Software Requirements Specification

for

<THE BAKERY APP>

Version 1.0 approved

Prepared by <Group No.1>

<Section No. 1>

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Revision History

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| **Name** | **Date** | **Reason For Changes** | **Version** |
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# Introduction

## Purpose

The purpose of this document is to present a comprehensive description of the app. It explains the purpose and features of the app, the interfaces, what the app will do and the constraints under which the app shall operate.

## Document Conventions

This document was created based on the IEEE template for SRS document.

* Convention for main title:
* Font: Times New Roman
* Font Style: Bold
* Font Size: 18
* Convention for subtitle:
* Font: Times New Roman
* Font Style: Bold
* Font Size: 14
* Convention for body:
* Font: Arial
* Font Style: Italic
* Font Size: 11

## Intended Audience and Reading Suggestions

The app is intended for the general public and / or the customers. Section 1 and 2 is where the users will be able to understand the basic features and working of the application.

The app can also be used by professionals, developers, clients or business managers to further increase the functionality as per requirement, make changes if need be or fix bugs. For this matter section 3, 4 and 5 should be referred to.

## Product Scope

* Easy registration and profile management options for customers
* Search mechanism for quick access to any particular product
* Shopping cart with checkout, add and delete options
* Feedback option available to get valuable feedback from customers
* Live order tracking
* Adequate payment options during checkout
* Inclusion of AR to allow customers to see the products in 360 view

## References

IEEE Template for SRS:

<https://goo.gl/ns/UFwy>

UML diagrams:

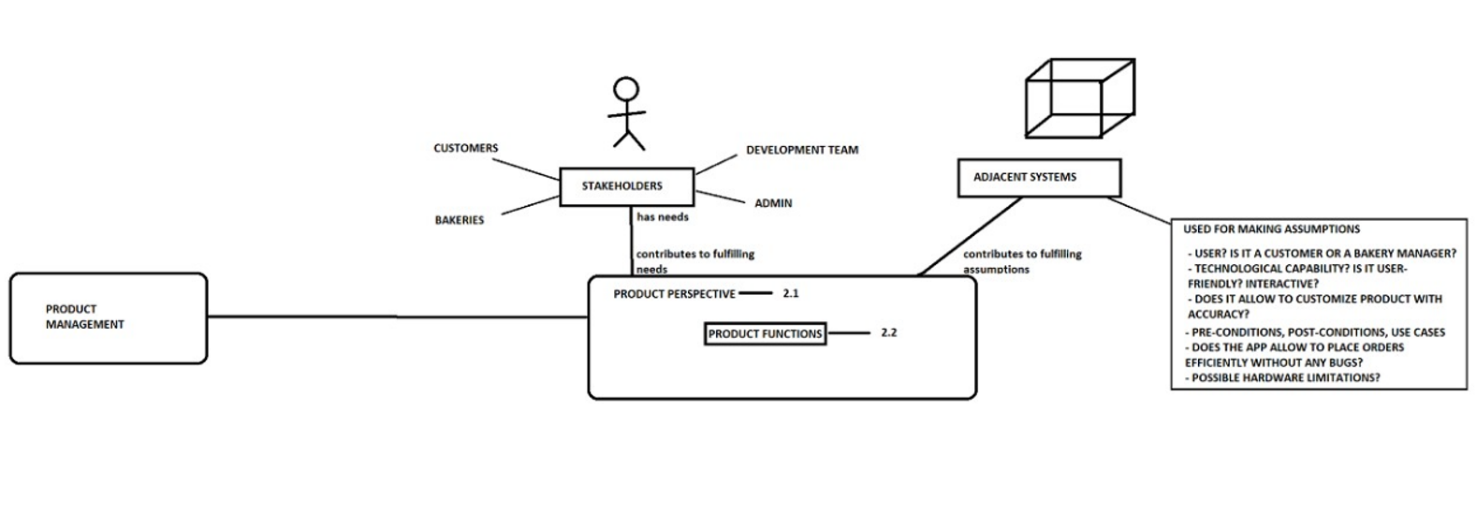
<https://www.umlet.com/>

# Overall Description

## Product Perspective

*The software being developed is for smartphones with working wi-fi and camera functionalities. This product allows the user to view items using markers specifically placed for each item, which can be done using the phone camera. This app uses Augmented Reality to allow this to happen and customers are able to efficiently navigate through the bakery products, and discern the price, quantity, and are able to customize that specific item to their liking (select different flavors, colors, size etc.). This then allows the user to place an order and save them into a database.*

*The product management team carries the obligation to see through the entire ordeal (including development) through for the product perspective, therefore accountable for product success. This augmented reality app will be built with the help of the software called Unity3D. The people interacting with this product will be mainly customers looking to order bakery items. Bakeries will receive the order. Adjacent systems (which can be anything arbitrary or can also be specified as a human being or a computer, used for making assumptions and providing valuable information regarding the software) will be used to supply essential information about our product and its functionalities. It will be used to test the use cases and check whether pre-conditions and post-conditions are being met. It will also check its technological capability, technological interactivity, hardware limitations, and whether the app performs smoothly without running into any errors or crashes during any process. Thus, these needs will have to be dealt with and fulfilled.*



## Product Functions

FE-1: The product will assist communication between the bakery and its customers.

FE-2: Customers will be able to access the full menu through this app.

FE-3: Customers will be able to select an item they’re interested in and view it in 3D reality.

FE-4: Customers have the option of customizing their orders and viewing their customizations.

