Non-Functional Requirements Specification

Beverage Booker

Version Information

Version	Date	Description	Author
1.0	12/04/20	First version of the vision document for Beverage Booker - Submitted for LCOM.	Jacob Kennedy
2.0	18/06/20	Appended document to remove reference to Table Booking and Event Booking as they no longer fit the scope of the project. Appended some information on look and feel to be more in line with our scope and existing layout. Corrected closing time of cafe to represent a more realistic scenario. Modified system constraints. Added Admin Login Rule to accommodate for the admin app. Submitted for LCAM.	Jacob Kennedy
3.0	16/07/20	Append document to remove reference to many use cases that now fall outside of the project's scope. Fixed spacing of some headings.	Jacob Kennedy
4.0	28/10/20	Appended document to reflect what our project has become rather than what it should be.	Jacob Kennedy

System-Wide Functional Requirements

- Auditing: It is a need to track who used the system. This will allow for tracking of orders to allow orders to be attributed to the proper owners, this is important also to send them notifications altering them when their order has been completed as well as attributing whether an order is for pick-up or delivery. Also it is crucial to always track transactions.

- Authentication: Level of access will be present within the Staff Application, however to prevent customers from accessing the Staff Application at all they have their own application. Within the Staff Application there will be level of access for the managers, baristas / kitchen staff and for the delivery drivers. The manager can see everything which includes orders, deliveries, inventory and menu management as well as staff management whereas the baristas / kitchen staff will only see orders and the delivery drivers can only see deliveries.
- Scheduling: System actions such as maintenance and other things should be scheduled on the system e.g. have the applications shutdown at a given time to allow someone to access it.
- Security: Elements of the applications such as payment method (Customer Application) and accounts (both Staff and Customer Applications) will have to be secure. To do this the system and database will have to incorporate an encryption mechanism to keep private information safe from sources such as hackers.

System Qualities

- Usability
    - Accessibility: The applications should be accessible from remote locations. They will be available to them at any point. They are to be available on mobile phones (android).
    - Ease of use: A user can access the application and can place an order easily. This can be done by making the application's UI and other components simplistic to allow for ease of use. They should easily create an account or if they choose not to, not be impeded by the login screens.
    - Ease of learning: A user should easily learn how the applications operate and shouldn't have to put in a lot of effort to place an order. They can learn easier with a simplistic and self-explained UI e.g. buttons that say what they do like "checkout" or "food / drink".
    - Task efficiency: A user is able to use the applications with as few screen presses as possible, to do this the UI the user is presented with can be easily navigated with few buttons to allow for simplicity. There are also few pages the user has to go through to finalise their order to allow for minimal time usage and less possibility of confusion or frustration with the applications.
    - Ease of remembering: The applications should be simple enough that a user is able to remember how to use it after using it once. Upon that user using it again they should be able to easily remember how the application operates.
    - Understandability: While the user is operating the application they should be able to understand the processes taken to accomplish their order. They should understand why they are being prompted to enter information and specify what

they want to order. They should understand prompts of fields they failed to enter e.g. if they click continue to checkout without actually having anything in their cart then they are given a simple prompt stating they cannot continue as they have no items in their cart.

- Reliability
    - Accuracy: Calculations performed by the applications require 100% accuracy, as the Customer Application handles money and therefore it is of large importance that any calculation regarding money, providing the total of the order to the user, withdrawing that money from the user's account must be completely accurate for the user to have trust in the system e.g. the cart total should be exactly equal to what was taken out of the user's bank account.
    - Availability: The Customer Application should be available all the time from 7 AM to 4 PM, maintenance access should be scheduled outside those hours specified before. The Staff Application should be available anytime as a manager may need to delete a staff member's account or append a menu item.
    - Recoverability: The system should not be able to go down for more than an hour to prevent much impact to the business during opening hours.
    - Frequency of severity of failures: critical defects should not occur as long as backup files are often updated to current versions of the files, this prevents loss of large amounts of data and allows the system to be reverted to a previously functional state. If a defect occurs it's expected the system can be put back to its previous functional point - a good reason why we went for a hosted database rather than create our own is that most hosting sites allow for automatic backups for databases, for example, we went with iPage to host our database which offers automatic backups in case something goes wrong.
- Performance
    - Response time:
        - Any interface the user operates should not exceed a response time of 2 seconds, as to ensure a quick and functional application.
        - An account should be updated with the order it made within 3 minutes. For our applications it is near instant as everything is done as soon as a user presses a button, for example if a user updates their account details they will be prompted with a message that will alert them if it failed, but it should just say account updated successfully to which that means their account has been updated.
    - Throughput: It is expected that the system is able to process many orders, transactions and updates at any given time. From the testing carried out on our applications this is properly covered.

    - Capacity: The system is expected to hold information of 3,000 or more accounts (more than average CSU to accommodate for growth). This information includes, names, usernames and passwords. During opening hours (7 AM - 4 PM) the system should be able to handle 30 simultaneous users, after this time the system should accommodate for 4 users simultaneously (for testing purposes).
    - Start-up time: The mobile system should start-up at around 7 AM to allow for orders to start processing. The administrator login should be available 24/7.
    - Shutdown time: The Customer Application should shut down at around 4 PM as the cafe will close. The Staff Application should not shut down as this should be able to be updated whenever to add/delete/edit items on the menu.

