



L OVELY
P ROFESSIONAL
U NIVERSITY

Transforming Education Transforming India

Minor Project Report

on

Project Title: - Food Waste Management System

Course: Advanced Database Techniques

Course Code: CAP570

Submitted by

1. Ishita Sharma (12409402), Group: - 2
2. Palakh Koyalkar (12415956), Group: -2
3. Sowmith Kota (12415593), Group: -2

Submitted to

Ms. Ranjit Kaur Walia
UID: 28632
Assistant Professor, SCA, LPU

Lovely Faculty of Technology & Sciences

School of Computer Applications

Lovely Professional University

Punjab

Acknowledgment

We would like to express our sincere gratitude to **Ms. Ranjit Kaur Walia (28632), Assistant Professor, School of Computer Applications, Lovely Professional University**, for her guidance and continuous supervision, as well as for providing essential information and unwavering support throughout the project. Her consistent direction and willingness to share her extensive knowledge enabled us to gain a deep understanding of the project, which greatly assisted us in completing our tasks on time.

We would also like to extend our heartfelt thanks to all the individuals who graciously participated in the interviews and surveys conducted during the project. Their experiences and insights provided a practical understanding of how database systems are used in real-world applications, which greatly enriched the quality of this project.

Finally, we would like to thank our families and friends for their constant encouragement and support during this journey. This project would not have been possible without the contribution of everyone involved.

Thank you all.

Table of Contents

Sr. No.	Content	Page No.
1.	Introduction	4
2.	Project Overview	5-7
3.	Project Objectives	8
4.	Problem Statement	9
5.	Requirement Gathering <ul style="list-style-type: none">• Interviews and Surveys• Website Exploration	10-13
6.	ER Diagram and Relational Schema	14-16
7.	Database Design and Normalization <ul style="list-style-type: none">• Tables Description• Normalization Process	17-20
8.	SQL Queries and Database Operations <ul style="list-style-type: none">• Create Tables• Insert Data• Queries for Data Retrieval	21-31
9.	Conclusion	32

1. Introduction

Food waste is a critical challenge that affects economies, environments, and communities worldwide. It is estimated that around one-third of all food produced for human consumption is wasted, translating to approximately 1.3 billion tons each year. This not only results in significant economic losses but also contributes to environmental degradation, as decomposing food waste in landfills generates harmful greenhouse gases.

To address this urgent issue, the Food Waste Management System (FWMS) aims to leverage modern database management systems (DBMS) to create a comprehensive framework for tracking, analyzing, and reducing food waste. By systematically collecting and processing data across various sectors—such as households, restaurants, and grocery stores—the FWMS provides stakeholders with valuable insights into waste patterns and potential mitigation strategies.

2. Project Overview

The **Food Waste Management System** is designed to facilitate the efficient management of food donations by connecting donors, organizations, and intermediary companies. The system aims to reduce food waste by ensuring that surplus food from individuals, businesses, and other groups reaches those in need through structured donations. By managing and tracking the flow of donations through a database, the system provides a streamlined, data-driven solution to the growing issue of food waste.

Project Concept

The primary goal of the Food Waste Management System is to create a centralized database that records and tracks food donations, from the initial donor to the receiving organization, and manages the intermediary company that facilitates this process. The database stores information about:

Donors: Individuals or groups offering food donations.

Organizations: Food banks, shelters, or charities receiving the donated food.

Intermediary Companies: Companies or logistics providers responsible for handling the transactions and transportation of food.

The system automates the process of matching donations with receiving organizations and allows stakeholders to monitor the status of donations, track the quantity and types of food donated, and generate reports for further analysis.

Scope of the Project

The Food Waste Management System is built with a specific focus on:

Efficient donation tracking: Logging and categorizing every donation made by a donor and ensuring it is correctly allocated to an organization.

Transparency: Allowing stakeholders (donors, organizations, and intermediary companies) to access real-time data on donations, deliveries, and food stock levels.

Data integrity and accessibility: Ensuring that the database remains secure, accurate, and easy to use, with role-based access for different users.

Scalability: Designing the system to accommodate large-scale use by multiple users across different geographical locations.

These relationships ensure that the system efficiently tracks food donations as they pass through various entities, providing clarity on how resources are distributed. This section provides a detailed overview of your project and explains the key elements in the system's database. You can modify the descriptions based on any additional features or details that your project may include. Let me know if you need any further refinement!

3. Project Objectives

The primary objective of the **Food Waste Management System** is to create a structured and efficient database that minimizes food waste by connecting donors with organizations in need. By managing the flow of food donations through an organized system, the project aims to address the issues of food surplus and hunger in a sustainable manner.

The specific objectives of the project include:

a) Build a Structured Database: Develop a database to manage food donations, donor details, organization information, and intermediary company logistics. Ensure data integrity, accuracy, and security for all recorded transactions and entities involved in the food donation process.

b) Track and Manage Donations: Record each food donation from the donor to the organization, including details like food items, quantities, and donation dates. Monitor the entire transaction process, ensuring smooth and transparent delivery of food from donor to recipient organizations.

c) Establish Clear Relationships Between Entities: Define and maintain relationships between donors, intermediary companies, and organizations to facilitate efficient donation management. Ensure that each entity (Donor, Organization, and Intermediary Company) has access to real-time data related to their roles in the donation process.

d) Implement Transparency in the Donation Process: Provide donors with updates on where their contributions are going and how they are used by recipient organizations. Allow organizations and intermediary companies to track the status of food donations, ensuring accountability and minimizing loss or mismanagement.

e) Generate Analytical Reports: Create a system that can generate reports on food donations over time, highlighting the impact of the program and identifying areas for improvement. Enable stakeholders to access insights into donation patterns, the most donated items, and the organizations benefiting the most from the system.

f) Facilitate Scalability and Flexibility: Design the system to scale up as the number of donors, organizations, and intermediary companies grows. Ensure

that the system can accommodate various types of food donations, different categories of organizations, and multiple intermediary companies operating across different regions.