FE-5: The app will use markers to identify and display products on the menu.

FE-6: Customers will have the option to pay for their order online.

FE-7: The app will track delivery of the product from the bakery to the place of order.

FE-8: The app will continuously inform the customer about the details of delivery, such as delivery time and order status.

FE-9: Customers will be able to rate and leave their reviews for products.

## User Classes and Characteristics

*The customer should be able to perform the following functions:*

* *User Account to access app features:* 
  + *Create a new account if no account exists*
  + *Log-in to an existing account*
  + *Log-out to exit their account*
* *Augmented Reality:* 
  + *View bakery items through “markers”*
  + *View price of item(s)*
  + *Yes/No option for customizability*
* *Moreover, customer should also be able to do the following concerning order(s):*
* *Place order(s)*
* *View order(s)*
* *View order history*
* *Cancel order*

## Operating Environment

*The software will operate with the following software components and applications:*

The AR features of the software is mainly being developed using Unity AR Foundation and Vuforia. The software will be running for both Android and IOS devices. Database will be utilized for storage of order record history.

## Design and Implementation Constraints

*Unity’s AR Foundation supports devices running Android 7.0 or later and iOS 11.0 or later. This means that older devices will not be able to run the Augmented Reality features. AR Foundation allows us to work with augmented reality platforms in a multi-platform way within Unity. This package presents an interface for Unity developers to use but does not implement any AR features itself. To use AR Foundation on a target device, we would need separate packages for the target platforms officially supported by Unity:*

* [*ARCore XR Plug-in*](https://docs.unity3d.com/Packages/com.unity.xr.arcore@4.2/manual/index.html)*on Android*
* [*ARKit XR Plug-in*](https://docs.unity3d.com/Packages/com.unity.xr.arkit@4.2/manual/index.html)*on iOS*

*AR Foundation support will allow us to utilize vertical planes or environment probes in our Vuforia scene or using Model Targets and Area Targets in our AR Foundation scene.*

*Combining Vuforia Engine and AR Foundation in the same scene does add performance overhead and latency. While this is barely noticeable on iOS devices; on Android, this will result in higher latency and less stable tracking of Vuforia targets.*

*Software will be monolingual and therefore will only be available in English language.*

## User Documentation

*For user documentation and information, refer to section 3: External Interface Requirements.*

## Assumptions and Dependencies

* *The product should be user-friendly and interactive, making it simpler for customers to view and discern the features of the software.*
* *The devices are not old and outdated and can run the software without much latency problems.*
* *The markers should be appropriately assigned to distinct bakery products and should allow for customizability if it’s allowed for that specific product.*
* *The software should allow to place orders efficiently without any errors.*
* *Battery percentage should not be lower than 20% when using the app for optimal experience.*
* *The app should allow the customers to rate the products after they bought it.*

# External Interface Requirements

## User Interfaces

<Describe the logical characteristics of each interface between the software product and the users. This may include sample screen images, any GUI standards or product family style guides that are to be followed, screen layout constraints, standard buttons and functions (e.g., help) that will appear on every screen, keyboard shortcuts, error message display standards, and so on. Define the software components for which a user interface is needed. Details of the user interface design should be documented in a separate user interface specification.>

## Hardware Interfaces

<Describe the logical and physical characteristics of each interface between the software product and the hardware components of the system. This may include the supported device types, the nature of the data and control interactions between the software and the hardware, and communication protocols to be used.>

## Software Interfaces

<Describe the connections between this product and other specific software components (name and version), including databases, operating systems, tools, libraries, and integrated commercial components. Identify the data items or messages coming into the system and going out and describe the purpose of each. Describe the services needed and the nature of communications. Refer to documents that describe detailed application programming interface protocols. Identify data that will be shared across software components. If the data sharing mechanism must be implemented in a specific way (for example, use of a global data area in a multitasking operating system), specify this as an implementation constraint.>

## Communications Interfaces

<Describe the requirements associated with any communications functions required by this product, including e-mail, web browser, network server communications protocols, electronic forms, and so on. Define any pertinent message formatting. Identify any communication standards that will be used, such as FTP or HTTP. Specify any communication security or encryption issues, data transfer rates, and synchronization mechanisms.>

# System Features

## Account Management

### *Description and Priority*

*This is the feature that will allow the user to manage their account. It will allow the user to create a new account, sign in, sign out, delete an existing account or allow the user to reset their password if they forget it. It is a high priority feature as a user will not be allowed to use the app if they have not signed in.*

4.1.2 *Stimulus/Response Sequences*

*CREATE ACCOUNT CASE: When the user will first open the app, he/she will be prompted to create a new account or log in to an existing one. If they choose to create a new account, a form will be displayed which they will be required to fill in with their information.*

*SIGN IN CASE: When the user will first open the app, he/she will be prompted to create a new account or log in to an existing one. If they choose to log in, a form will be displayed that will ask them for their email and password. If a valid email and password is entered, the user will be redirected to the home page of the app. Otherwise, an error message will be shown.*

*SIGN OUT CASE: Once the user logs in, an option to log out of their account will become available to them. If they choose this, all their existing data will be saved, and they will be redirected to the login page.*

*DELETE ACCOUNT CASE: Once the user logs in, an option to delete account will become available to them. If they choose this, they will be asked to enter their email and password. A confirmation message will also be displayed. If they confirm, the account and all related data will be deleted.*

