Assignment 1 :
Discover and Design

LE EECS 3461 - A
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Sarah Akhavan Kazemzadeh

Group Members:

Haobin Alturo Chen Liu
218294587

Sarika Patel
216463242

Prachi Sadhwani
218971515

Method: Make Observations

(i) Gathering Data

For the purpose of discovering one of the main struggles or barriers students face as a University student, the techniques of brainstorming and direct observation were used. Using brainstorming to gather data is beneficial as it allows the interviewer to have a better understanding of common problems university students face. The participants can provide examples of problems they face or problems other students may have without being judged. This lack of judgment makes it possible to receive as many ideas as possible regarding the goals, concerns, needs and requirements of university students. Direct observation will help with understanding how the participants behave and act in the location of interest. By observing students on campus, the observer was able to take note of the things they witnessed in real time, and notice trends among the students.

(ii) Report the Documentation

Brainstorming Session 1
During the first brainstorming session, 4 participants from the target population of university students were asked to brainstorm the main struggles or barriers they face as a student attending university. The following are the notes taken by the interviewer during the session.*

Participant 1
Major: Computer Science (5th Year)
Pronouns: he/him
Problems :

- There is no way to know whether the YFS has or does not have certain club documents and if that documents needs to be renewed and when

Participant 2
Major: Digital Media Game Arts (4th year)
Pronouns: she/her
Problems:

- Collecting all her projects into a single place to create a portfolio or gallery for past projects

Participant 3
Major: Digital Media Development (4th year)

Pronouns: He/Him
Problems:

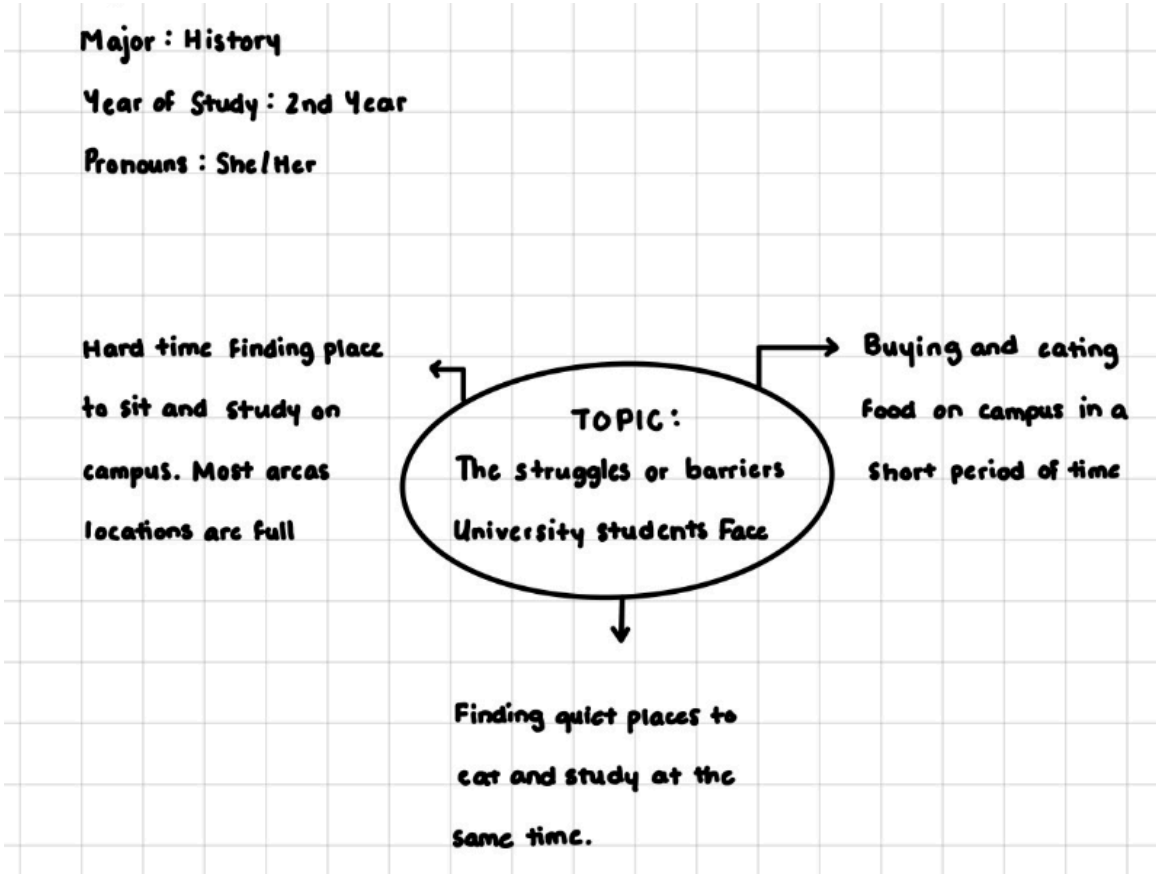
- Help finding the locations of water fountains on campus and knowing whether a water fountain works or not
- Help finding locations of food and the type of food available on campus

