

ZERO HUNGER

**A PROJECT REPORT
for
Major Project (KCA451)
Session (2023-24)**

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Under the Supervision of
Dr. Amit Kumar Gupta
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Submitted to

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(MAY 2024)**

DECLARATION

I hereby declare that the work presented in report entitled “Zero Hunger” was carried out by me.I have not submitted the matter embodied in this report for the award of any other degree or diploma of any other University or Institute. I have given due credit to the original authors/sources for all the words, ideas, diagrams, graphics, computer programs, that are not my original contribution. I have used quotation marks to identify verbatim sentences and give credit to the original authors/sources. I affirm that no portion of my work is plagiarized, and the experiments and results reported in the report are not manipulated. In the event of a complaint of plagiarism and the manipulation of the experiments and results, I shall be fully responsible and answerable.

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Zero Hunger

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ABSTRACT

The paper represents the website to reduce the food wastage by providing that too those who are in need. In today's world people are wasting more food than consuming, which is a huge problem. India ranks 2nd in food wasting, about 68.8 million tons of food is wasted per year. This proposal is to overcome the food wastage problem. It will work as request and response from Restaurants and NGOs. The quantity and lifetime of the food should be mentioned by the restaurants. NGOs should collect the leftovers from Restaurants before the lifetime of food and distribute among those in need. And the restaurants can post the food donated details..

To develop a Web Based application that reduces the amount of food wastage produced in restaurants, functions and mess. The current system only provides information on amount of food wasted and does not provide an interface to donate and provide data analysis. Using data analysis, to visualize the impact. Donating the excess food that consists of the following details, first, providing the location of where excess food is available & details of the food quantity available. Immediate Alerts to nearby NGO's, orphanage, volunteers to collect them. According to a recent survey, 1.3 billion tons of food is being wasted each year and one third of food consumed are leftover. To produce a system that reduces the amount of food being wasted the focus of the project is to develop a web application that uses data analysis to visualize the impact of excess food, thus reducing food wastage. It also enables to give away the excess food produced by notifying the nearby users (NGO's, Volunteers) with details of the food available.

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CHAPTER 1

INTRODUCTION

1.1 Overview

Food waste is a significant global issue with profound environmental, economic, and social implications. Approximately one-third of all food produced for human consumption is wasted each year, amounting to about 1.3 billion tons. This wastage occurs at various stages of the food supply chain, from production and processing to retail and consumption. Addressing this issue is critical for achieving sustainability and ensuring food security for the growing global population. In the 2023 Global Hunger Index, India ranks **111th** out of the 125 countries with a score of **28.7** in the 2023 Global Hunger Index, India has a level of hunger that is serious.

The "Zero Hunger" project is an ambitious initiative aimed at addressing food insecurity and reducing hunger by efficiently managing food donations through a structured and collaborative system. The project is divided into three main modules: Admin, Donor, and NGO. Each module plays a crucial role in ensuring that surplus food is effectively collected, verified, and distributed to those in need.

1.2 Motivation

The motivation behind the "Zero Hunger" project is deeply rooted in the urgent need to address food insecurity and hunger, which are critical issues affecting millions of people worldwide. Despite significant advances in food production and distribution, a substantial amount of food is wasted each year while countless individuals and families suffer from hunger and malnutrition. This stark contrast highlights a glaring inefficiency in our food systems and underscores the necessity for innovative solutions to bridge this gap.

1.3 Donor Interface

This is a user interface which is used for users where users interact with this facility like when he/she was registered and login successfully then he will interact with home page then he/she will select many pages which is Home, Donation etc.