*FORGOT PASSWORD CASE: At the time of log in, the user will be allowed to reset their password if they have forgotten it. If they choose this option, they will be asked to enter their email which will be verified. If an account with the given email exists, an email will be sent to the user on the email address provided that will allow the user to reset their password.*

*4.1.3 Functional Requirements*

*FR.1.1: The app will show a button to sign up*

*FR.1.2: A sign up form will be displayed which the user will be required to fill in with their full name, email address, contact number, password and address to sign up.*

*FR.1.3: The email address will be verified.*

*FR.1.4: The password will be verified to see if it conforms to the requirements.*

*FR.1.5: The account creation will be cancelled if the user clicks out of the form at any time before the completion of the form.*

*FR.1.7: If the information entered is valid, the account details will be stored.*

*FR.1.8: A login form will be displayed to the user to be filled at the time of login.*

*FR.1.9: The email and password entered will be verified.*

*FR.1.10: If incorrect email or password is entered, error message will be displayed.*

*FR.1.11: A login button will be visible to the user.*

*FR.1.12: A logout button will be available to the user once the user has logged in.*

*FR.1.13: A delete account button will be available to the user once the user has logged in.*

*FR.1.14: The forgot password button will prompt the user to enter a valid email address*

*FR.1.15: A reset password link will be sent to the user’s email address if the address is verified.*

*FR.1.16: The new password entered will be updated in the database.*

*FR.1.17: At the time of deletion, user will be sent a confirmation email.*

*FR.1.18: After deletion, any user information in the database will be removed.*

*FR.1.19: The deletion request will be cancelled if the user cancels the request at any time.*

*FR.1.20: The logout request will be cancelled if the user cancels the request at any time.*

*FR.1.21: The login request will be cancelled if the user cancels the request at any time.*

*FR.1.22: The ‘forgot password’ request will be cancelled if the user cancels the request at any time.*

*FR.1.23: Once the user has logged in, they will be able to edit their profile at any time.*

*FR.1.24: If the user cancels the edit profile request, the information will not be updated.*

*FR.1.25: The edited user information will be updated in the database.*

*FR.1.26: A ‘forgot password’ option will be visible to the user at the time of login.*

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| **Use Case Name** | **Register** | |
|  |  | |
| **Related Requirements** | FR.1.1  FR.1.2  FR.1.3  FR.1.4  FR.1.5  FR.1.6  FR.1.7 | |
| **Goal in Context** | A new user creates an account and becomes a registered user. | |
| **Preconditions** | None | |
| **Successful End Condition** | The data entered by the user is stored in the user account. A confirmation email is sent to the user to the appropriate email address. | |
| **Failed End Condition** | The user entered invalid data or chose to cancel the account creation. In either case, the account will not be created. | |
| **Primary Actors** | Guest | |
| **Secondary Actors** | Database / Server | |
| **Trigger** | The user requests the system to create an account | |
| **Included Cases** | Register Verification | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | The User enters the required User Accountinformation values and requests that the system saves the entered values. |
|  | 2 | The system validates the entered User Accountinformation. |
|  | 3 | The values for the User Accountinformation are stored in the User’s account. The system notifies the User that the account has been created. |
|  | 4 | A confirmation email is sent to the user on the appropriate email address |

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| **Use Case Name** | **Log In** | |
| **Related Requirements** | FR.1.8  FR.1.9  FR.1.10  FR.1.11  FR.1.21 | |
| **Goal in Context** | The user signs into their account | |
| **Preconditions** | User account must exist | |
| **Successful End Condition** | The User is authenticated, and the system displays all features available for the role the user is associated with as defined in his/her user account. | |
| **Failed End Condition** | This can occur because the User repeatedly entered invalid sign in information. The User has been notified of the reason why he/she was not signed in. The User is not authenticated and remains in the guest role. | |
| **Primary Actors** | User | |
| **Secondary Actors** | Database / Server | |
| **Trigger** | This use case starts when the User accesses the sign in feature of the system. | |
| **Included Cases** | Login verification | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | The system prompts the User for his/her username and password. |
|  | 2 | The User enters his/her username and password. |
|  | 3 | The system validates the entered information, making sure that the entered username and password are valid for one user account in the system, and that the required password is entered for the entered username |
|  | 4 | The User is signed in. The system displays a message indicating that the user is signed in. |

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| **Use Case Name** | **Log Out** | |
| **Related Requirements** | FR.1.12  FR.1.20 | |
| **Goal in Context** | The user signs out of their account | |
| **Preconditions** | The user is signed in | |
| **Successful End Condition** | The user successfully signs out of their account and enters the anonymous user role. | |
| **Failed End Condition** | The user stays signed into their account | |
| **Primary Actors** | User | |
| **Secondary Actors** |  | |
| **Trigger** | This use case starts when the User accesses the sign out feature of the system. | |
| **Included Cases** |  | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | The user requests the system to logout. |
|  | 2 | The User is signed out. The system displays a message indicating that the user has successfully signed out. |

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| **Use Case Name** | **Delete Account** | |
| **Related Requirements** | FR.1.13  FR.1.17  FR.1.18  FR.1.19 | |
| **Goal in Context** | The user deletes their account | |
| **Preconditions** | User must be logged into the account | |
| **Successful End Condition** | The user account is deleted | |
| **Failed End Condition** | The user account is not deleted | |
| **Primary Actors** | User | |
| **Secondary Actors** | Database/Server | |
| **Trigger** | The user requests the system to delete their account | |
| **Included Cases** | Add item | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | User clicks on the button to delete account |
|  | 2 | The user is asked to enter their email and password. |
|  | 3 | The user information is verified |
|  | 4 | A confirmation message pops up on the screen to confirm the users request |
|  | 5 | The account is deleted |

