Report

INFO30005 Web Information Technology

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Snacks In A Van

Logo Design

We were asked to design and build a web application for Snacks in a Van, based on business requirements provided to us throughout this semester. Our team aims to program a professional and easy-to-use application for business and practice the culture of team web development.

For the submitted work, our application runs on an online server and interacts with our cloud database. The back-end systems of our application meet all business requirements, including some extra designed functionalities to enhance the user experience. All these systems are displayed via a carefully designed front-end interface.

In the following sections of the report, we will present the process of our development (Section 2), explain the architecture and functionalities behind our design (Section 3), and discuss some of the potential improvements in the future (Section 4).

Report Content

Development Process

To accomplish our task, we split our work into four subsections

- ***UI Mockup*** that we design our user interface in advance. We exhaustedly designed the front-end interface of our complete app and ensured that all business requirements are covered. This deliverable gives us a clearer understanding of the works that need to be done.

- ***App Server Mockup*** that we build our cloud database and connect it to our basic back-end systems. This deliverable is the prototype of our application, where we have realized some of the most basic business requirements.

- ***Front-end and Back-end*** that we construct our front-end interface to operate our further completed back-end system. This deliverable mainly focused on implementing our previous UI design. Until now, we have partially completed our application, which users can place and view their orders.

- ***Complete Whole System*** that we complete the remaining parts of our application and conduct several tests on our website to ensure that all required functionalities are perfected. This deliverable provides a complete and stable version of our application.

Things of Utilising

We consider using various development tools and reference some sample codes to assist our development. The following will introduce some of the utilised things for this project.

Tools

- ***Zoom** (Team meetings)*: We expect that our team members can communicate with each other in a timely and effective manner when developing, therefore we always require each member to participate the zoom meetings during development.
- ***Adobe XD** (Design our user interface):* due to its convenient usability and rich features. It provides a variety of UI templates and icons so that we can draw our UI more efficiently.
- ***GitHub** (Project management):* Project management and version control are vital to the team web development. GitHub perfectly provides a platform for these two needs.
- ***VS Code** (Main IDE for coding)* :to program our source code, and its ***Live Share*** function for team collaboration. We decided to use IDE to make our development more convenient and efficient. In order to allow every team member to have the same development process and make bug fixes timelier, we chose to collaboratively program our project.
- ***Draw.io** (Application modelling and architecture design)*: This software provides a set of professional tools for software modelling and design.
- ***Heroku** (Application operation platform):* which is a platform that enables developers to build, run, and operate applications entirely in the cloud.
- ***MongoDB** (Database management):* as it is easy to access and manage.

Libraries

- ***React** (Our team decides to use for our components rendering): We adopt this library to handle the view layer for our website, thereby making our application a more intuitive and smoother user experience.*
- ***Ant design** (Contemplate for page extensions): We have tried so many con-templates to fit our needs, but we use **Ant Design** for our final decision.*

Team Members Roles

Each member of our team plays their responsibilities and roles, which made great contributions to the development of our project. The following will introduce the role of each team member.

- ***Fu-Sheng Huang*** is the leader of our team. He is mainly responsible for member management, task assignment, and development arrangement. Meanwhile, he also made a lot of contributions to the full-stack development and error correction. Most bugs are fixed by him.

- ***Yi-Xun Zhao***, ***Ke-Xin Wen***, ***Xin-Yu Li*** are the core developers of our application's back-end systems. They have made huge contributions to the functionalities of our application. They fulfilled all the business requirements while enhancing the using experience. Moreover, they also tested the rationality and compatibility of our application to maintain the website's normal operation.

- ***Xue-Fei Qi*** is mainly responsible for UI design and front-end development, and her contribution in this part is particularly significant. Due to her skilled designing techniques, our app UI immediately becomes more user-friendly and pretty. Additionally, she has also made a lot of improvements in the user interaction experience of our application.

