - **SQLALCHEMY_ECHO**: **True** - prints all SQL statements generated by SQLAlchemy to the console.

Analysis/Conclusion

Overall, the application allows users to sign up, log in, view the coffee shop's menu, place orders, and view and update the inventory. The manager can access additional functionalities not available to regular users, such as viewing all orders and updating inventory and prices. Web Application combines all the moving parts to form functionality. Most troubleshooting tests compatibility with certain programs/files, or in simpler words, “getting everything to click.” One way to take this assignment a step further is implement framework for payment processing.