Participant 4
Major: Digital Media Game Arts (4th year)
Pronouns: she/her
Problems:

- Frustrated by the lack of proper documentation for managing clubs and the lack of proper procedures from the last club's president.

Brainstorming Session 2
For the second brainstorming session, 3 participants from the target population of university students were asked to brainstorm the main struggles or barriers they face as a student attending university. The following are pictures of the notes and diagrams from the brainstorming second brainstorming session conducted.*

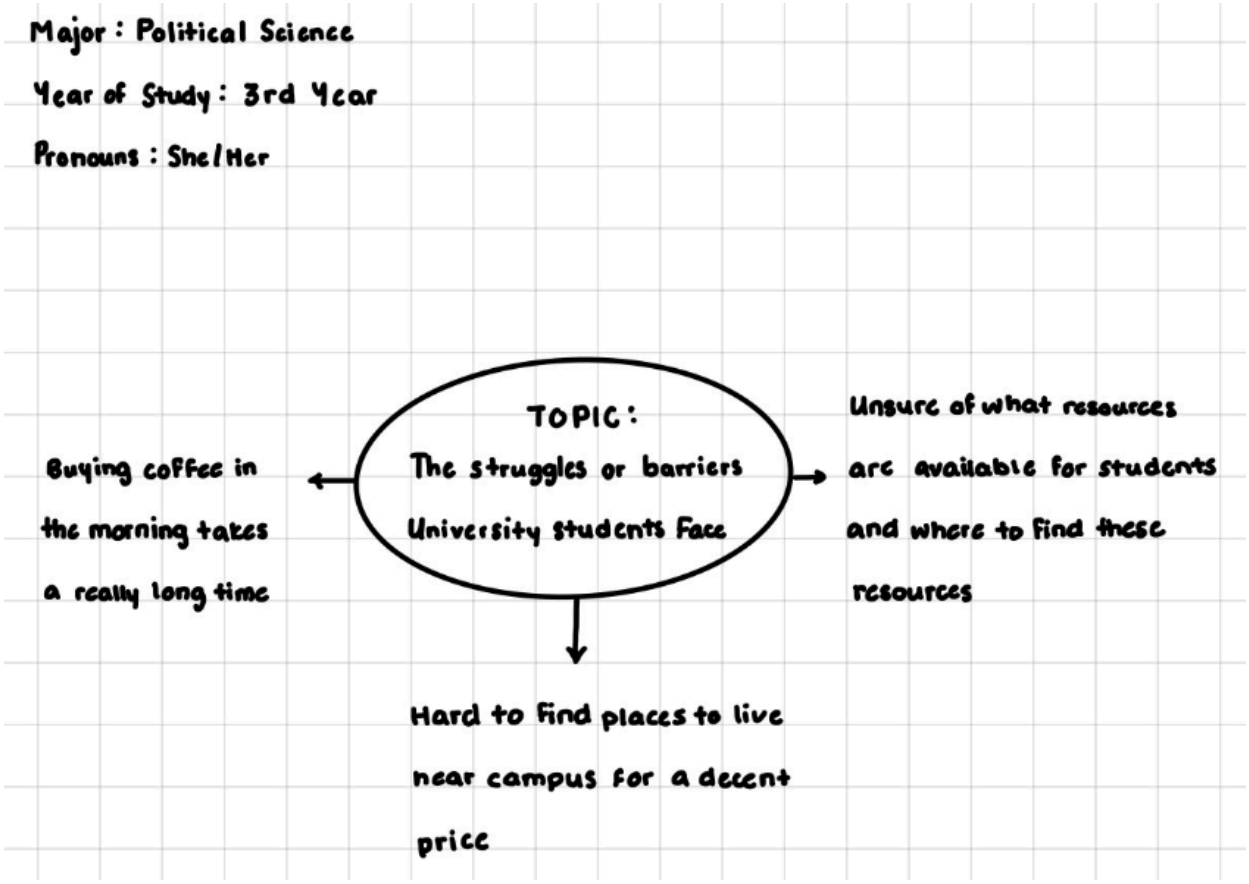
Participant 5



Notes from the diagram above:

- Difficulties buying food and eating food in a short time period
- Has a hard time finding places on campus to sit and study, because most areas are already full
- Finding quiet places to eat and study at the same time

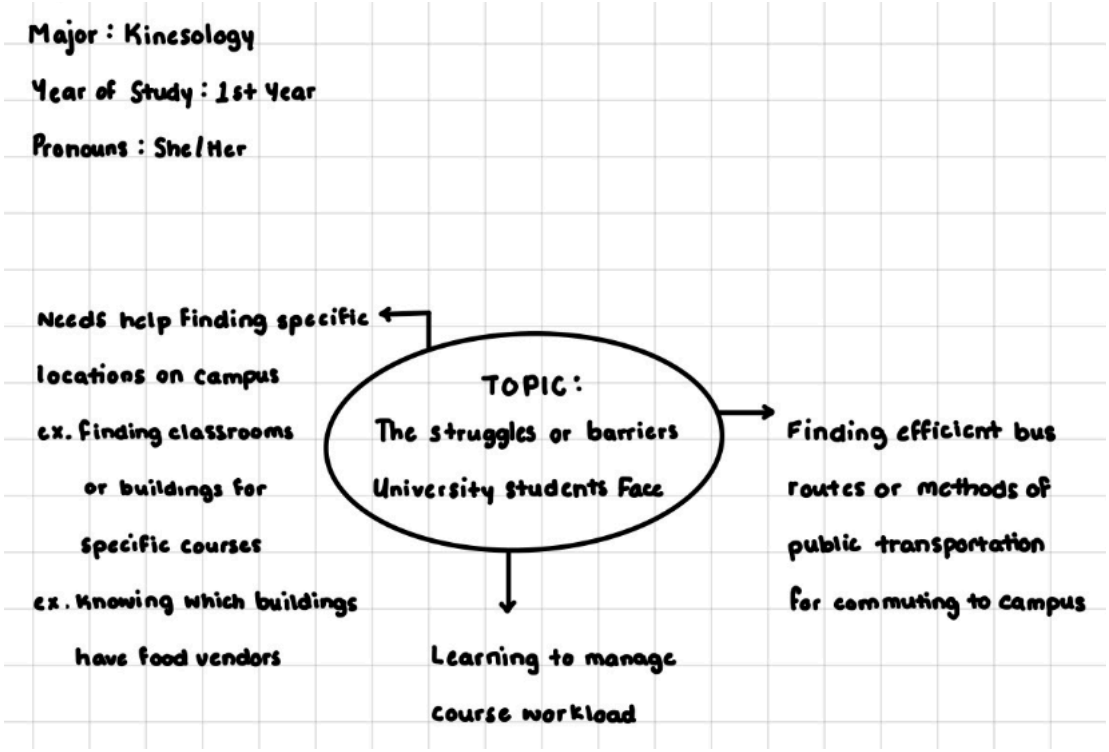
Participant 6



Notes from the diagram above:

- Unsure of what resources are available to students and where to find these resources
- Buying coffee in the mornings takes a really long time
- Hard to find places to live on campus for a decent price

Participant 7



Notes from the diagram above:

- Needs help finding specific locations on campus, ex.finding the classroom or building for a specific course, or knowing which buildings have food vendors
- Struggles with finding efficient bus routes for commuting on campus
- Learning to manage course workload is very hard

*Note, both brainstorming sessions were conducted in a similar manner, but the style of notes taken vary based on the interviewer conducting the interview.

Direct Observation

For the gathering of data through direct observation, the observer visited three busy locations on the campus to understand the struggles students face through their actions. The following are the notes taken by the observer at these locations.