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| **Use Case Name** | **Forgot Password** | |
| **Related Requirements** | FR.1.14  FR.1.15  FR.1.16  FR.1.26 | |
| **Goal in Context** | The user resets his/ her password if they have forgotten their password | |
| **Preconditions** |  | |
| **Successful End Condition** | The user resets their account password | |
| **Failed End Condition** | The user is not able to reset their password | |
| **Primary Actors** | User | |
| **Secondary Actors** |  | |
| **Trigger** | The user requests click on the forgot password button | |
| **Included Cases** |  | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | User clicks on the forgot password button |
|  | 2 | User is asked to enter their email address |
|  | 3 | The email address is verified to see whether an account with the given email exists |
|  | 4 | The user enters the new password |
|  | 5 | The new password is set and the user can now access their account using the new password |

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| **USE CASE NAME** | | EDIT PROFILE |
| **Related Requirements** | | FR 1.23  FR 1.24  FR 1.25 |
| **Goal In Context** | | The user should be able to change his profile details such as username, password, email or address etc. |
| **Preconditions** | | User needs to be logged in |
| **Successful End Condition** | | The user is successfully able to edit his account details |
| **Failed End Condition** | | An error is shown while changing any details like if a password is already taken |
| **Primary Actors** | | User |
| **Secondary Actors** | | Verification Database/Server |
| **Trigger** | | A user clicks the side bar on home page and then clicks on profile where he selects edit |
| **Included Cases** | | - |
| **MAIN FLOW** | **STEP** | **ACTION** |
|  | 1 | A user has logged in and is on the home page |
|  | 2 | The user clicks the side bar and selects profile |
|  | 3 | He then selects edit in profile and changes his details |
|  | 4 | The new details are stored in the server and a details changed message is displayed |

## 4.2 Items/Product Management

*4.2.1 Description and Priority*

Item or product management is the feature where the system allows the user to browse through different item lists which are appropriately categorized. After the user selects a particular item, the app displays the details about the products such as a description of the product, the reviews, and options to change the quantity of the product or add it to cart. This is a high priority feature because you can only order or add to cart once the item is selected and after which, it can customize.

*4.2.2 Stimulus/Response Sequences*

*SELECT ITEM CASE: After a user logs in to the application, they are taken to the home page. All the items are listed there after being appropriately categorized. The user then selects a particular item where he is shown all the details regarding the item.*

*CUSTOMIZE CASE:* *A user, after selecting a particular item, has the option to customize the item according to his needs like changing the size or the quantity of the item, picking from a selection of flavors or selecting/deselecting specific ingredients.*

*FAVOURITES CASE:* *A user, after selecting the item, opens the details to that particular item where the favorites’ icon will also be displayed. If the user clicks that icon, that particular item gets added to the wish list of the user which is saved in the verification database/server. That wish list icon is present on the home page where all the favorite items of the user are listed and upon its selection, that list is fetched from the server.*

*REVIEWS CASE: After selecting a particular item the user, according to his liking and satisfaction of the item, also has the option to give reviews of that particular item and rate it on a scale of one to five stars. The review that is given is stored in the server so that if another user views that item, they also can access its reviews.*

*4.2.3 Functional Requirements*

FR 2.1: The user must be logged in.

FR 2.2: The user must be on the home page.

FR 2.3: The home page consists of items organized categorically from which the user can select a particular item.

FR 2.4: After selection of item, its details are displayed.

FR 2.5: The user should be able to customize selection.

FR 2.6: The user can select the size.

FR 2.7: The user can select the quantity.

FR 2.8: The user can select the ingredients to be added.

FR 2.9: The user can select the flavor.

FR 2.10: After customization, the user should be able to add to the cart

FR 2.11: The user can also choose to add the particular item to his/her wish list.

FR 2.12: The user selects the favorites’ icon to do this.

FR 2.13: This list shall be saved in the server in that user’s dedicated profile.

FR 2.14: The user can access this wish list on the home page.

FR 2.15: That list only shows the items that the particular user has liked.

FR 2.16: The user is also able to see the reviews of the different items.

FR 2.17: The user is able to give reviews his/herself.

FR 2.18: The user can review on a scale of one to five stars.

FR 2.19: The reviews given are stored in the server for that particular item.

FR 2.20: Other users can view reviews which are fetched from the server when the users selects a particular item.