Tasks and Repository

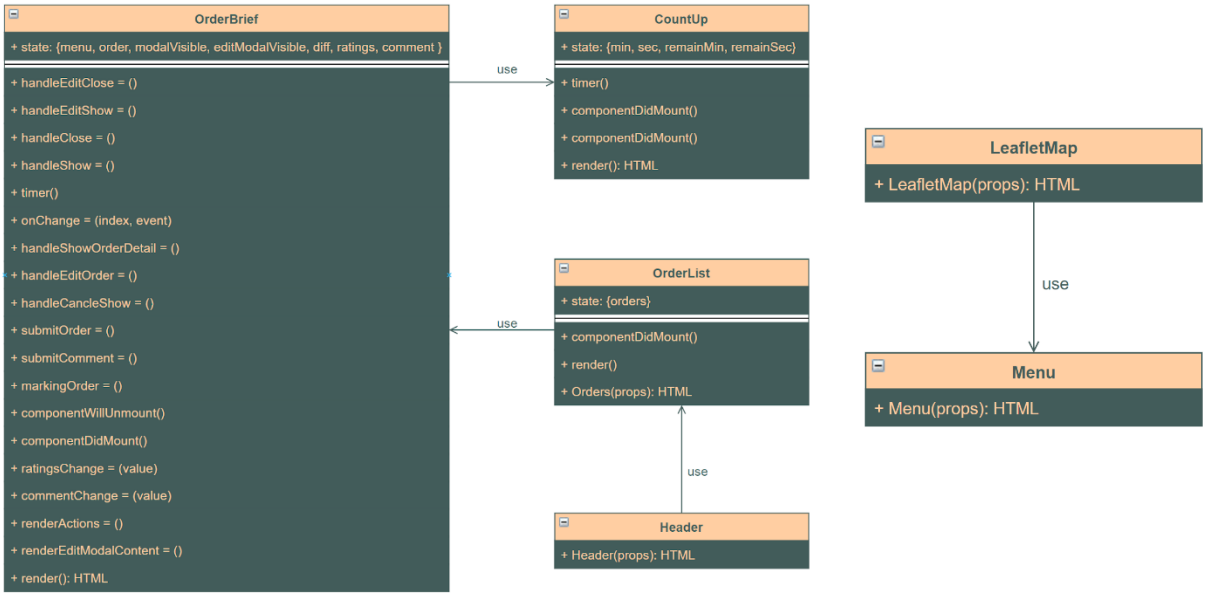
Our process for Tasks assigning and repository managing is highly sensible. When assigning a new task, we usually let team members receive their tasks on a self-recommended basis. We consider this could maximize the capability of each team member, which is relatively more efficient. For repository managing, we only use one single repository (Master) to manage our project.

We only push our repository whenever certain progress has been made and ensure that every team member is informed that the repository has been updated. Repository pushing is typically done by one person to make sure that there will be no undesired conflicts occurred. We also tried that each team member has their own GitHub branch, yet this is not good for version management and control.

System Architecture

We now explain the architecture and functionalities behind our design.

Components Interconnection Design



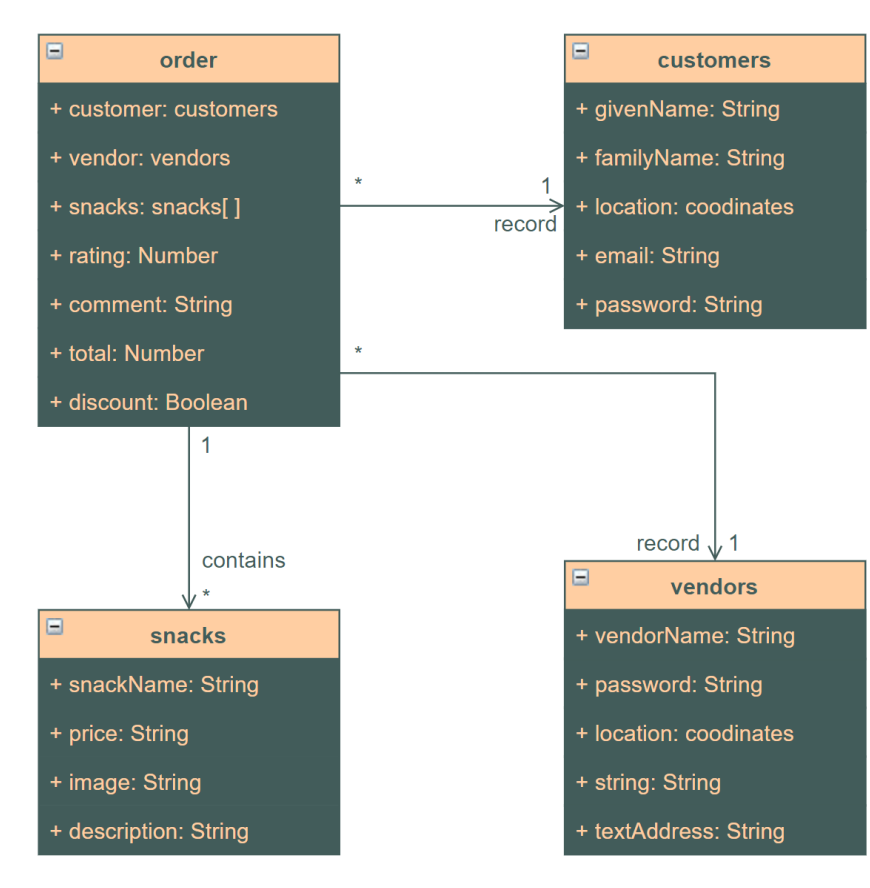
Components Design

Design Analysis

- Model ***Menu*** and model ***CountUp*** are mainly set up basic information, E.g., time, snacks list for browsing, discount time remaining.
- We constructed the model ***Header*** to represent the customer profile headers and give customers to see their basic information by importing ***OrderList*** model and head to profile to change personal information if needed.
- ***OrderList*** model import ***OrderBrief*** model to update order information simultaneously.
- Model ***LeafletMap*** represents map for ordering on the map by check opening vendor markers, which needs ***Menu*** model to work with and show up menus if customer click the vendor markers.
- Last model ***OrderBrief*** is to display the order details when customer want to check orders in the drawer we made and import ***CountUp*** model to show time to see if the discount should be added to customers' order(s)