4. Problem Statement

In today's world, a significant amount of food is wasted while millions of people go hungry. The core issue lies in the inefficiency of connecting surplus food from donors, such as restaurants, grocery stores, and individuals, to organizations that serve those in need. There is often a lack of coordination, tracking, and logistical management, leading to food wastage and missed opportunities to help the underprivileged.

The **Food Waste Management System** aims to solve this problem by providing a centralized database that facilitates the efficient collection, management, and distribution of food donations. The system connects three key stakeholders—donors, intermediary companies, and recipient organizations—creating a streamlined process to minimize food waste while addressing food insecurity.

Challenges Addressed:

a)Lack of Coordination: There is no centralized platform to match donors with organizations in need of food donations, leading to excess food being discarded.

b)Inefficient Tracking: Without proper tracking, it becomes difficult to ensure food reaches the right organizations at the right time.

c)Logistical Issues: Many donors are unable to donate food simply because they lack the resources or network to transport food efficiently.

d)Food Insecurity: Despite the availability of surplus food, organizations that serve food-insecure populations struggle to receive sufficient donations.

The **Food Waste Management System** solves these problems by creating an organized, transparent, and scalable solution, helping to reduce food wastage and hunger in a sustainable way.

This problem statement clearly identifies the key issues the project seeks to address. Feel free to adjust it according to the specific focus of your system. Let me know if you need further refinements!

5. Requirement Gathering

5.1 Interviews and Surveys



We went to various restaurant, canteen and hotel which are engaged in **Food Waste Management System** , asked following questions from them:

1. How do you track and manage the food donations received by your NGO?
2. What kind of information do you collect from donors and beneficiaries (e.g., quantity of food, type, expiry date, etc.)?
3. Do you have a system in place to track the amount of food distributed daily, weekly, or monthly?
4. How do you record the details of donors (e.g., name, contact, type of donation)? Do you maintain any long-term relationships with recurring donors?
5. How do you handle large donations from corporate donors or food chains? Is there a separate process for these?
6. Can you explain your process for allocating donations to different communities? Is there a threshold for how much food one beneficiary can receive?
7. What logistical challenges do you face when distributing food donations, and how do you track the delivery and receipt of food?
8. Do you keep records of transportation or distribution points for each donation? If yes, what kind of data is stored?

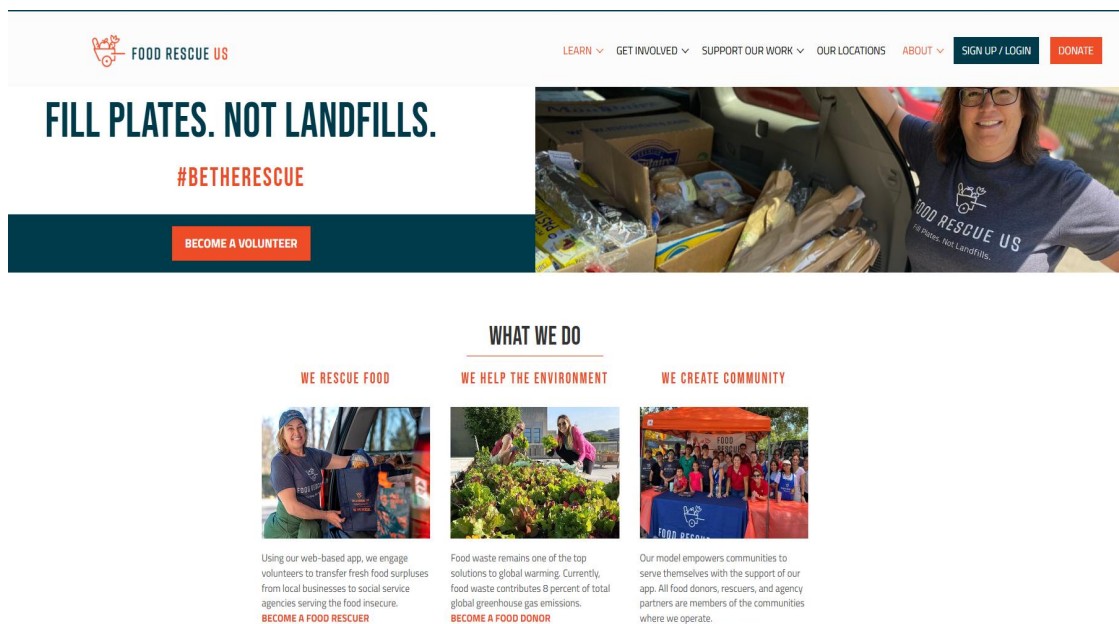
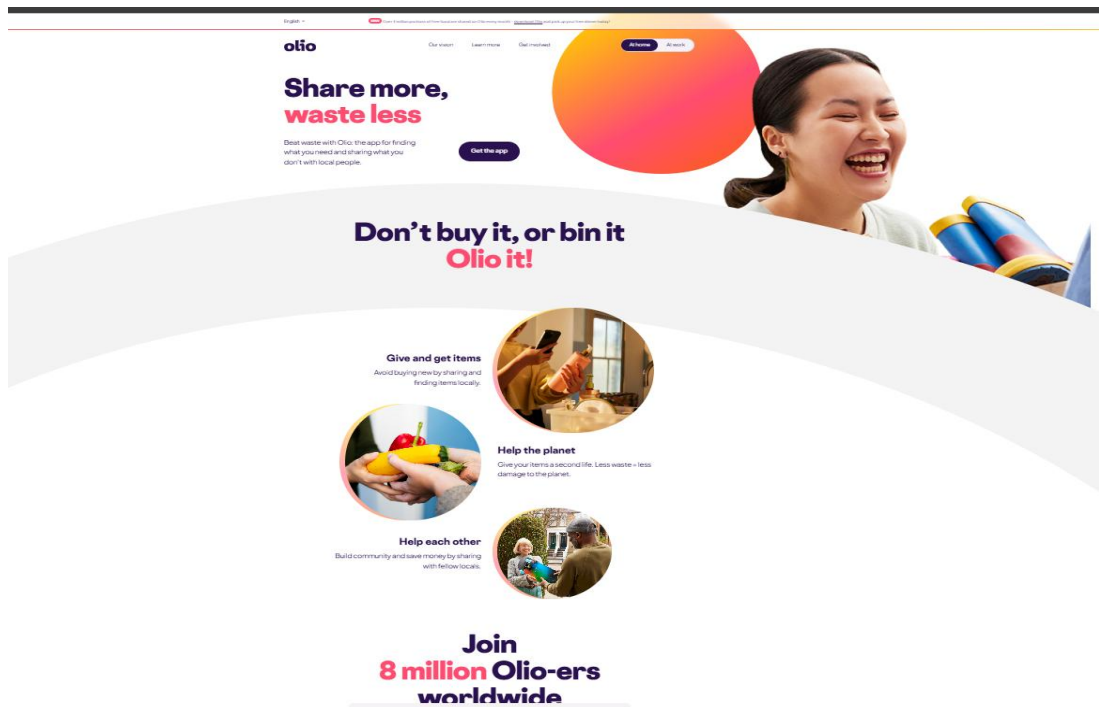
9. Are you required to report your activities to any regulatory body or sponsors? If so, what kind of reports do you generate and what data is included in those reports?
10. How do you ensure that the personal information of donors and beneficiaries is kept confidential and secure?
11. What kind of data do you wish you could collect but currently don't, and how would that help you improve your operations?
12. Do you have plans to implement or upgrade your current data management system? If so, what improvements are you seeking?.