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| **USE CASE NAME** | | Select Item |
| **Related Requirements** | | FR 2.1  FR 2.2  FR 2.3  FR 2.4 |
| **Goal In Context** | | The user selects the item, and it opens the page of details for the particular item |
| **Preconditions** | | User needs to be logged in and be on the home page |
| **Successful End Condition** | | The user is successfully able to open the details of the particular item selected after which he has the option to customize the item, set quantity or add item to the cart |
| **Failed End Condition** | | The user can’t view the details of the particular item selected |
| **Primary Actors** | | User |
| **Secondary Actors** | | none |
| **Trigger** | | A user clicks on a particular item |
| **Included Cases** | | Customize, Details |
| **MAIN FLOW** | **STEP** | **ACTION** |
|  | 1 | A user has logged in. |
|  | 2 | After which he is taken to the home page where all the items are listed according to the categories but without any details |
|  | 3 | The user selects a particular item |
|  | 4 | The user is then able to view all the details related to that particular item where he has the option to customize, view in AR or add to the cart |
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| Use Case Name | Customize Item |
| Related Requirements | FR 2.5  FR 2.6  FR 2.7  FR 2.8  FR 2.9  FR 2.10 |
| Goal In Context | Add customization to the chosen, this includes the size of the product and the flavor/type of the product. |
| Preconditions | The user has selected an item that they wish to further customize. |
| Successful End Condition | The user successfully customizes the selected item according to his need and liking |
| Failed End Condition | The customization is unavailable.  An error message is displayed. |
| Primary Actors | Customer |
| Secondary Actors | none |
| Trigger | The user chooses the customization option.  The size button will allow to manipulate the size.  The flavor type will allow user to manipulate the type/flavor of the item. |
| Included Cases | None |
| Main Flow | 1. The user selects an item on the home page 2. The item opens with its details shown 3. The user has now the option to customize 4. After doing this he can add that to the cart |

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| **USE CASE NAME** | | Favorites |
| **Related Requirements** | | FR 2.11  FR 2.12  FR 2.13  FR 2.14  FR 2.15 |
| **Goal In Context** | | The user should be able to add the certain items he likes to a wish list where only those items will be displayed |
| **Preconditions** | | User is logged in and have selected an item |
| **Successful End Condition** | | The user is successfully able to add items to the favorites’ list which he has liked |
| **Failed End Condition** | | The item which user likes is not added to the favorites’ list |
| **Primary Actors** | | User |
| **Secondary Actors** | | Verification database/server |
| **Trigger** | | A user clicks an icon which represents favorites |
| **Included Cases** | | - |
| **MAIN FLOW** | **STEP** | **ACTION** |
|  | 1 | A user logs in and selects a particular item |
|  | 2 | If the user likes the item and wishes to add to his personal list, he clicks the favorites icon |
|  | 3 | That particular item is then added to the favorites’ list |
|  | 4 | In this list he can only view whatever items he has liked |
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| **USE CASE NAME** | | Reviews |
| **Related Requirements** | | FR 2.16  FR 2.17  FR 2.18  FR 2.19  FR 2.20 |
| **Goal In Context** | | The user is able to see and give reviews to a particular item |
| **Preconditions** | | User is logged in and has already selected a particular item |
| **Successful End Condition** | | The user is successfully able to give view and give reviews according to his liking of the item on a scale of five stars |
| **Failed End Condition** | | The user is unable to see or give any reviews |
| **Primary Actors** | | User |
| **Secondary Actors** | | Verification database/server |
| **Trigger** | | A user clicks on the star review icons |
| **Included Cases** | | - |
| **MAIN FLOW** | **STEP** | **ACTION** |
|  | 1 | A user has selected a particular item |
|  | 2 | After which he has the option to give rating on a scale of five stars |
|  | 3 | The user gives the rating according to his liking and that is added to system for the particular item |
|  | 4 | Other users can also look up the overall reviews for a particular items while browsing through different items |
|  |  |  |

## AUGMENTED REALITY

* + 1. *Description and Priority*

*Augmented reality or AR feature is another unique feature which allows the user to view the items in 3D once they have been selected. The AR can be used directly from the home page where the user clicks on an AR camera and then points it towards a marker. That marker details are already fed into the system and as it is pointed to the marker, it verifies and then fetches the details form the verification database/server after which the particular item is displayed on the screen. The user is then able customize and add to the cart.*

* + 1. *Stimulus/Response Sequences*

*VIEW IN AR CASE: After the user has logged in, he/she is taken to the home page where an AR icon is present. The user selects the icon, and it opens a camera which is pointed towards a marker of which the information is already in the server. The details are fetched after the verification and an item is shown on the screen. The user can also view an item in AR 3D once he/she has selected an item on the home page after which it opens and shows the details, customization, and AR view.*

*CUSTOMIZE CASE:* *A user can customize the particular item on that screen. Change the size and color or add ingredients and can navigate back and forth. After this he/she can add to the cart. (Refer to section 4.2.3 for the use case table)*

* + 1. *Functional Requirements*

FR 3.1: The user must be logged in.

FR 3.2: The user selects the AR camera directly on the home page

FR 3.3: The camera should open and work properly

FR 3.4: The camera is pointed towards a marker

FR 3.5: The details of the marker should be already present in the server for it to detect the marker.

FR 3.6: The server verifies, and the details are fetched after which the particular item shows up on the screen

FR 3.7: The item can navigate

FR 3.8: The item can zoom in and out

FR 3.9: The item can be customized

FR 3.10: The item can be added to cart

FR 3.11: The user is also able to view in AR 3D once he has selected an item on the home page

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| --- | --- | --- |
| **USE CASE NAME** | | View In AR |
| **Related Requirements** | | FR 3.1  FR 3.2  FR 3.3  FR 3.4  FR 3.5  FR 3.6  FR 3.7  FR 3.8  FR 3.9  FR 3.10  FR 3.11 |
| **Goal In Context** | | The user can view an item in AR when the camera is pointed towards an item marker. |
| **Preconditions** | | User needs to be logged in and the camera need to work |
| **Successful End Condition** | | The user is successfully able to view the item in 3D when the camera points to the marker and show the details of the item and he also has the option to customize. |
| **Failed End Condition** | | The camera is unable to detect the marker. |
| **Primary Actors** | | User |
| **Secondary Actors** | | Verification database/server |
| **Trigger** | | A user clicks the AR camera |
| **Included Cases** | | Marker Verification |
| **MAIN FLOW** | **STEP** | **ACTION** |
|  | 1 | A user clicks to view in AR |
|  | 2 | The user points the camera to the marker which is placed physically. |
|  | 3 | The details are fetched for that marker and the item is displayed in 3D. |
|  | 4 | The user then views the item along with its details and is able to customize it. |
|  |  |  |