- Supportability
    - Adaptability: The applications should be easily adaptable to the platform it supports. e.g. mobile versions, mobile models (e.g. samsung) and tablets.
    - Compatibility: The system works on Android Mobiles and Android Tablets of Version 8.0 or higher.
    - Level of Support: The users of the Customer Application have access to help buttons linking to a youtube video demonstrating how to operate certain parts of the application. The Staff Application has a user manual.
    - Scalability: It is expected the system is able to handle 3,000+ accounts efficiently without having issues with space requirements.
    - Configurability: The applications can be modified to adapt to the cafe's needs; this includes configuration of menus and menu items and logo changes, staff members and also inventory levels. Configurability is also important because of changing needs from the cafe, e.g. the menu with items being removed and added all the time.
    - Maintainability: It is expected that the system supports an admin tool allowing those with administrative access to modify components of the mobile app e.g. scheduling updates and updating menu items - this is possible through the Google Play Store in which the Applications can be updated.

System Constraints

- Design constraints: The Customer Application supports a mobile app meaning it must support all aspects regarding that platform such as touchscreen support, therefore the system should be created to support touch screen interface. The Staff Application is to be installed on Android Tablets to which its UI is created for.
- Implementation languages: Android studio will be used as a software in development of the mobile application (Java). An API writing in PHP has been created for the handling of database operations.

- Platform support: The Customer Application should also be available on at least modern versions of android to allow access to the mobile app. This includes modern Pixel phones, Samsungs and other largely used Android products. The Staff Application runs on modern Android Tablets.
- Resource limits: The project only expands 2 subjects (1 year) so it's expected to be finished by the end of session 2 which is the end of October. It is not expected that any member of the group puts more than 10 - 12 hours in per week. Monetary requirements should be kept to a minimum if any at all - iPage was paid for to host the database for both Applications.
- Physical constraints: Screen size constraints for mobile apps will have to be taken into account while developing the system, e.g. the app should be able to adjust to what the screen resolution of the phone is and not harm the usability of the app e.g. the application doesn't stretch, and all text and buttons remain readable and usable. These points were taken into account when creating both the Customer and Staff applications.

System Interfaces

- User Interfaces:
    - Look & Feel:
        - Smooth, slick and simple. Quick interactions are important for the efficiency and ease of use of the system. The apps should allow for smooth and slick looks to look modern as can be seen in other mobile and tablet apps. Maintaining a simple design e.g. minimal buttons and minimal button click will greatly improve the feel of the inference. Maintaining a simple design will all for clearer use and ease of learning.
    - Layout and Navigation Requirements:
        - The apps should be simple in design and easily navigable, it must conform to usual seen mobile layouts in which buttons are located at the center-bottom for some pages e.g. login button on the login page and then bottom-left or bottom-right when confirming details e.g. the button to go from the cart to the order type selection (pick up or delivery) then payment screen.
    - Consistency:
        - It's expected that navigation controls are always going to be consistent throughout all pages the customer will look at on the app, it will follow common mobile and tablet trends e.g. buttons on the bottom of the screen either center, left or right. Screen size and shape should remain the same throughout the app to maintain consistency. The data field that the user enters information into should remain consistent to allow

familiarity in use, this also goes for presenting data to the user e.g. in the menu each item should be presented the same as the last. Terminology should also be prioritised in consistency.

- Interface to External Systems or Devices:
    - Software Interfaces: The customer app involves Stripe interface.
    - Hardware Interfaces: Hardware interfaces the system will have to interact with are android phones and android tablets. Other hardware interfaces are databases in which the system will interact to be able to store user information, this database will be hosted by iPage.
    - Communication Interfaces: Communication interfaces that will have to be traversed to deliver this system are internet interfaces and mobile application interfaces.

Business Rules

- Account Creation Requirement Rule 1:
    - Rule 1.1: If the user creates an account and email is correct and not already used and password meets requirements, then the user account is created.
    - Rule 1.2: If the user creates an account and email is not correct or password does not meet requirements then account is not created.
    - Rule 1.3: If the user creates an account and email is already in use then the account is not created.
- Account Login Requirement Rule 2:
    - Rule 2.1: If the user selects login and provides email or name that are valid and password is valid then user logged in.
    - Rule 2.2: If the user selects login and provides email or name that are invalid and password that is valid then the user did not log in.
    - Rule 2.3: If the user selects login and provides email or name that are valid and password that is invalud then the user did not log in.
- Place an Order - Pick up Rule 3:
    - Rule 3.1: If a user has placed an item into cart and proceeded to checkout, selected pick up and entered valid payment information, then order is confirmed.
    - Rule 3.2: If a user has placed an item into cart and proceeded to checkout, selected pick up and entered invalid payment information, then order is denied.
- Place an Order - Delivery Rule 4:

    - Rule 4.1: If a user has placed an item into cart and proceeded to checkout, selected delivery, entered valid delivery information, entered valid payment information, then order is confirmed.
    - Rule 4.2: If a user has placed an item into cart and proceeded to checkout, selected delivery, entered valid delivery information, entered invalid payment information, then order is denied.
- Add to Cart Rule 5:
    - Rule 5.1: If a user has selected the add to cart button then add selected item to cart.
- Staff Login Rule 6:
    - Rule 6.1: If a staff member provides a correct staff ID to the fields on the Staff Application - they should be given access to the components allowed for what staff Level they are (e.g. 1 is management, 2 is barista / kitchen staff and 3 is delivery driver - each of which see their respective components of the application).