Database Design

We analyzed the given scenario and derived a database design diagram



Design Modal Diagram of database system

Design Analysis

- Model ***customers*** and model ***vendors*** represent the uses of our application. We store their information in our database, which can be modified when required.
- We constructed the model ***order*** to represent the order created by customers. It records who created this order and the vendor who received this order. It contains important information for selling, while recording if it is discounted.
- Model ***snacks*** represents the snack object provided by vendors. We record the name, price, description, and its image URL.

User Interface and User Experience

During the design process, we paid more attention to build high-standard usability and functionality of our system.

1. ***Visibility of system status:*** Our system provides appropriate feedback within a reasonable time to users when they take actions to always be clear about the system status. (E.g., "Your location is here")

2. ***User Freedom:*** Our system gives users the freedom to navigate the basic functionalities (the non-login users could also navigate the menu). Meanwhile, we provide the "undo" and "go-back" function for error prevention, in case that users accidentally press the wrong button or want to return to the former page.

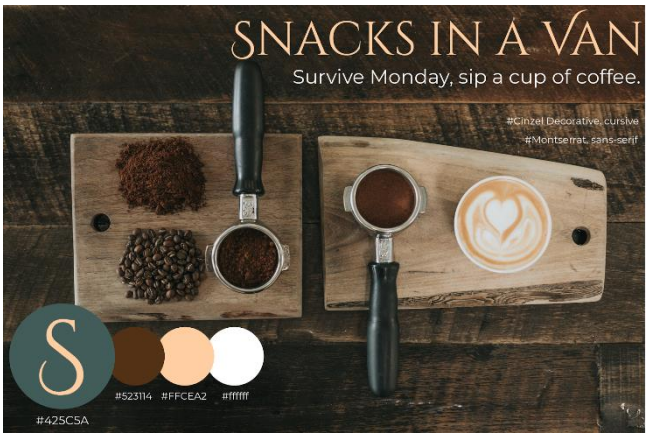
3. ***Error prevention:*** Meanwhile, we provide the "undo" and "go-back" function for error prevention, in case that users accidentally press the wrong button or want to return to the former page.

4. ***Privacy Security:*** Our system uses hash function to protect user privacy, meanwhile in the login window, we make a special mention of "Your email is under high-security protection"

5. ***Aesthetic***: our website app is designed in a coffee shop style.

6. ***Extension:*** A pop-up window (drawer) to distinguish between different layers

7. ***Efficiency:*** Set different colours to distinguish the buttons from usage frequency



Colour Palette and Fonts

Vendor Marker Design

Empty Order Design

Potential Improvements and Future Works

More Advanced Functions

Our application is highly extendable for potential developments in the future. Current supporting features only satisfying business requirements. However, it is feasible to add some more practical features to further complete our application. Here, we listed some of the implementable features.

1. ***Vendors can add/delete snacks by themselves:*** This allows vendors to dynamically modify their daily supply of snacks, which also prevents customers from ordering under-supply snacks.

2. ***Customers can visualize their input password when registering:*** When customers setting their password, they can make it visible or hidden.

3. ***Customers' old passwords are required to validate to change their new password:*** For security purpose, to set a new password, customers must validate their identity.

4. ***More reliable security level:*** E.g., customers must input a validation code to check the validity of their email address.

5. ***Third-party payment system:*** Customers can pay for their orders via third-party methods. E.g., PayPal, Credit Card, Debit Card.

6. ***Advanced feedback system:*** In order to receive suggestions and improve our application. Customers can more conveniently comment or report their orders.

UI Design Enhancement

Since we don't have enough time to fully construct our UI details or animations, the UI designs of our current application are not exactly the same as the UI we designed in deliverable 1. Therefore, we could complete our current UI designs in the future.

In addition, it is worthwhile to enrich our UI features using more advanced CSS techniques. By facilitating our interaction designs or adding more animations, the user experience of our application could be more natural or humanized.

Epilogue and Summary

In this project, our team provided a web application called **"*Snacks in a Van!*", ** which is a platform that allows customers to order snacks from a nearby snack vendor in advance. It also provides a platform for snack vendors to handle their working status and incoming order requests.

Our current application has met all the business requirements provided to us, yet there are still some limitations and potential improvements (e.g., functionality details, UI designs). Therefore, we decide to consistently update our application in the future to serve a better user experience for users if we have extra time.

Regarding completing this project, our work attitude is serious that we follow the rigorousness of project development and the cohesiveness of teamwork. Therefore, our application can be said well-accomplished. Furthermore, our web development techniques have been improved and our team development ability is practised.

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