Text

Description automatically generated

## Order Management

*4.4.1 Description and Priority*

*Order management is the feature which enables the system to manage orders and facilitate users with item selection. It lets the user add items to their order list, remove item from the order list, cancel order, view order, track order, view order history and checkout. It is a high priority feature, and the orders are only processed if one is logged in to the account. This feature provides a great service to the user.*

*4.4.2 Stimulus/Response Sequences*

*Add Item Case: This option appears once the user has completed customizing (where applicable) their items. The user will have the option add that item to their basket. The user will click on the Add Item to add the customized (where applicable) selected item to their basket.*

*Remove Item Case: This option appears beside every item in the view order. The user will have the option remove that item from their basket. The user will click on the Remove Item to remove the customized (where applicable) selected item from their basket.*

*Cancel Order Case: This option appears on the bottom of the view order window interface. This option allows user to cancel their order 2 minutes after the checkout has been confirmed. If the user cancels the order within the 2 minutes allotted, they are refunded, otherwise the cancel order option disappears, and the user cannot cancel the order.*

*View Order Case: This option appears on the top right corner of the interface throughout the whole app. It is represented as a cart. The user will have the option to view all the items added to their order for that session.*

*View Order History Case: This option appears along with the user’s profile view. This option allows user to view a list of the history of all the orders and transactions in details, made by them.*

*Track Order Case: This option appears on the bottom of the view order window interface. This option allows user to track order once the checkout has been confirmed. This option will estimate the time taken complete the order.*

*Checkout Case: This option appears on the bottom of the view order window interface. This option allows user to proceed their order to a payment window where the user will confirm their payment methods and payment.*

*4.4.3 Functional Requirements*

*FR 4.1: The user should view an add item button.*

*FR 4.2: The user can add an item to their order once they have completed the customization (where applicable).*

*FR 4.3: The user should view the cart symbol, symbolizing the view order button.*

*FR 4.4: The user should be able view their complete order when they click on the cart symbol.*

*FR 4.5: The Application must show a remove item beside each item listed in the order.*

*FR 4.6: The User should be able to remove each item from their order list if they select the remove item button.*

*FR 4.7: The user must be able to view checkout button in the end of their order list.*

*FR 4.8: The user can confirm their complete order and move to the checkout window if they select the checkout button.*

*FR 4.9: The user will have to confirm their payment methods and payment.*

*FR 4.10: Once the payment method and payment are confirmed the user should be able to view track order and cancel order buttons at the bottom of their current order that is in process.*

*FR 4.11: The user should be able to view the cancel order button for only two minutes after the order has been confirmed.*

*FR 4.12: The cancel order button should disappear once the two minutes time limit concludes.*

*FR 4.13: If the user cancels order within two minutes of order confirmation, the user must be refunded, and the order must be declared cancelled.*

*FR 4.14: The user should also be able to view a track order button.*

*FR 4.15: The track order option should calculate and display estimated time.*

*FR 4.16: The track order option should display a “ready” prompt when the order is ready.*

*FR 4.17: The view order history button appears along with the user profile view.*

*FR 4.18: The user should be able to view a list of all orders that have been made.*

*FR 4.19: The user should be able to view details about each order and the transaction details of each order individually.*

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| **Use Case Name** | **Add Item to cart** | |
| **Related Requirements** | FR 4.1  FR 4.2 | |
| **Goal in Context** | The user successfully adds the desired product to their cart | |
| **Preconditions** | User must have an existing account and must be logged in. | |
| **Successful End Condition** | The item has been added to the user’s cart | |
| **Failed End Condition** | The item was not added to the user’s cart | |
| **Primary Actors** | User | |
| **Secondary Actors** |  | |
| **Trigger** | The user requests the system to add item to their cart | |
| **Included Cases** | View Order | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | User chooses a product they wish to buy and requests the system to add it to their cart. |
|  | 2 | The item is added to the user’s cart |
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| **Use Case Name** | **Remove item from cart** | |
| **Related Requirements** | FR 4.5  FR 4.6 | |
| **Goal in Context** | The user successfully removes the product from their cart | |
| **Preconditions** | User must have the product in their cart | |
| **Successful End Condition** | The item is removed from the cart | |
| **Failed End Condition** | The item is not removed from the cart | |
| **Primary Actors** | User | |
| **Secondary Actors** |  | |
| **Trigger** | The user requests the system to remove the item from their cart | |
| **Included Cases** | Add item | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | User chooses a product they wish to remove and requests the system to remove it from their cart. |
|  | 2 | The item is removed from the user’s cart |