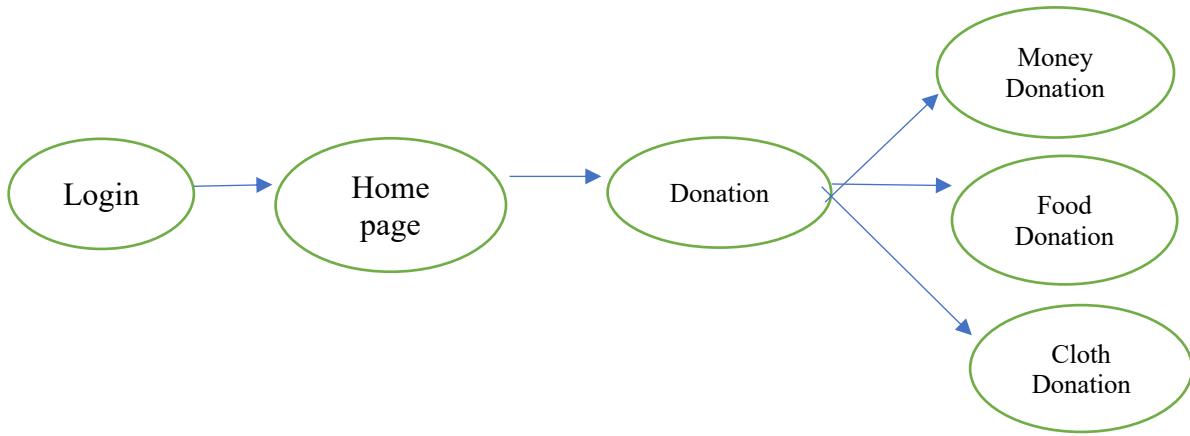


Fig. 1.1 Donor Interfaces

Fig 1.1 represents the basic flow of the Donor interface system in which the user will interact with the system and after reaching the home page will have the different options of donation.

1.3.1 Login

Basic login details will be shown like enter username and password for login, new user registration.

1.3.2 Home page

Details and instructions about making new donations and viewing history of previous donations.

1.3.3 Donation

Tab to do donations and further divided into three parts food donation, money donation, and cloth donation.

1.4 ADMIN INTERFACE

This is an Admin interface which only interact with admins and users can't login and admins can have many facilities like to verify organizations, donors, accept, verify and deny donations request etc.

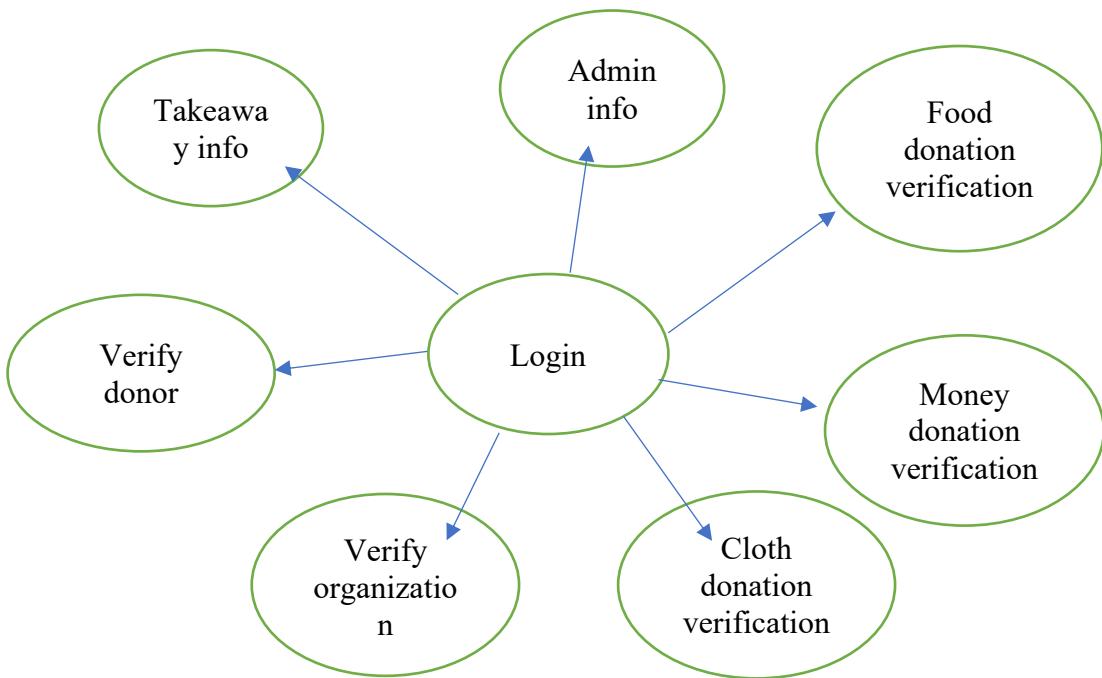


Fig. 1.2 Admin Interface

Fig 1.2 represents the basic flow of the Admin Interface system in which the admin will interact with the system.

