Food Management System Project Report

Introduction

The increasing levels of food wastage in urban regions and the simultaneous shortage of food resources for underprivileged communities have become one of the major social and environmental challenges. Many organizations strive to reduce food wastage, yet there is a gap in managing surplus food in an efficient and structured manner. This project, titled Food Management System, aims to bridge this gap by providing a web-based platform that connects food providers (such as restaurants, hotels, grocery stores) with receivers (such as NGOs and shelters) to ensure that surplus food is redistributed to those in need.

The system leverages modern web technologies and a relational database to enable real-time interaction between stakeholders. This project not only promotes sustainable consumption but also fosters social responsibility among service providers.

Project Objectives

- **To** create a centralized platform for food providers and receivers to interact easily.

- **To** minimize food waste by redirecting surplus food to organizations in need.

- **To** increase awareness and participation in food donation activities.

- **To** build trust through transparent management of food listings, claims, and providers/receivers information.

- **To** support scalability and accessibility for communities across multiple regions.

Background and Literature Review

Food waste is a global issue that significantly impacts the environment and economy. According to research studies, a large percentage of food produced globally goes to waste, while millions of people suffer from hunger. Previous systems lack automation and transparency, creating challenges for efficient redistribution. Implementing a digital platform has been identified as an effective way to create a network of donors and receivers.

The Food Management System builds upon the principles of sharing economy and digital cooperation. Similar solutions exist in other sectors (e.g., ride sharing), proving that centralized platforms can effectively address resource utilization challenges. However, many solutions for food redistribution are localized or limited in scope. This project attempts to provide a generic and scalable architecture.

System Design

Executive Summary

Data Analysis Key Findings

• The overall food claim rate is 28.36%, with a total of 25,794 units of food listed and 7,314 units successfully claimed.

• A significant amount of listed food—7,757 units associated with cancelled claims and 7,274 units with pending claims—remains unclaimed or in pending status.

• Claim rates vary significantly by location. Some locations show claim rates over 100% (potentially data anomalies or highly efficient distribution), while several locations have a 0% claim rate, suggesting that food is not being claimed at all in these areas.

• 'Non-Vegetarian' is the most claimed food type (3,125 units), while 'Vegan' is the least claimed (2,565 units).

• 'Breakfast' is the most claimed meal type (2,423 units); 'Snacks' are the least claimed (2,043 units).

• The top provider by donated quantity is 'Barry Group' (179 units). The top receivers by claim count (5 claims each) are 'William Frederick', 'Anthony Garcia', and 'Matthew Webb'.

Insights and Next Steps

• Investigate locations with 0% claim rates to understand the barriers to claim ing and develop targeted strategies or re-evaluate distribution methods in these areas.

• Analyze data anomalies in locations with claim rates

Overall Food Claim Rate

The overall food claim rate, representing the percentage of listed food quantity that was successfully claimed, is a key indicator of the distribution system's effectiveness. The analysis shows:

•**Total Listed Quantity: 25,794**

•**Total Claimed Quantity (Completed Status): 7,314**

•**Overall Food Claim Rate: 28.36 Database Design**

While some food is successfully claimed, a significant portion remains unclaimed (7757 units cancelled, 7274 units pending). This suggests opportunities to improve the matching of available food with receiver needs and streamline the claiming process.

Food Distribution by Location

Analyzing claim rates by location reveals significant variations

Food Top 10 Location by Claim Rate

Location	Listed Quantity	Claimed Quantity	Claim Rate (%)
Patrickfort	18	54.0	300.0
Toddstad	37	74.0	200.0
Roachhaven	45	90.0	200.0
Port Marcland	35	70.0	200.0
Port Troychester	11	22.0	200.0
Derekport	28	56.0	200.0
Danachester	4	8.0	200.0
Cunninghambury	39	78.0	200.0
Vazquezshire	45	90.0	200.0
Marthaside	46	92.0	200.0

Bottom Top 10 Location by Claim Rate

Location	Listed Quantity	Claimed Quantity	Claim Rate (%)
Leeburgh	79	0.0	0.0
Markport	73	0.0	0.0
Martinville	32	0.0	0.0
Maynardstad	53	0.0	0.0
Medinatown	94	0.0	0.0
Meganshire	37	0.0	0.0
Michaelport	98	0.0	0.0
Port Kendraborough	27	0.0	0.0
Port Lance	32	0.0	0.0
Port Leahfurt	38	0.0	0.0

Some locations have very high claim rates (over 100%), which might indicate data in- consistencies or highly efficient distribution in those areas. Conversely, several locations have a 0% claim rate, indicating that listed food is not being claimed at all. This high- lights the need to investigate barriers and potentially re-evaluate distribution strategies.