5.2 Website Exploration

Objective: Connects neighbors and local businesses to share surplus food. The site features a user-friendly interface for sharing and finding food.

- **Websites Explored:** OLIO, Food Reuse Us



Observations:

- **Food Sharing:**

Users can share surplus food items with neighbors or local businesses, reducing waste.

- **User Profiles:**

Each user has a profile where they can list available food items and view items offered by others.

- **Search and Filter Options:**

Users can search for available food based on categories, location, and types of items.

- **In-App Messaging:**

A messaging feature allows users to communicate directly to arrange pick-up or drop-off.

Structure:

- **Homepage:**

Features an overview of the platform, its mission, and prompts users to join or log in.

- **Search Interface:**

Allows users to quickly find available food items and offers suggestions based on location.

- **User Dashboard:**

A personalized space for users to manage their listings, track interactions, and view notifications.

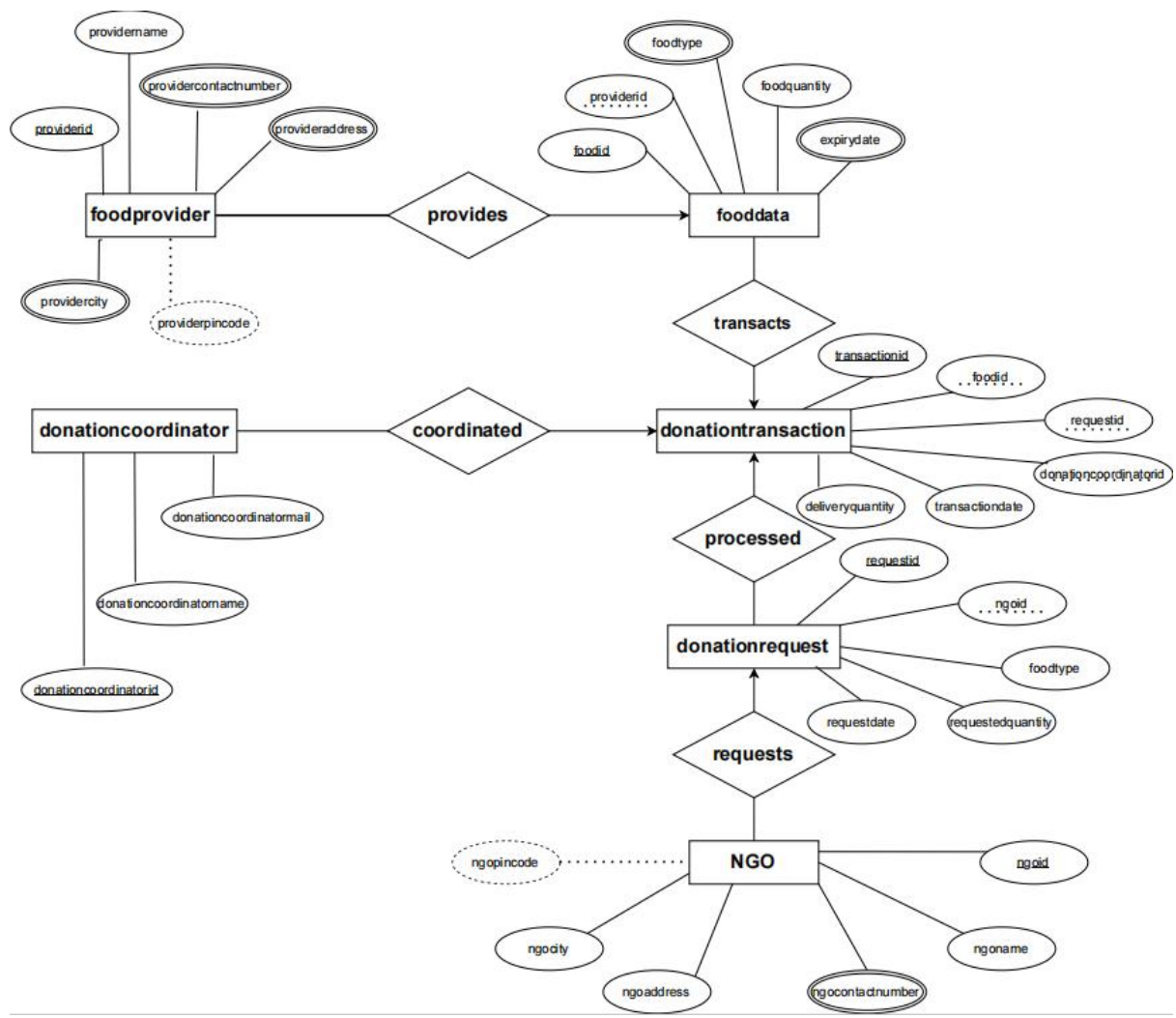
- **Profile Page:**

Displays user information, listings, reviews, and a history of shared items.

6. ER Diagram and Relational Schema

ER diagram represents a system that manages food donations between canteens and NGOs. The **foodprovider** entity stores the details of food providers, such as their name, contact information, and address. Each provider can donate multiple food items, and this information is captured in the **fooddata** entity, which includes the type of food, quantity, and expiration date. The **donationtransaction** entity records the details of each donation transaction, linking the food provided to a specific request made by an NGO. This entity also tracks the quantity of food delivered and is managed by a **DonationCoordinator**, who oversees the process and ensures smooth communication between providers and NGOs.

The **donationrequest** entity stores the requests made by NGOs for specific types and quantities of food. These requests are linked to the **NGO** entity, which holds the NGO's contact information and location. The system, as a whole, ensures that the food donations from canteens are efficiently matched to the requests from NGOs, with the transaction details being carefully recorded and managed by coordinators.



Relational Schema:



7. Database Design and Normalization

Table Descriptions

CREATE DATABASE foodwastemanagementsystem
USE foodwastemanagementsystem

Table1:--foodprovider table

Attribute:providerid,providername,providercontactnumber,provideraddress,
providercity,providerpincode

Primary key: providerid

Description: stores the details of food donors.

Table2:--NGO Table:

Attribute:ngoid,ngoname,ngocontactnumber,ngoaddress,ngocity,ngopincode

Primary key: ngoid

Description: Stores information about organizations that will receive food donations.

Table3:--donation coordinator table :

Attribute:donationcoordinatorid,donationcoordinatorname,
donationcoordinatormail

Primary key: donationcoordinatorid

Description: donation coordinator table :Stores the intermediary details that facilitate communication between donors and NGOs

Table4:--foodwaste data table:

Attribute: .foodid,providerid, foodtype,foodquantity, expirydate

Primary key: foodid

Description: Stores information about the food waste donated.

Table5:-- donationrequest table :

Attribute:requestid,ngoid, foodtype,foodquantity, requiredquantity,requestdate

Primary key: requesteid

Description: Stores the *donation requests made by NGOs*.

Table6:--

Attribute:transactionid,foodid,requestid,donationcoordinatorid,
deliveredquantity ,transactiondate,

Primary key: : transactionid

Description: captures the transaction between food providers, NGO and donationcoordinator.

Normalization Process

1NF (First Normal Form)

1NF requires that all table columns contain atomic values, and there should be no repeating groups.

Tables Review:

All tables comply with 1NF because each field contains atomic values, such as providername, foodtype, and foodquantity, with no multiple values in a single column or repeating groups.

2NF (Second Normal Form)

2NF requires the table to be in 1NF and that all non-key columns depend on the entire primary key (i.e., no partial dependency of columns on part of a composite primary key).

Tables Review:

- **foodprovider, NGO, DonationCoordinator, fooddata, and donationrequest:** These tables all have simple primary keys (providerid, ngoid, donationcoordinatorid, etc.), and all non-key columns depend on the primary key, so they comply with 2NF.
- **donationtransaction:** This table has multiple foreign keys (foodid, requestid, donationcoordinatorid), but there is no partial dependency between non-key columns and part of the key. For example, deliveredquantity depends on all the keys together, not just a part of the composite key.
- **fooddata:** providerid determines the waste details (foodtype, foodquantity, Expirydate), so it satisfies 2NF.

3NF (Third Normal Form)

3NF requires the table to be in 2NF and that all columns are non-transitively dependent on the primary key (i.e., no transitive dependencies where a non-key column depends on another non-key column).

Tables Review:

- **foodprovider, NGO, DonationCoordinator:** All columns directly depend on their respective primary keys. There are no transitive dependencies, so these tables comply with 3NF.
- **fooddata:** Every column (foodtype, foodquantity, Expirydate) depends directly on providerid, and there are no transitive dependencies, so this is in 3NF.
- **donationrequest:** foodtype, requiredquantity, and requestdate depend directly on the primary key requestid, not on each other. This satisfies 3NF.

- **donationtransaction:** No transitive dependencies between the non-key columns. transactiondate and deliveredquantity depend directly on the entire key (composite of foodid, requestid, and donationcoordinatorid), so this table is also in 3NF.

Conclusion:

All the tables satisfy **1NF**, **2NF**, and **3NF**:

- **1NF:** No repeating groups or multiple values in a column.
- **2NF:** No partial dependencies.
- **3NF:** No transitive dependencies. All non-key columns depend solely on the primary key of their respective tables.

The tables you designed (foodprovider, NGO, DonationCoordinator, fooddata, donationrequest, donationtransaction) are well-structured and normalized, ensuring minimal redundancy and dependency issues.