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| **Use Case Name** | **Cancel Order** |
| **Related Requirements** | FR 4.10  FR 4.11  FR 4.12  FR 4.13 |
| **Goal In Context** | A confirmed order is cancelled. |
| **Preconditions** | An order has been confirmed. Not more than 2 minutes have passed since the order was confirmed. |
| **Successful End Condition** | The order is successfully cancelled.  Refund is offered. |
| **Failed End Condition** | The time limit exceeds.  The order cancellation is denied.  Refusal message is displayed. |
| **Primary Actors** | Customer |
| **Secondary Actors** | None |
| **Trigger** | The user selects the cancel order option. |
| **Included Cases** | None |
| **Main Flow** | 1. The user selects the cancel order option.  2. The duration of between the checkout confirmation and order cancellation is calculated.  3. If the duration does not exceed the time limit set the order is cancelled.  4. The user is refunded. |

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| **Use Case Name** | **View Order** |
| **Related Requirements** | FR 4.3  FR 4.4 |
| **Goal In Context** | A request for the list of all items ordered in an order is displayed. |
| **Preconditions** | Items have been confirmed and added into the order. |
| **Successful End Condition** | A list of all confirmed items is displayed. |
| **Failed End Condition** | The order list is declared empty and error message is displayed. |
| **Primary Actors** | Customer |
| **Secondary Actors** | None |
| **Trigger** | The user selects the view order option. |
| **Included Cases** | None |
| **Main Flow** | 1. The user confirms all items. All items are listed. 2. The user selects the view order option. 3. Details of the respective order are displayed. |

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| --- | --- |
| **Use Case Name** | **View Order History** |
| **Related Requirements** | FR 4.17  FR 4.18  FR 4.19 |
| **Goal In Context** | A list of past orders is displayed. |
| **Preconditions** | A successful order has been made and delivered in the past. |
| **Successful End Condition** | A list of past orders is displayed for user, each order and its respective items can be seen individually. |
| **Failed End Condition** | No order history exists.  An error message is displayed. |
| **Primary Actors** | Customer |
| **Secondary Actors** | None |
| **Trigger** | The user selects the view order history option. |
| **Included Cases** | none |
| **Main Flow** | 1. The user selects the view order history option. 2. A list of previous orders is displayed. 3. User selects an order form the list. 4. Details about the order are displayed. |

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| **Use Case Name** | **Track Order** |
| **Related Requirements** | FR 4.10  FR 4.14  FR 4.15  FR 4.16 |
| **Goal In Context** | Track the progress of a confirmed order and offer an estimated time of delivery. |
| **Preconditions** | The items have been customized and confirmed.  The checkout conditions have been satisfied. |
| **Successful End Condition** | Estimate delivery time displayed. |
| **Failed End Condition** | Track order request is rejected. |
| **Primary Actors** | Customer |
| **Secondary Actors** | None |
| **Trigger** | The user uses the track order option. |
| **Included Cases** | None |
| **Main Flow** | 1. The user confirms payment detail and order at checkout. 2. The users choose the track order option. 3. The estimated time is computed. 4. The estimated delivery time is displayed. |

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| **Use Case Name** | **Checkout** | |
| **Related Requirements** | FR 4.7  FR 4.8  FR 4.9 | |
| **Goal in Context** | The user successfully proceeds to payment. | |
| **Preconditions** | The user has items in their cart (view order).  The user chooses a valid payment method.  The payment is verified to be successful. | |
| **Successful End Condition** | The payment is successful, and the order has been placed. | |
| **Failed End Condition** | The order is not placed. | |
| **Primary Actors** | User | |
| **Secondary Actors** |  | |
| **Trigger** | The user requests the system to checkout. | |
| **Included Cases** | Track Order | |
| **Main Flow** | **Step** | **Action** |
|  | 1 | User confirms their complete order. |
|  | 2 | The payment window allows user to choose payment option. |
|  | 3 | Order is placed once payment |

**-USE CASE DIAGRAM**

## 

# Other Nonfunctional Requirements

## Performance Requirements

### Start-Up Time

Users will be expected to use this application on the go thus the application should load and be usable within 3 seconds.

### Edit Response Time

The application should display edited values and models within 1 second after the user triggers the edit operation to maintain a flowing user experience.

### Confirmation Time

The user should be notified of successful order placement within 5 seconds of triggering the order operation.

### Tracking Order

The tracking details of the order should be updated every 5 minutes up until user receives the order.

### Order Fulfillment

Successful Delivery message should be visible to the user within 5 minutes of successful delivery of the product.

## Safety Requirements

### Server – Receiver

*Data stored in the server will be protected from power loss. Data in transit (Server -> Receiver and vice versa) can be lost, in such a situation, the data will be sent again.*

### Data Privacy

*All payment data and private user data will be encrypted to ensure user safety. Correct protocols to ensure encryption should be followed.*

### Account Sharing

*Account sharing will be discouraged to prevent malicious activity. Account sharing can lead to outcomes unintended by the owner of the account and cannot be refunded by the associated bakery.*

## Security Requirements

### Authentication

*To aid the system to identify the user and to limit uninvited malicious user activity. Email, password and phone numbers will be used to create user accounts. A unique code will be sent to registered phone number and email to ensure authenticity.*

### Confidentiality

*User data will be encrypted and access to private user data will be limited.*

### Data Integrity

*Correct format of addresses, email and phone numbers will be enforced to ensure data integrity.*

## Software Quality Attributes

### Maintainability

*The application design shall aid in bug fixing, future optimization and adding of new functionality in the future.*

### Availability

*User should be able to place order as long as the connected Bakery is open. Denial of Service attacks are not foreseen and will not be treated as a cause for concern.*

### Extendibility

*The application shall be designed in a way that supports the implementation of optional functional requirements at a later date, making the application with a more modular approach.*

### Reusability

*Components developed for this application can be reused in isolation and integrated with other applications.*

### Portability

*The app will be able to run on IOS and Android devices provided it meets the minimum requirements. It will run on mobile phones, making it easy to access on the go.*

### Reliability

*The application will ensure all orders are effectively communicated with the bakery.*

## Business Rules

### User

### User Authentication

User will be required to enter his identification details, address, email, and password.