1.4.1 Admin Info

The details about admin information and system control in admin hands.

1.4.2 Food Donation Verification

All details related to food donation verification.

1.4.3 Money Donation Verification

All details related to money donation verification.

1.4.4 Cloth Donation Verification

All details related to cloth donation verification.

1.4.5 Verify Organization

The details about verifying organization.

1.4.6 Verify Donor

The details about verifying donor.

1.4.7 Takeaway information

The details about the takeaway information of the donated food and clothes.

1.5 ORGANIZATION INTERFACE

This is an Organisation interface which interact with Donor Request of food and clothes donation of their city.

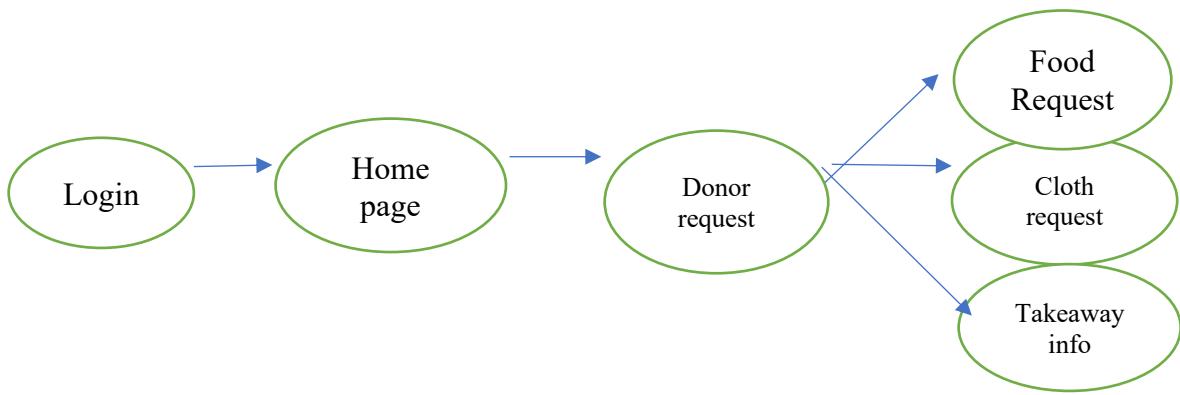


Fig. 1.3 Organization Interfaces

Fig 1.3 represents the basic flow of the Organization interface system in which the user will interact with the system and after reaching the home page will have the different options of donation request.

1.5.1 Login

Basic login details will be shown like enter username and password for login, new organization registration.

1.5.2 Home page

Details and instructions about new donation requests and viewing history of previous donation requests.

1.5.3 Donor request

Tab to do donations and further divided into three parts food donation request, cloth donation request and takeaway information.

CHAPTER 2

LITERATURE REVIEW

2.1 GENERAL

In today's digital age, the convergence of technology and philanthropy has paved the way for innovative solutions to address social issues such as hunger and poverty. The advent of web applications has particularly revolutionized the way individuals and organizations interact, collaborate, and contribute towards social welfare. In this literature review, we explore the existing literature surrounding web applications aimed at connecting donors and non-governmental organizations (NGOs) to combat hunger and poverty, with a specific focus on the modules proposed in the "Zero Hunger" project.

The concept of utilizing web-based platforms to facilitate charitable giving and support is not new. Over the past decade, there has been a significant proliferation of online platforms designed to connect donors with charitable organizations. Research by Smith and Stewart (2019) highlights the evolution of such platforms, emphasizing their role in democratizing philanthropy and empowering individuals to make a tangible impact on social causes.

Traditional methods of charitable giving often suffer from inefficiencies and lack of transparency. Donors may struggle to find reputable organizations to support, while NGOs face challenges in reaching potential donors and managing resources effectively. Moreover, logistical hurdles in distributing aid can hinder the timely delivery of assistance to those in need (Jones et al., 2018).

Web applications offer a promising solution to overcome the aforementioned challenges by providing a centralized platform for donors and NGOs to connect and collaborate. Research by Garcia and Martinez (2020) underscores the potential of web-based platforms in fostering transparency, accountability, and efficiency in charitable giving. By leveraging features such as real-time tracking of donations and resources, these platforms can enhance trust between donors and NGOs, thereby maximizing the impact of charitable contributions.