Location: Central Square

- After a certain length in long lines, the lines stop growing significantly in size, especially the lines in Tim Hortons and Starbucks by Central Square.

Location: Scott Library

- Many students walk around the library to find a place to study. If they cannot find a place to sit, they go to a different floor or end up leaving
- Many students are falling a sleeping or taking a nap in the library

Location: Ross Building (path from Vari Hall to Central Square)

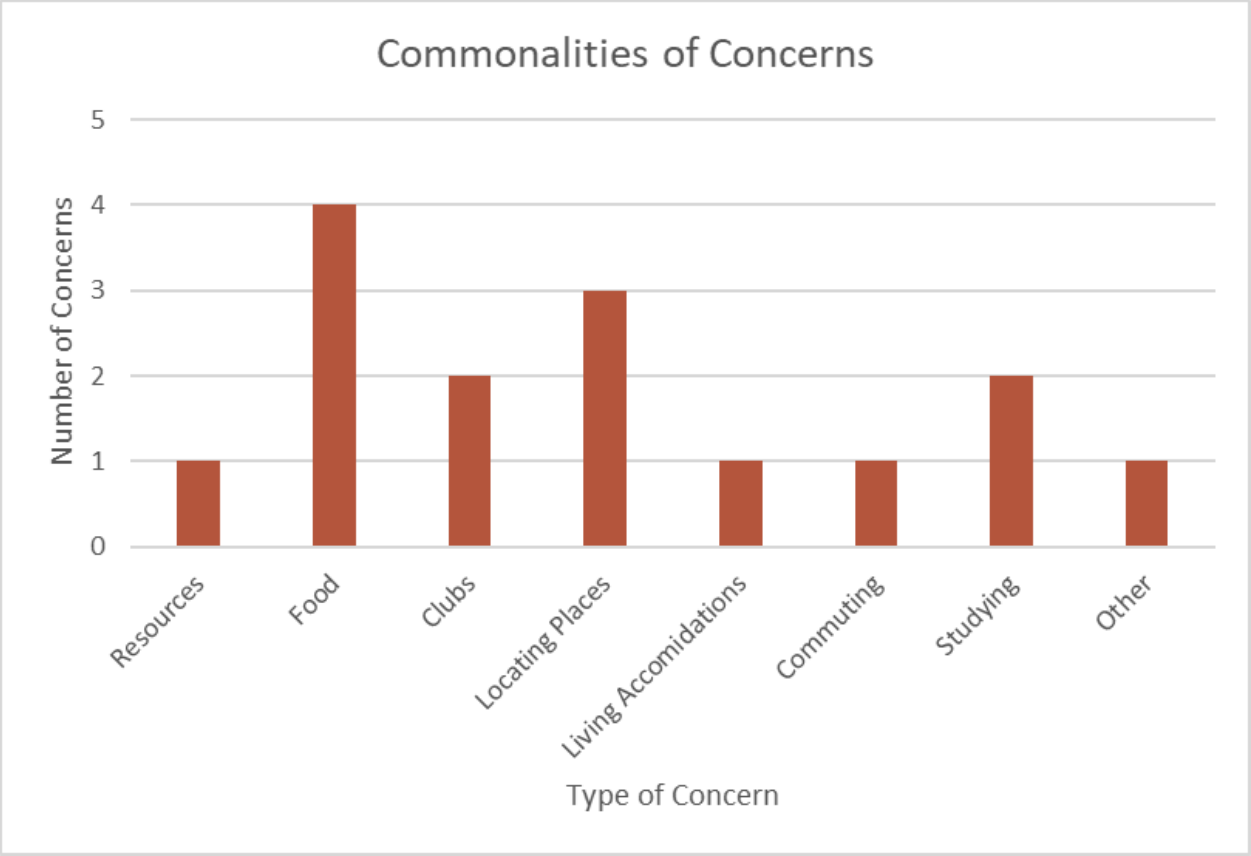
- Not many people are making use of the resources, like the help desk, student accessibility services and lost and found at this location. They ended up passing through without stopping

Reflections about the Observation:

- It seems like most students do not have enough time to buy food on campus
- There are not enough spaces to study in Scott Library
- Many students may not know what resources are available to them because they do not pay attention to their surroundings or they do not have need for these resources

(iii) Commonalities

After gathering the data about the struggles university students face, the different types of concerns were broken down into categories based on the type of concern and the number of times that type of concern was mentioned. The following graph shows the number of times certain concerns were brought up during both brainstorming sessions.