8. SQL Queries and Database Operations

8.1 Create Tables

```
CREATE DATABASE foodwastemanagementsystem
USE foodwastemanagementsystem
```

Table1:--foodprovider table : stores the details of food donors.

```
CREATE TABLE foodprovider(
    providerid INT PRIMARY KEY IDENTITY(1,1),
    providername varchar(100),
    providercontactnumber BIGINT,
    provideraddress VARCHAR(100),
    providercity VARCHAR(30),
    providerpincode INT,
    CONSTRAINT checkprovidercontactnumber CHECK
(providercontactnumber >=6000000000 AND providercontactnumber<=
9999999999),
    CONSTRAINT checkproviderpincode CHECK (providerpincode
BETWEEN 100000 AND 999999)
);
```

Table2:--NGO Table: Stores information about organizations that will receive food donations.

```
CREATE TABLE NGO(
    ngoid INT PRIMARY KEY IDENTITY(1,1),
    ngo name VARCHAR(100),
    ngocontactnumber BIGINT,
    ngoaddress VARCHAR(100),
    ngocity VARCHAR(30),
    ngopincode INT,
    CONSTRAINT checkngocontactnumber CHECK
(ngocontactnumber >=6000000000 AND ngocontactnumber<= 9999999999),
    CONSTRAINT checkngopincode CHECK (ngopincode BETWEEN
100000 AND 999999)
);
```

Table3:--donation coordinator table :Stores the intermediary details that facilitate communication between donors and NGOs.

```
CREATE TABLE Donationcoordinator(  
    donationcoordinatorid INT PRIMARY KEY IDENTITY(1,1),  
    donationcoordinatorname VARCHAR(100),  
    donationcoordinatormail VARCHAR(255),  
    CONSTRAINT checkdonationcoordinatormail check  
(donationcoordinatormail LIKE '%@%._%')  
);
```

Table4:--foodwaste data table: Stores information about the food waste donated.

```
CREATE TABLE fooddata(  
    foodid INT PRIMARY KEY IDENTITY(1,1),  
    providerid INT,  
    foodtype VARCHAR(50),  
    foodquantity FLOAT, --in kilograms  
    Expirydate DATE,  
    CONSTRAINT fkproviderid FOREIGN KEY (providerid)  
REFERENCES foodprovider(providerid)  
);
```

Table5:-- donationrequest table : Stores the donation requests made by NGOs.

```
CREATE TABLE donationRequest(  
    requestid INT PRIMARY KEY IDENTITY(1,1),  
    ngoid INT,  
    foodtype VARCHAR(50),  
    requiredquantity FLOAT, --in kilograms  
    requestdate DATE,  
    CONSTRAINT fkngoid FOREIGN KEY (ngoid) REFERENCES  
NGO(ngoid)  
);
```

Table6:--captures the transaction between food providers, NGO and donationcoordinator.

```

CREATE TABLE donationtransaction(
    transactionid INT PRIMARY KEY IDENTITY(1,1),
    foodid INT,
    requestid INT,
    donationcoordinatorid INT,
    transactiondate DATE,
    deliveredquantity FLOAT,
    CONSTRAINT fkfoodid FOREIGN KEY (foodid) REFERENCES
foodData(foodid),
    CONSTRAINT fkrequestid FOREIGN KEY (requestid) REFERENCES
donationRequest(requestid),
    CONSTRAINT fkdonationcoordinatorid FOREIGN KEY
(donationcoordinatorid)REFERENCES
Donationcoordinator(donationcoordinatorid)
);
select * from foodprovider
select * from NGO
select * from Donationcoordinator
select * from fooddata
select * from donationrequest
select * from donationtransaction

```

Results Messages						
providerid	providername	providercontactnumber	provideraddress	providercity	providerpincode	
ngoid	ngoname	ngocontactnumber	ngoaddress	ngocity	ngopincode	
donationcoordinatorid	donationcoordinatorname	donationcoordinatormail				
foodid	providerid	foodtype	foodquantity	Expirydate		
requestid	ngoid	foodtype	requiredquantity	requestdate		
transactionid	foodid	requestid	donationcoordinatorid	transactiondate	deliveredquantity	

8.2 Insert Data

```
--foodprovider table
insert into
foodprovider(providername,providercontactnumber,provideraddress,providercity,providerpincode)
values ('Kota Ravi',7383181533,'PNo270 Shreenatji soc-4, Niligiri,Udhna Yard','Surat',395010),
      ('Margham Ganesh',9173356481,'B-346 Suman Siddhi Society, Gododara','Surat',395010),
      ('Shrinista Koyalkar',7876551533,'151-4 Rauji Sochpal Building,Dadar','Mumbai',400028),
      ('Chanthu S',8734259037,'Pno109,Demonte Colony,Varkala','Thiruvandhapuram',695143),
      ('Shiva Venkatesh',9386526222,'D-546 Bhagya Nagar','Ongole',523001),
      ('Ishita Sharma',7845382538,'324-C, Brundhavan Colony','Phagwara',144411),
      ('Tanishta',8745386457,'78-D, Chaura Bazar','Ludhiana',141001),
      ('Mahendra Singh',7802914165,'PNo104,Beautiful Society','Jalandhar',144001),
      ('Vamshi Anabattulu',9546372826,'434-2,Suman Prahar','Ludhiana',141001),
      ('Rakesh Sharma',8764573903,'A-718, Kalpana Society','Jalandhar',144001)
```

