1. **Requirements Linkage Traceability Matrix**

In the project, we have a partial list of requirements below:

1. **User Registration and Authentication**
   1. The system shall allow users to register with their personal information, including name, email, and password.
   2. Users must authenticate themselves with their registered email and password before accessing the system.
   3. The system shall store user registration information securely.
2. **Browse and Search Food Items**
   1. Users should be able to browse and search for food items on the platform.
   2. The system shall provide a search bar for users to enter keywords and filter food items by category, price, and other relevant attributes.
   3. The system shall display a list of food items with details, including name, price, description, and images.
3. **Order Placement and Payment**
   1. Users should be able to add food items to their cart and place orders.
   2. The system shall calculate the total order amount, including taxes and delivery fees, if applicable.
   3. Users shall be able to make online payments through various payment methods, such as credit cards or digital wallets.
4. **Order Tracking and History**
   1. Users should be able to track the status of their orders, from order placement to delivery.
   2. The system shall maintain a history of users' previous orders, including order details, dates, and payment information.
   3. Users can view their order history and reorder previous orders.

The Requirements Linkage Traceability Matrix is illustrated as below:

\*R.ID: Requirement ID

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| R.ID | 1 | 1.1 | 1.2 | 1.3 | 2 | 2.1 | 2.2 | 2.3 | 3 | 3.1 | 3.2 | 3.3 | 4 | 4.1 | 4.2 | 4.3 |
| 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.2 |  | R |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1.3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2 | U |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2.2 |  |  |  |  |  | R |  |  |  |  |  |  |  |  |  |  |
| 2.3 |  |  |  |  |  |  | R |  |  |  |  |  |  |  |  |  |
| 3 | U |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 3.2 |  |  |  |  |  |  |  |  |  | R |  |  |  |  |  |  |
| 3.3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4 | U |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.1 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.2 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 4.3 |  |  |  |  |  |  |  |  |  |  |  |  |  |  | R |  |

Table 1 The Requirements Linkage Traceability Matrix

The simplified matrix after eliminating the blank entries:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| R.ID | 1 | 1.1 | 2.1 | 2.2 | 3.1 | 4.2 |
| 1.2 |  | R |  |  |  |  |
| 2 | U |  |  |  |  |  |
| 2.2 |  |  | R |  |  |  |
| 2.3 |  |  |  | R |  |  |
| 3 | U |  |  |  |  |  |
| 3.2 |  |  |  |  | R |  |
| 4 | U |  |  |  |  |  |
| 4.3 |  |  |  |  |  | R |

Table 2 The Requirements Linkage Traceability Matrix (simplified version)

1. **Requirements Source Traceability Matrix**

In the project, we have a partial list of requirements about External Interfaces:

1. **API Compatibility:** Ensure compatibility with restaurant partner APIs and third-party services (e.g., Google Maps) for accessing restaurant data, location services, and reviews.
2. **Push Notification Services:** Utilize a reliable push notification service (e.g., Firebase Cloud Messaging) to send timely updates to users, such as order confirmations, delivery tracking, and promotions.
3. **Location Services:** Integrate with the device's GPS or location services to provide accurate restaurant recommendations based on the user's current location.
4. **Third-Party Services:** Ensure compatibility with third-party services for on-demand delivery and courier tracking.
5. **Menu Management Systems:** Provide an interface for restaurant partners to update their menus, pricing, and availability in real-time.
6. **Feedback Channels:** Provide direct links or interfaces to gather user feedback or reports of issues, which can integrate with a customer support or feedback management system.

Illustrate the requirements on the matrix:

|  |  |  |  |
| --- | --- | --- | --- |
| **Requirement ID** | **Google Policies** | **Third-party Policies** | **Community Standards** |
| 1 | X |  |  |
| 2 | X |  |  |
| 3 | X |  |  |
| 4 |  | X |  |
| 5 |  |  | X |
| 6 |  |  | X |

Table 3 Requirements Source Traceability Matrix

1. **Requirements Stakeholder Traceability Matrix**

Assume that we are working on the Requirement 4 in section A:

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Rank**  *1 (lowest importance) – 5 (highest importance)* | **Stakeholder Source**  *A – Admin, C – Customer, R – Restaurant Owner, S – Shipper* |
| 4.1 | 4 | A, C, R, S |
| 4.2 | 4 | A, C, R |
| 4.3 | 2 | A, C |

Table 4 Requirements Stakeholder Traceability Matrix