According to the graph the problems or opportunities for design can be the concerns that are brought up the most. In this case the two three most common problems are regarding food, locating places and a tie between studying and clubs. There is a great opportunity for designing a system that will help with problems concerning food, as many of the problems mentioned are very similar. Most concerns about food either relate to the long wait times, or finding restaurants on campus. Another opportunity for design could be for the concern of locating places. This topic includes locating buildings or classrooms for classes, locating places that sell food, and locating water fountains. This concern has an overlap with the concern of food.

The problem of studying is a need that cannot be addressed by the current interactive system, because the topic is too broad. It could be possible to design a system to find places to study on campus, but it is not possible for addressing techniques for studying and work management. Study techniques are heavily dependent on the people who are using they system, as everyone has a different way that helps them study. Creating singe system would not meet the needs of all users. In the case of clubs, the information is already available online, its simply a matter of finding that information that is har. For this scenario that best option would be to improve existing systems so that the information people are looking for is more readily available.

User Profiles, Personas, Scenarios

User profiles

User profile 1:
Age: 18 – 24
Education: Post-secondary
Location: On campus
Goals: Determine the optimal time when a specific restaurant has the shortest line.

User profile 2:
Age: 18 – 24
Education: Post-secondary
Location: Outside of campus
Goals: Identify the restaurant with the shortest line at the current time.

Personas

Person 1 (Based off User Profile 1)

Mei Lee

Age: 21	Education: Undergraduate
Sex: Female	Occupation: Student

BIOGRAPHY

Mei is a third year undergraduate student studying computer science. As an international student from China, Mei lives on the campus of her university. Mei has spent a lot of time this week working on an important project and has made significant progress. To reward herself , Mei decides to visit her favourite restaurant, Sakura. Mei is determined to go to Sakura when the wait time is the shortest. This way Mei can prioritize her time and use it towards finishing up her project instead of wasting time to wait in line for her food.

MOTIVATION

Wait Time

Positive Review

Service Quality

Distance

GOALS

- To find the information she needs efficiently
- To be able to see the hourly trends of wait lines for a specific restaurant

FAVOURITE RESTAURANTS

SAKURA

STARBUCKS COFFEE

FRUSTRATIONS

- Wasting time waiting in line
- Too much information or Irrelevant information

PERSONALITY

Extrovert — Introvert

Sensor — Intuitive

Thinker — Feeler

Judger — Perceiver

Persona 2 (Based off User Profile 2)

Sean Davidson

Age: 19	Education: Undergraduate
Sex: Male	Occupation: Student

BIOGRAPHY

Sean is an second year undergraduate student studying business. As a commuter student, Sean spends a significant amount of time each day traveling to and from campus. This semester Sean has a very busy schedule and finds it particularly hard to get food on campus, as the locations he visits have a very long line. With the limited time he has between classes, Sean decides to grab food after his last class for the day is complete. Sean wants to find the closets restaurant with the shortest wait time so he can ensure he will not miss his bus home.

MOTIVATION

Wait Time

Positive Review

Service Quality

Distance

GOALS

- To find a restaurant that is both close by and has a short wait time
- To be provided with as many suitable options as possible
- To see the current wait times of at different restaurants

FRUSTRATIONS

- Information provided in an unorganized manner
- Missing the bus

FAVOURITE RESTAURANTS

aroma espresso bar

TIMBERS LODGE SOCIAL GRILL

PERSONALITY

Extrovert — Introvert

Sensor — Intuitive

Thinker — Feeler

Judger — Perceiver

Establishing Requirements

1. Functional Requirements

1.1. The Scope of the Work

1.1.1. Project Objectives

Requirement #: 15 Requirement Type: The Scope of the Work

Description: The project aims to develop an app that helps university students make informed decisions about dining by providing real-time updates on restaurant waiting times.

Rationale: Clear project objectives provide a focus for development efforts and align with user needs.

Originator:

Fit Criterion: The project is considered successful if it delivers an app that meets the specified objectives and user needs.