The "Zero Hunger" project proposes four essential modules:

The admin module serves as the backbone of the web application, facilitating the management and oversight of the entire platform. Admins have the authority to verify NGOs, manage donor accounts, and ensure compliance with regulatory standards. Research by Johnson et al. (2017) emphasizes the critical role of administrators in maintaining the integrity and security of web-based philanthropy platforms.

NGOs play a pivotal role in implementing initiatives to alleviate hunger and poverty. The NGO module enables registered organizations to showcase their projects, communicate their impact, and request support from donors. Studies by Brown and Smith (2019) highlight the importance of transparency and storytelling in engaging donors and building long-term relationships.

The donor module empowers individuals and businesses to contribute towards the mission of Zero Hunger. Donors can browse through verified NGO projects, make donations, and track the impact of their contributions in real-time. Research by Wilson et al. (2018) underscores the significance of user experience design in enhancing donor engagement and retention.

Efficient logistics are essential for the timely and effective distribution of aid to beneficiaries. The logistics module facilitates the coordination of resources, including food, clothes, and monetary donations, ensuring that aid reaches the intended recipients promptly. Research by Lee and Kim (2021) highlights the role of technology in optimizing supply chain management processes in humanitarian contexts.

While web applications such as Zero Hunger hold immense promise in combating hunger and poverty, several challenges lie ahead. These include ensuring data privacy and security, promoting inclusivity and accessibility, and addressing digital literacy barriers among marginalized communities. Future research should also explore the scalability and sustainability of such platforms, along with their long-term impact on social welfare outcomes.

In conclusion, the literature surrounding web-based philanthropy platforms underscores their potential to revolutionize charitable giving and address pressing social issues such as hunger and poverty. The proposed "Zero Hunger" project, with its innovative modules connecting donors and NGOs, represents a significant step towards leveraging technology for social good. By fostering transparency, accountability, and efficiency, such platforms have the power to transform the landscape of philanthropy and create a world where no one goes hungry.

CHAPTER 3

DESIGN

3.1 Data Flow Diagram

3.1.1 Level 0 Data Flow Diagram

Level 0 Data Flow Diagram will explain the basic flow of data in a system which shows how the new or old user will interact with the system.

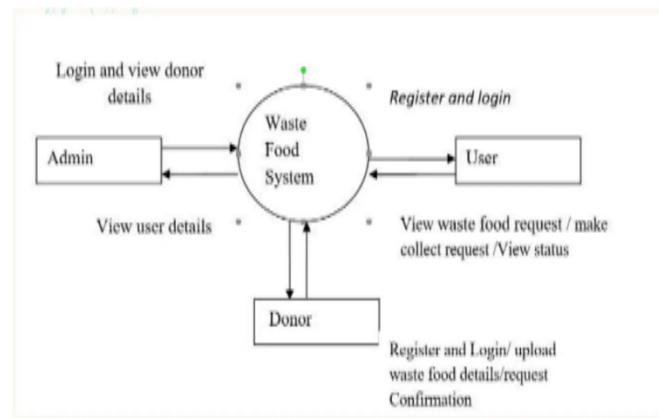


Fig. 3.1 0-Level Data Flow Diagram

Fig. 3.1 elaborates the interaction between user and the system. If the user is new then user will first register to the system by providing name, username, email, password, phone, age and address.