Food Distribution by Food Type and Meal Type

Understanding which food and meal types are most and least claimed can help optimize listings:

Claimed Quantity by Food Type

Food Type	Quantity
Non-Vegetarian	3,125
Vegan	2,565
Vegetarian	3,083

Claimed Quantity by Male Type

Meal Type	Quantity
Breakfast	2,423
Dinner	2,103
Lunch	2,204
Snacks	2,043

Vegan food and Snacks are claimed in slightly lower quantities compared to other types. This insight can help tailor food listings to receiver preferences and potentially promote less frequently claimed items.

Provider and Receiver Activity

Examining the activity of providers and receivers helps identify key participants and potential areas for engagement.

Top 10 Providers by Donated Quantity

Provider ID	Quantity	Name	Type	Address
428	709	Barry Group	Restaurant	632 Wong Place, West Sh
152	306	Evans, Wright And Mitchell	Catering Service	73725 Anthony Way Apt.
394	655	Smith Group	Restaurant	USCGC Meyer, FPO AP
159	315	Nelson Llc	Restaurant	773 Frazier Ranch, Kellerb
410	678	Ruiz-Oneal	Grocery Store	934 Kelsey Shoals, Tiffan
281	499	Blankenship-Lewis	Catering Service	883 Lee Alley, East Rober
227	41	Kelly-Ware	Catering Service	482 Bush Island, Wrightb
48	161	Campbell Llc	Supermarket	8423 Karen Trace Apt. 64
125	262	Bradford-Martinez	Supermarket	366 Wheeler Fields, Harri
435	717	Shepherd And Sons	Catering Service	533 Peters Locks Suite 99

Top 10 Receivers by Claim Count

Receiver ID	Claim Count	Name	Type	City	Contact
186	5	William Frederick	NGO	Port Dean	001-228-551-9866
484	5	Anthony Garcia	Individual	Brownbury	+1-845-541-9687x5
445	5	Matthew Webb	Charity	West David	001-998-341-9445x
119	5	Scott Hunter	Individual	Greenton	074.305.5053x6097
136	4	Kristina Simpson	NGO	Melissaport	3752453906
153	4	Kristine Martin	NGO	Thompsonhaven	444.954.4127x1643
559	4	Donald Caldwell	Shelter	Dawsonberg	001-191-071-2217x
221	4	Betty Reid	Charity	North Abigail	001-526-626-7117x
278	4	Chelsea Powell	Charity	Lake Rachelburgh	001-527-059-4168x
557	4	Alvin West	Shelter	Kellybury	(417)314-8724

Engaging with these high-activity participants could provide valuable insights and opportunities for scaling up successful practices.

Implementation

The platform's frontend uses responsive design principles to ensure accessibility on various devices. Forms are provided for users to submit data easily. All inputs are validated both on the client and server side to avoid invalid or incomplete submissions.

The backend processes requests, interacts with the MySQL database, and returns appropriate data to users. Security measures have been taken to prevent unauthorized access, including password encryption and role-based access control.

Key Features

- Real-time listing of available surplus food.

- Search and sorting features to allow receivers to quickly find relevant listings.

- Notification system to alert providers when their food is claimed.

- Dashboard that shows food donation statistics.

Results and Discussions

After implementing and testing the Food Management System, the following observations were made:

- The platform significantly reduced the time for receivers to find available food.

- Providers reported that the system enabled better tracking of donated food.

- The test phase demonstrated the potential for regional scalability.

By enabling transparency and direct connections between providers and receivers, the system built trust and increased participation. The reporting module also provided valuable insights into food wastage and contribution trends.

Conclusion

The Food Management System successfully establishes an efficient and scalable platform to reduce food wastage and support communities in need. The system achieved its objectives of connecting stakeholders, improving transparency, and promoting sustainable resource utilization.