Customer Satisfaction: Medium Customer Dissatisfaction: Medium

Priority: High Conflicts: None

Supporting Materials: Project scope documents

1.1.2. Milestones and Deliverables

Requirement #: 16 Requirement Type: The Scope of the Work

Description: The project includes specific milestones and deliverables, such as app development phases and project reports.

Rationale: Defining milestones and deliverables helps track project progress and ensure timely completion.

Originator:

Fit Criterion: Milestones and deliverables should be completed according to the project timeline.

Customer Satisfaction: Low Customer Dissatisfaction: Low

Priority: Medium-low Conflicts: None

Supporting Materials: Project timeline, milestone descriptions, and deliverable specifications

1.2. Business Data Model and Data Dictionary

1.2.1. Data Source

Requirement #: 17 Requirement Type: Business Data Model and Data Dictionary

Description: The project specifies the data sources from which the app retrieves real-time waiting time information.

Rationale: Identifying data sources is crucial for real-time data integration and accuracy.

Originator:

Fit Criterion: Milestones and deliverables should be completed according to the project timeline.

Customer Satisfaction: Medium Customer Dissatisfaction: Medium

Priority: Medium Conflicts: None

Supporting Materials: Data source documentation and integration plans

1.3. The Scope of the Product

1.3.1. App Features

Requirement #: 18 Requirement Type: The Scope of The Product

Description: The app should include features such as restaurant listing and real-time waiting time updates.

Rationale: Defining product features ensures alignment with user needs and project objectives.

Originator:

Fit Criterion: The app should successfully implement and provide all specified features.

Customer Satisfaction: Medium Customer Dissatisfaction: Medium

Priority: High Conflicts: None

Supporting Materials: Feature specifications and user requirements documentation

1.3.2. Target User

Requirement #: 19 Requirement Type: The Scope of The Product

Description: The app's target user are university students seeking real-time restaurant waiting time information on campus.

Rationale: Defining the target user groups helps tailor the app to their specific needs and preferences.

Originator:

Fit Criterion: The app should meet the expectations and requirements of the target user groups.

Customer Satisfaction: Medium Customer Dissatisfaction: Medium

Priority: Medium-high Conflicts: None

Supporting Materials: User personas and target audience profiles

1.4. Functional Requirements

1.4.1. Listing Selection

Requirement #: 20 Requirement Type: Functional Requirements

Description: The app should provide a list of restaurants on campus and allow users to filter restaurants by cuisine type.

Rationale: Offering restaurant listings and filtering options aligns with user needs.

Originator:

Fit Criterion: Users should be able to access the restaurant list and filter restaurants effectively.

Customer Satisfaction: High Customer Dissatisfaction: Medium-high

Priority: Medium-high Conflicts: None

Supporting Materials: Restaurant listing specifications and user requirements documentation

1.4.2. Live Waiting Time Updates

Requirement #: 21 Requirement Type: Functional Requirements

Description: The app should display real-time information on restaurant waiting times, and users can contribute waiting time updates for the community.

Rationale: Providing real-time data and user contributions enhances the app's utility and accuracy.

Originator:

Fit Criterion: The app should deliver real-time waiting time information, and user contributions should be accepted and updated promptly.

Customer Satisfaction: High Customer Dissatisfaction: High

Priority: High Conflicts: None

Supporting Materials: Real-time data integration technologies and user contribution guidelines

1.4.3. Accessibility

Requirement #: 22 Requirement Type: Functional Requirements

Description: The app should be accessible to users with disabilities, including screen readers and voice commands.

Rationale: Accessibility support ensures inclusivity and usability for all users, maybe curb side effect.

Originator:

Fit Criterion: The app should work seamlessly with accessibility tools and offer alternative user interface options.

Customer Satisfaction: Medium Customer Dissatisfaction: Medium

Priority: Medium Conflicts: None

Supporting Materials: Accessibility guidelines and integration documentation

1.4.4. User Feedback and Support

Requirement #: 23 Requirement Type: Functional Requirements

Description: Users should have access to customer support and provide feedback through the app.

Rationale: Providing support and feedback channels helps address user issues and improve the app.

Originator:

Fit Criterion: The app should offer accessible customer support options, and users should be able to submit feedback through the app.