	providerid	providername	providercontactnumber	provideraddress	providercity	providerpincode
1	1	Kota Ravi	7383181533	PNo270 Shreenatji soc-4, Niligiri,Udhna Yard	Surat	395010
2	2	Margham Ganesh	9173356481	B-346 Suman Siddhi Society, Gododara	Surat	395010
3	3	Shrinista Koyalkar	7876551533	151-4 Rauji Sochpal Building,Dadar	Mumbai	400028
4	4	Chanthu S	8734259037	Pno109,Demonte Colony,Varkala	Thiruvandhapuram	695143
5	5	Shiva Venkatesh	9386526222	D-546 Bhagya Nagar	Ongole	523001
6	6	Ishita Sharma	7845382538	324-C, Brundhavan Colony	Phagwara	144411
7	7	Tanishta	8745386457	78-D, Chaura Bazar	Ludhiana	141001
8	8	Mahendra Singh	7802914165	PNo104,Beautiful Society	Jalandhar	144001
9	9	Vamshi Anabattulu	9546372826	434-2,Suman Prahar	Ludhiana	141001
10	10	Rakesh Sharma	8764573903	A-718, Kalpana Society	Jalandhar	144001

```
--NGO table
insert into
NGO(ngoname,ngocontactnumber,ngoaddress,ngocity,ngopincode)
values ('Goonj Foundation',8745363809,'Jangpura','New Delhi',110014),
```


('FoodBank India',7645370098,'1st Floor, Jivdani Apartment, Mhatre Nagar, Dadar West','Mumbai',400028),
 ('Akshaya Patra Foundation',9845096021,'2nd Floor, Sukh Sagar, 40, Banshankar Marg, Basavanagudi','Bengaluru',560004),
 ('Robin Hood Army',8065748535,'F-41, 2nd Floor, Opp. Radha Swami Satsang Beas','New Delhi', 110015),
 ('Gujarat Food Bank',7864509203,'3rd Floor, Nirmal Residency, Near Shreyas School, Maninagar','Ahmedabad',110052),
 ('Food for All',6378063468,'Plot 49, Opp. Indian Oil Petrol Pump, 60 Feet Road, Ashok Vihar Phase 3','New Delhi',110052),
 ('Sewa Punjab',8976453087,'56, Krishna Nagar','Jalandhar',144001),
 ('The Midday Meal Scheme',8745620701,'Room No. 201, 2nd Floor, State Project Office, Near Jalandhar Bypass','Ludhiana',141008),
 ('Food for Change Punjab',6754309803,'H.No. 82, Street No. 4, Shankar Garden, Near Guru Teg Bahadur School','Patiala',147001),
 ('Sankalp Trust',9084536078,'501, Dev Ashish Complex, Opp. Vishwakarma Engineering College','Ahmedabad',382426)

	ngoid	ngoname	ngocontactnumber	ngoaddress	ngocity	ngopincode
1	1	Goonj Foundation	8745363809	Jangpura	New Delhi	110014
2	2	FoodBank India	7645370098	1st Floor, Jivdani Apartment, Mhatre Nagar, Dadar West	Mumbai	400028
3	3	Akshaya Patra Foundation	9845096021	2nd Floor, Sukh Sagar, 40, Banshankar Marg, Basava...	Bengaluru	560004
4	4	Robin Hood Army	8065748535	F-41, 2nd Floor, Opp. Radha Swami Satsang Beas	New Delhi	110015
5	5	Gujarat Food Bank	7864509203	3rd Floor, Nirmal Residency, Near Shreyas School, M...	Ahmedabad	110052
6	6	Food for All	6378063468	Plot 49, Opp. Indian Oil Petrol Pump, 60 Feet Road, A...	New Delhi	110052
7	7	Sewa Punjab	8976453087	56, Krishna Nagar	Jalandhar	144001
8	8	The Midday Meal Scheme	8745620701	Room No. 201, 2nd Floor, State Project Office, Near J...	Ludhiana	141008
9	9	Food for Change Punjab	6754309803	H.No. 82, Street No. 4, Shankar Garden, Near Guru T...	Patiala	147001
10	10	Sankalp Trust	9084536078	501, Dev Ashish Complex, Opp. Vishwakarma Engine...	Ahmedabad	382426

```
--DonationCoordinator table
insert into Donationcoordinator
(donationcoordinatorname,donationcoordinatormail)
values ('Rakesh Kamuni','rakeshkamuni2002@gamil.com'),
('Srinath
Mittakola','mittakolasrinath98@gamil.com'),
('Rashmitha S','rashmitha123@gmail.com'),
('Neha Allam','nehaallam87@gmail.com'),
('Sirisha Guttula','sirishaguttula56@gmail.com'),
```

```
( 'Dhananjay
Chitturi', 'chitturidhananjay@gmail.com' ),
( 'Charan
Boggavarapu', 'boggavarapucharam@gmail.com' ),
( 'Abhinaya S', 'abhinaya789@gmail.com' ),
( 'Ankna Chaudhary', 'anknachaudhary@gmail.com' ),
( 'Sanjana Sherawat', 'sanjanasherawat@gmail.com' )
```

	donationcoordinatorid	donationcoordinatorname	donationcoordinatormail
1	1	Rakesh Kamuni	rakeshkamuni2002@gamil.com
2	2	Srinath Mittakola	mittakolasrinath98@gamil.com
3	3	Rashmitha S	rashmitha123@gmail.com
4	4	Neha Allam	nehaallam87@gmail.com
5	5	Sirisha Guttula	sirishaguttula56@gmail.com
6	6	Dhananjay Chitturi	chitturidhananjay@gmail.com
7	7	Charan Boggavarapu	boggavarapucharam@gmail.com
8	8	Abhinaya S	abhinaya789@gmail.com
9	9	Ankna Chaudhary	anknachaudhary@gmail.com
10	10	Sanjana Sherawat	sanjanasherawat@gmail.com