* + If the Submit button is pressed on the user enrollment form page and all mandatory fields are present only then the user will have an account created.
  + If any fields are filled incorrectly or left unfilled, the user will be prompted to fill the required fields as needed and until these are fixed, no user account will be created.

### Customer Reviews

A customer will only be able to reviews items he/she has previously ordered. This is to prevent malicious activity such as review bombing.

* + Review options will not be available if the customer has not ordered the specific product.

### Order Cancellation

User will only be able to cancel order before a set time before its delivery.

* + In the event the user attempts cancellation after that set time, the user will be prompted of an unsuccessful cancellation attempt and the delivery will occur as scheduled.

### Bakery

### Order Cancellation

Bakery will allow cancellation of the order before a set time.

* + The delivery process will be cancelled, and the order will be removed from the user view.

# Other Requirements

### Legal Requirements

Copyright laws and license agreements must be respected for any third-party software used in the creation of this system.

### Training Requirements

No specific training should be necessary for a user or bakery admin to begin using this application. Manuals and tutorials will be provided to help them navigate through the app in case of confusion.

Appendix A: Glossary

*Acronyms*

* *AR (Augmented Reality) - an enhanced version of the real physical world that is achieved using digital visual elements, sound, or other sensory stimuli delivered via technology.*
* *GUI (graphical user interface) - a form of user interface that allows users to interact with electronic devices through graphical icons and audio indicator such as primary notation, instead of text-based user interfaces, typed command labels or text navigation.*
* *FTP (File Transfer Protocol) - a standard communication protocol used for the transfer of computer files from a server to a client on a computer network.*
* *HTTP (Hypertext Transfer Protocol) - an application-layer protocol for transmitting hypermedia documents, such as HTML.*
* *3D (Three Dimensional) - is anything that has three dimensions, width, length, and depth.*
* *IEEE (Institute of Electrical and Electronics Engineers) - the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity.*
* *UML (Unified Modelling Language) - a general-purpose, developmental, modelling language in the field of software engineering that is intended to provide a standard way to visualize the design of a system.*
* *SRS (Software requirements specification) - a description of a software system to be developed.*

*Glossary*

* *Authentication - The procedure (essentially approval) used by the approval authority in verifying that specification content is acceptable. Authentication does not imply acceptance or responsibility for the specified item to perform successfully.*
* *Denial of Service attacks - A cyber-attack in which the perpetrator seeks to make a machine or network resource unavailable to its intended users by temporarily or indefinitely disrupting services of a host connected to the Internet.*
* *Database - A collection of related data stored in one or more computerized files in a manner that can be accessed by users or computer programs via a database management system.*
* *Encryption - a means of securing digital data using one or more mathematical techniques, along with a password or "key" used to decrypt the information. The encryption process translates information using an algorithm that makes the original information unreadable.*
* *Functional requirement - A statement of a piece of required functionality or a behavior that a system will exhibit under specific conditions. These include inputs, outputs, calculations, external interfaces, communications, and special management information needs. Functional requirements are also called behavioral requirements because they address what the system does.*
* *Marker - an object used to uniquely represent something.*
* *IOS - a mobile operating system created and developed by Apple Inc. exclusively for its hardware.*
* *Android - Android is a mobile operating system based on a modified version of the Linux kernel and other open-source software, designed primarily for touchscreen mobile devices such as smartphones and tablets.*
* *Server – A central computer (server) which provides services such as file storage, printing, and communications in a network computing system*
* *Synchronization - the action of causing a set of data or files to remain identical in more than one location.*
* *Portability - When referring to computer software, portability refers to how easy a software program can be moved between computer Operating Systems.*
* *Requirement - A statement of need for some aspect of a system, often elicited directly from a stakeholder or captured from a source document.*

*Interface*

* *User class - A group of users for a system who have similar characteristics and requirements for the system*
* *Unity 3D - Unity3D is a powerful cross-platform 3D engine and a user-friendly development environment.*
* *Unity AR - a Unity build framework purpose-built for augmented reality (AR) development that lets you build your app once and deploy across mobile and wearable AR platforms.*
* *User requirements - address what the users need to do their jobs. These requirements are implementation independent and are sometimes called "business requirements."*
* *User request - A user request is controlled by a workflow to make sure it is managed according to a defined process. Only authorized users can manage a user request and change its status.*
* *Use cases - A task analysis technique often used in software engineering. For each module of a system, common tasks are written up with the prerequisites for each task, the steps to take for the user and the system, and the changes that will be true after the task is completed. Use cases are especially useful for making sure that common tasks are supported by the system, that they are relatively straightforward, and that the system architecture reflects the task structure.*
* *Vuforia- is an augmented reality software development kit for mobile devices that enables the creation of augmented reality applications.*
* *Wi-Fi - the wireless technology used to connect computers, tablets, smartphones and other devices to the internet.*

Appendix B: Analysis Models

Nonapplicable or deemed necessary at the present moment.

Appendix C: To Be Determined List

This section is reserved for open requirements issues that remain to be resolved, pending decisions, information that is needed, conflicts awaiting resolution.