Customer Satisfaction: Medium Customer Dissatisfaction: High

Priority: Medium Conflicts: None

Supporting Materials: Customer support mechanisms and feedback submission forms

2. Non-Functional Requirements
2.1. Look and Feel
2.1.1. UI Design

Requirement #: 1 Requirement Type: Look and Feel

Description: The user interface (UI) design of the app should be clean and intuitive, visually appealing, and follow modern UI/UX practices.

Rationale: A visually appealing and user-friendly UI enhances the user experience.

Originator:

Fit Criterion: Users find the UI easy to navigate, and it receives positive feedback during usability testing.

Customer Satisfaction: High Customer Dissatisfaction: High

Priority: High Conflicts: None

Supporting Materials: UI/UX design guidelines and style guides

2.1.2. Consistency

Requirement #: 2 Requirement Type: Look and Feel

Description: The layout and design of the app should be consistent across screens and platforms.

Rationale: Consistency enhances the user experience by making the app predictable and easy to use.

Originator:

Fit Criterion: Users do not find the design jarring or inconsistent during interaction with the app.

Customer Satisfaction: High Customer Dissatisfaction: High

Priority: High Conflicts: None

Supporting Materials: UI/UX design guidelines and style guides

2.2. Usability and Humanity

2.2.1. Intuitiveness

Requirement #: 3 Requirement Type: Usability and Humanity

Description: The app should be easy to navigate for university students, ensuring that users can intuitively understand and use its features.

Rationale: Intuitiveness simplifies user interaction, making the app more user-friendly.

Originator:

Fit Criterion: Users should not encounter significant navigation challenges.

Customer Satisfaction: High Customer Dissatisfaction: Medium

Priority: High Conflicts: None

Supporting Materials: Usability testing and user feedback

2.2.2. Multilingual Support

Requirement #: 4 Requirement Type: Usability and Humanity

Description: The app should support multiple languages to make it usable to a wider population of university students.

Rationale: Multilingual support ensures inclusivity and accessibility for a diverse user base.

Originator:

Fit Criterion: The app should offer language options, and users can switch between languages seamlessly.

Customer Satisfaction: Medium Customer Dissatisfaction: Low

Priority: Medium Conflicts: None

Supporting Materials: Language translation resources

2.2.3. Accessibility Support

Requirement #: 5 Requirement Type: Usability and Humanity

Description: The app should provide alternative user interface options and integrate with Android/iOS accessibility APIs to ensure accessibility for users with disabilities.

Rationale: Accessibility support is essential for users with disabilities to use the app effectively.

Originator:

Fit Criterion: Users with disabilities give positive feedback on usability

Customer Satisfaction: Medium Customer Dissatisfaction: Low

Priority: Medium Conflicts: None

Supporting Materials: Accessibility guidelines and APIs

2.3. Performance

2.3.1. Response Time

Requirement #: 6 Requirement Type: Performance

Description: The app should provide real-time updates of restaurant waiting times or close to real-time updates.

Rationale: Quick response times ensure that users receive up-to-date information, enhancing the app's utility.

Originator:

Fit Criterion: The app should update waiting times within seconds of real changes.

Customer Satisfaction: High Customer Dissatisfaction: High

Priority: High Conflicts: None

Supporting Materials: Real-time data integration technologies

2.3.2. Scalability

Requirement #: 7 Requirement Type: Performance

Description: The app should be able to handle an increasing user base and an increase in restaurant listings without performance degradation.

Rationale: Scalability ensures that the app remains responsive and functional as user and restaurant data grows.

Originator:

Fit Criterion: The app should handle user and restaurant data growth without a noticeable decrease in performance.

Customer Satisfaction: Medium Customer Dissatisfaction: Low

Priority: Medium Conflicts: None

Supporting Materials: Scalability testing and performance optimization strategies

2.4. Operational and Environmental

2.4.1. Cross-platform

Requirement #: 8 Requirement Type: Operational and Environmental

Description: The app should be supported across multiple platforms, including iOS and Android.

Rationale: Cross-platform support broadens the app's accessibility to users with various devices and preferences.

Originator:

Fit Criterion: The app should be available and perform consistently on both iOS and Android platforms.