--fooddata table

insert into

fooddata(providerid, foodtype, foodquantity, Expirydate)

```
values (1, 'Puri and Chana', 10.5, '11-27-2024'),
(2, 'Rice and Dal', 15, '11-27-2024'),
(3, 'Roti and Aloocurry', 20, '11-27-2024'),
(4, 'Veg Biriyan', 20, '11-27-2024'),
(5, 'Chole Kulche', 15, '11-27-2024'),
(6, 'Rice and Dal', 25.5, '11-27-2024'),
(7, 'Chana Puri', 10.5, '11-27-2024'),
(8, 'Roti and Aloocurry', 12, '11-27-2024'),
(9, 'Pav Bhaji', 15, '11-27-2024'),
(10, 'Chole Kulche', 20, '11-27-2024')
```

	foodid	providerid	foodtype	foodquantity	Expirydate
1	1	1	Puri and Chana	10.5	2024-11-27
2	2	2	Rice and Dal	15	2024-11-27
3	3	3	Roti and Aloocurry	20	2024-11-27
4	4	4	Veg Biriyan	20	2024-11-27
5	5	5	Chole Kulche	15	2024-11-27
6	6	6	Rice and Dal	25.5	2024-11-27
7	7	7	Chana Puri	10.5	2024-11-27
8	8	8	Roti and Aloocurry	12	2024-11-27
9	9	9	Pav Bhaji	15	2024-11-27
10	10	10	Chole Kulche	20	2024-11-27

```
--donationrequest table
```

```
insert into
```

```
donationrequest(ngoid,foodtype,requiredquantity,requestdate)
```

```
values (1,'Puri and Chana',10,'11-26-2024'),  
(2,'Veg Biroyani',15,'11-26-2024'),  
(3,'Chole kulche',10.5,'11-26-2024'),  
(4,'Pav Bhaji',12,'11-26-2024'),  
(5,'Puri and Chana',12.5,'11-26-2024'),  
(6,'Rice and Dal',20,'11-26-2024'),  
(7,'Chana Puri',10,'11-26-2024'),  
(8,'Roti and Aloocurry',15,'11-26-2024'),  
(9,'Rice and Dal',20,'11-26-2024'),  
(10,'Chole Kulche',15.5,'11-26-2024')
```

	requestid	ngoid	foodtype	requiredquantity	requestdate
1	1	1	Puri and Chana	10	2024-11-26
2	2	2	Veg Biroyani	15	2024-11-26
3	3	3	Chole kulche	10.5	2024-11-26
4	4	4	Pav Bhaji	12	2024-11-26
5	5	5	Puri and Chana	12.5	2024-11-26
6	6	6	Rice and Dal	20	2024-11-26
7	7	7	Chana Puri	10	2024-11-26
8	8	8	Roti and Aloocurry	15	2024-11-26
9	9	9	Rice and Dal	20	2024-11-26
10	10	10	Chole Kulche	15.5	2024-11-26

```
--donationtransaction table
```

```
insert into
```

```
donationtransaction(foodid,requestid,donationcoordinatorid,  
transactiondate,deliveredquantity)
```

```
values (1,1,1,'11-27-2024','10.2'),  
(2,2,2,'11-26-2024','15'),  
(3,3,3,'11-27-2024','12.5'),  
(4,4,4,'11-28-2024','20'),  
(5,5,5,'11-25-2024','12.5'),  
(6,6,6,'11-20-2024','15.5'),  
(7,7,7,'11-26-2024','10'),  
(8,8,8,'11-19-2024','10.5'),  
(9,9,9,'11-21-2024','20'),  
(10,10,10,'11-22-2024','15')
```

	transactionid	foodid	requestid	donationcoordinatorid	transactiondate	deliveredquantity
1	1	1	1	1	2024-11-27	10.2
2	2	2	2	2	2024-11-26	15
3	3	3	3	3	2024-11-27	12.5
4	4	4	4	4	2024-11-28	20
5	5	5	5	5	2024-11-25	12.5
6	6	6	6	6	2024-11-20	15.5
7	7	7	7	7	2024-11-26	10
8	8	8	8	8	2024-11-19	10.5
9	9	9	9	9	2024-11-21	20
10	10	10	10	10	2024-11-22	15

8.3 Queries for Data Retrieval

--1.What food was donated by Transaction id =3

```
SELECT fd.foodtype, fd.foodquantity
FROM fooddata fd
WHERE fd.foodid = (SELECT foodid FROM donationtransaction
WHERE transactionid = 3);
```

	foodtype	foodquantity
1	Roti and Alooocurry	20

--2.Which provider provided 'Pav bhaji'

```
SELECT providername
FROM foodprovider
WHERE providerid = (SELECT providerid FROM fooddata WHERE
foodtype = 'Pav Bhaji');
```

	providername
1	Vamshi Anabattulu

--3.Total quantity of food was donated on 2024-11-20

```
SELECT SUM(deliveredquantity) AS total_donated_quantity
FROM donationtransaction
WHERE transactiondate = '2024-11-20';
```

	total_donated_quantity
1	15.5

--4.Display Ngo with maximum amount of food donated

```
SELECT n.ngoname, SUM(dt.deliveredquantity) AS
total_donated_quantity
FROM donationtransaction dt
```

	ngoname	total_delivered
1	Food for Change Punjab	20
2	Robin Hood Army	20

```

JOIN donationrequest dr ON dt.requestid = dr.requestid
JOIN NGO n ON dr.ngoid = n.ngoid
GROUP BY n.ngoname
ORDER BY total_donated_quantity DESC
TOP 1;
/*OR*/
SELECT n.ngoname, SUM(dt.deliveredquantity) AS
total_delivered
FROM NGO n
JOIN donationrequest dr ON n.ngoid = dr.ngoid
JOIN donationtransaction dt ON dr.requestid = dt.requestid
GROUP BY n.ngoname
HAVING SUM(dt.deliveredquantity) = (
    SELECT MAX(total_delivered)
    FROM (
        SELECT SUM(dt2.deliveredquantity) AS
total_delivered
        FROM donationrequest dr2
        JOIN donationtransaction dt2 ON dr2.requestid =
dt2.requestid
        GROUP BY dr2.ngoid
    ) AS MaxDonation
);

```

--5.What is the total quantity of food requested by each NGO?

```

SELECT n.ngoname, SUM(dr.requiredquantity) AS
total_requested
FROM NGO n
JOIN donationrequest dr ON n.ngoid = dr.ngoid
GROUP BY n.ngoname;

```

	ngoname	total_requested
1	Akshaya Patra Foundation	10.5
2	Food for All	20
3	Food for Change Punjab	20
4	FoodBank India	15
5	Goonj Foundation	10
6	Gujarat Food Bank	12.5
7	Robin Hood Army	12
8	Sankalp Trust	15.5
9	Sewa Punjab	10
10	The Midday Meal Scheme	15

--6.What is the total quantity of food donated by each provider?

```
SELECT fp.providername, SUM(fd.foodquantity) AS
total_quantity
FROM foodprovider fp
JOIN fooddata fd ON fp.providerid = fd.providerid
GROUP BY fp.providername;
```

	providername	total_quantity
1	Chanthu S	20
2	Ishita Sharma	25.5
3	Kota Ravi	10.5
4	Mahendra Singh	12
5	Margham Ganesh	15
6	Rakesh Sharma	20
7	Shiva Venkatesh	15
8	Shrinista Koyalkar	20
9	Tanishtha	10.5
10	Vamshi Anabattulu	15

--7.Which donation coordinators handled which donation transactions?

```
SELECT dc.donationcoordinatorname, dt.transactionid,
dt.transactiondate, dt.deliveredquantity
FROM DonationCoordinator dc
JOIN donationtransaction dt ON dc.donationcoordinatorid =
dt.donationcoordinatorid;
```

	donationcoordinatorname	transactionid	transactiondate	deliveredquantity
1	Rakesh Kamuni	1	2024-11-27	10.2
2	Srinath Mittakola	2	2024-11-26	15
3	Rashmitha S	3	2024-11-27	12.5
4	Neha Allam	4	2024-11-28	20
5	Sirisha Guttula	5	2024-11-25	12.5
6	Dhananjay Chitturi	6	2024-11-20	15.5
7	Charan Boggavarapu	7	2024-11-26	10
8	Abhinaya S	8	2024-11-19	10.5
9	Ankna Chaudhary	9	2024-11-21	20
10	Sanjana Sherawat	10	2024-11-22	15

--8.Which food donations have an expiry date after 2024-11-26?

```
SELECT * FROM fooddata WHERE Expirydate > '2024-11-26';
```


	foodid	providerid	foodtype	foodquantity	Expirydate
1	1	1	Puri and Chana	10.5	2024-11-27
2	2	2	Rice and Dal	15	2024-11-27
3	3	3	Roti and Aloocurry	20	2024-11-27
4	4	4	Veg Biryani	20	2024-11-27
5	5	5	Chole Kulche	15	2024-11-27
6	6	6	Rice and Dal	25.5	2024-11-27
7	7	7	Chana Puri	10.5	2024-11-27
8	8	8	Roti and Aloocurry	12	2024-11-27
9	9	9	Pav Bhaji	15	2024-11-27
10	10	10	Chole Kulche	20	2024-11-27

--9.Which food types and quantities were donated by each provider?

```
SELECT fp.providername, fd.foodtype, fd.foodquantity
FROM foodprovider fp
JOIN fooddata fd ON fp.providerid = fd.providerid;
```

	providername	foodtype	foodquantity
1	Kota Ravi	Puri and Chana	10.5
2	Margham Ganesh	Rice and Dal	15
3	Shrinista Koyalkar	Roti and Aloocurry	20
4	Chanthu S	Veg Biryani	20
5	Shiva Venkatesh	Chole Kulche	15
6	Ishita Sharma	Rice and Dal	25.5
7	Tanishta	Chana Puri	10.5
8	Mahendra Singh	Roti and Aloocurry	12
9	Vamshi Anabattulu	Pav Bhaji	15
10	Rakesh Sharma	Chole Kulche	20

--10.Which NGOs requested which types of food, and what were the required quantities?

```
SELECT n.ngoname, dr.foodtype, dr.requiredquantity
FROM NGO n JOIN donationrequest dr ON n.ngoid = dr.ngoid;
```

	ngoname	foodtype	requiredquantity
1	Goonj Foundation	Puri and Chana	10
2	FoodBank India	Veg Biroyani	15
3	Akshaya Patra Foundation	Chole kulche	10.5
4	Robin Hood Army	Pav Bhaji	12
5	Gujarat Food Bank	Puri and Chana	12.5
6	Food for All	Rice and Dal	20
7	Sewa Punjab	Chana Puri	10
8	The Midday Meal Scheme	Roti and Aloocurry	15
9	Food for Change Punjab	Rice and Dal	20
10	Sankalp Trust	Chole Kulche	15.5

9. Conclusion

In conclusion, the Food Waste Management System developed using a Database Management System (DBMS) demonstrates a significant potential for addressing the pressing issue of food waste. Through the systematic collection, analysis, and management of data related to food production, consumption, and disposal, the system provides stakeholders—ranging from consumers to food retailers and policymakers—with valuable insights and actionable strategies.

Moreover, the findings underscore the necessity for collaboration among various sectors, including government agencies, food businesses, and community organizations, to create a comprehensive approach to food waste management. Future enhancements could include integration with IoT devices for real-time monitoring, mobile applications for consumer engagement, and partnerships with local food banks to redirect surplus food.

Overall, the Food Waste Management System represents a crucial step towards a more sustainable food ecosystem, ultimately fostering a culture of awareness and responsibility around food consumption and waste.