Customer Satisfaction: High Customer Dissatisfaction: High

Priority: Medium Conflicts: None

Supporting Materials: Cross-platform development tools and guidelines

2.5. Maintainability and Support

2.5.1. Update and Maintenance

Requirement #: 9 Requirement Type: Maintainability and Support

Description: The app should receive regular updates to improve functionality and should be designed with a modular structure for easy maintenance.

Rationale: Regular updates keep the app current, and modular design simplifies maintenance tasks.

Originator:

Fit Criterion: Updates should be released at regular intervals, and the modular design should allow for straightforward maintenance.

Customer Satisfaction: Medium-low Customer Dissatisfaction: Low

Priority: Medium Conflicts: None

Supporting Materials: Software development best practices and modular design principles

2.5.2. Customer Support

Requirement #: 10 Requirement Type: Maintainability and Support

Description: Users should be able to receive support and provide feedback through the app.

Rationale: Providing customer support and feedback channels helps address user issues and improve the app.

Originator:

Fit Criterion: The app should have accessible customer support options, and users should be able to submit feedback through the app.

Customer Satisfaction: Low Customer Dissatisfaction: Medium

Priority: Medium Conflicts: None

Supporting Materials: Customer support mechanisms and feedback submission forms

2.6. Security

2.6.1. User Data Privacy

Requirement #: 11 Requirement Type: Security

Description: The app should ensure the security and privacy of user data

Rationale: Protecting user data is crucial to maintaining trust with user.

Originator:

Fit Criterion: The app should employ encryption and security measures to safeguard user data.

Customer Satisfaction: Low Customer Dissatisfaction: Medium

Priority: High Conflicts: None

Supporting Materials: Data encryption technologies

2.7. Legal

2.7.1. Data Privacy Compliance

Requirement #: 12 Requirement Type: Legal

Description: The app must comply with Canadian data privacy regulations.

Rationale: Compliance with data privacy laws is essential to avoid legal issues and protect user privacy.

Originator:

Fit Criterion: The app should align with all Canadian data privacy regulations in its handling of user data.

Customer Satisfaction: Low Customer Dissatisfaction: Medium

Priority: High Conflicts: None

Supporting Materials: Canadian data privacy regulations

2.7.2. Copyright

Requirement #: 13 Requirement Type: Legal

Description: The app should respect intellectual property rights, ensuring that users do not post copyrighted or trademarked content without proper authorization.

Rationale: Compliance with data privacy laws is essential to avoid legal issues and protect user privacy.

Originator:

Fit Criterion: Respecting intellectual property rights is essential to avoid legal disputes and uphold the law.

Customer Satisfaction: Low Customer Dissatisfaction: Low

Priority: High Conflicts: None

Supporting Materials: Copyright laws

2.7.3. Terms of service

Requirement #: 14 Requirement Type: Legal

Description: The app should have clear terms of service that inform users about how their data is collected, stored, and used.

Rationale: Transparent terms of service are essential to inform users about their rights and data handling practices.

Originator:

Fit Criterion: Users must agree to the terms of service before using the app.

Customer Satisfaction: Low Customer Dissatisfaction: Low

Priority: High Conflicts: None

Supporting Materials: Lawyer advice and established terms of service documents

Use Cases

Use Case 1: Find the best time to visit a specific restaurant today

1. The system asks for the restaurant name
2. The user enters the restaurant name
3. The system checks for the restaurant
4. The system displays the current wait time at the restaurant
5. The user asks for wait time trends throughout the day
6. The system provides the wait times at hourly intervals

Alternative Courses

2. If restaurant name is invalid:
    2.1 The system provides an error message
    2.2 The system returns to step 1

4. If daily wait time trends unavailable:
    4.1 The system provides information unavailable message
    4.2 The system returns to step 3

Use Case 2: Find the restaurant with the shortest line

1. The system asks for the restaurant name
2. The user asks to have all current wait time at restaurants to be displayed at once
3. The system displays all current wait times
4. The user clicks the restaurant with the shortest time
5. The system displays the wait time of the chosen restaurant
6. The user asks for the location of the restaurant
7. The system provides the location of the restaurant

Alternative Courses

2. If the action to display all current wait times unavailable
    2.1 System provides an error message
    2.2 The system returns to step 1

6. The location of restaurant cannot be found
    6.1 The system provided an information unavailable message
    6.2 The system returns to step 5