3.1.2 Level 1 Data Flow Diagram

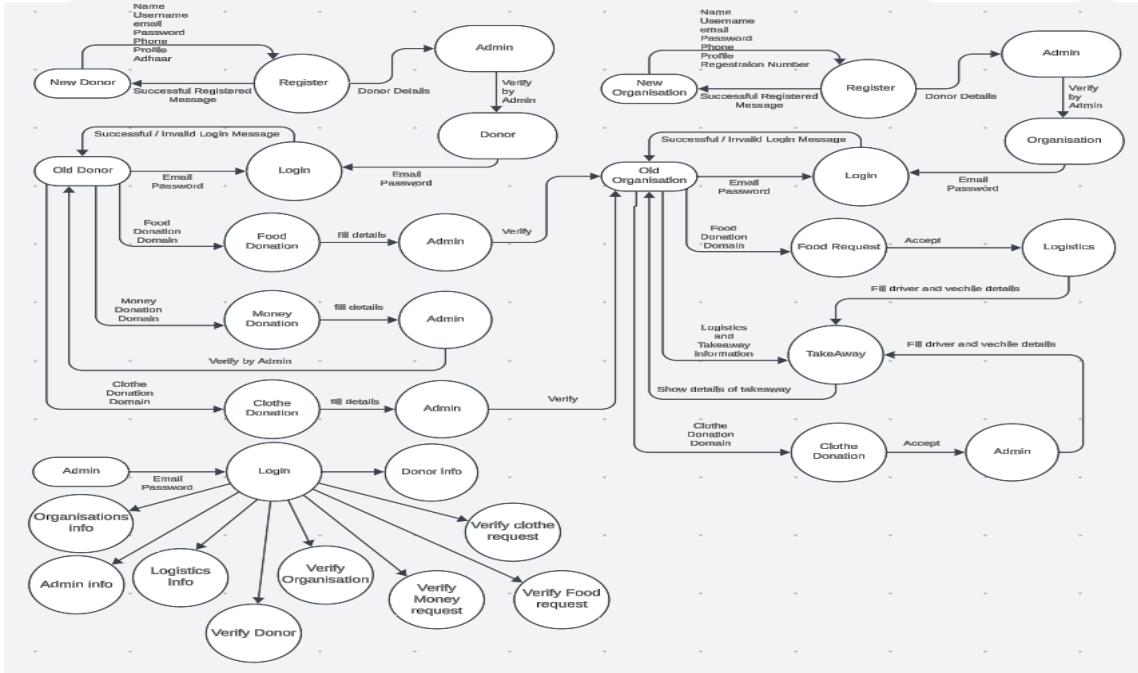


Fig.3.2 1 Level Data Flow Diagram Of Zero Hunger.

Fig 3.2 This is an Level 1 data flow diagram which show the flow of admin, ngo and donor module.

3.2 Sequence Diagram

Sequence Diagram is used to show the process of the system based on the different timeline.

3.2.1 Sequence Diagram of Registration Process

In this Diagram of Registration Process, it has 4 objects one actor, one boundary.

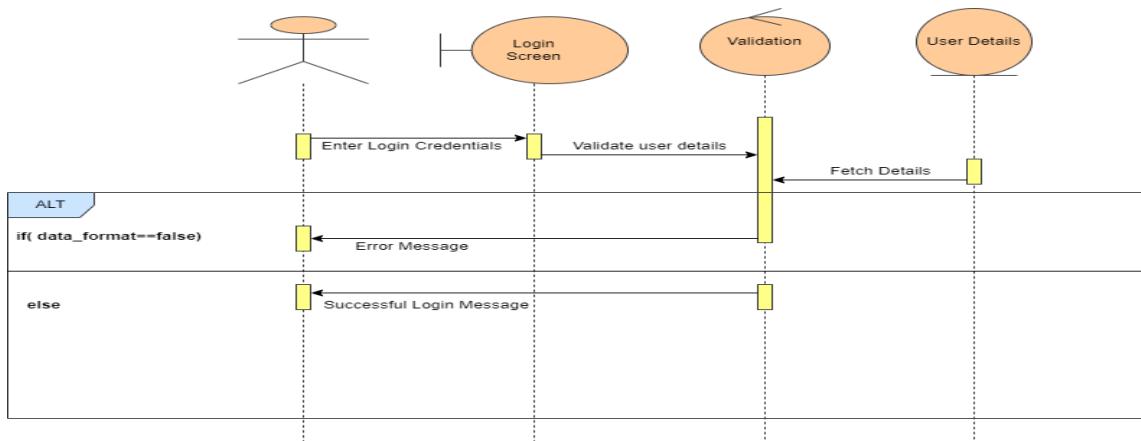


Fig. 3.3 Registration Sequence Diagram

Fig 3.3 explains about the process of registration where user send the details to the screen then

validate those details. If details are not in correct format, then an error message is displayed. If details are in correct format, then successful message is displayed.

3.2.2 Sequence Diagram of Login Process

In this Diagram of Login Process, it has 4 objects one actor, one boundary object, one control object, one store object.

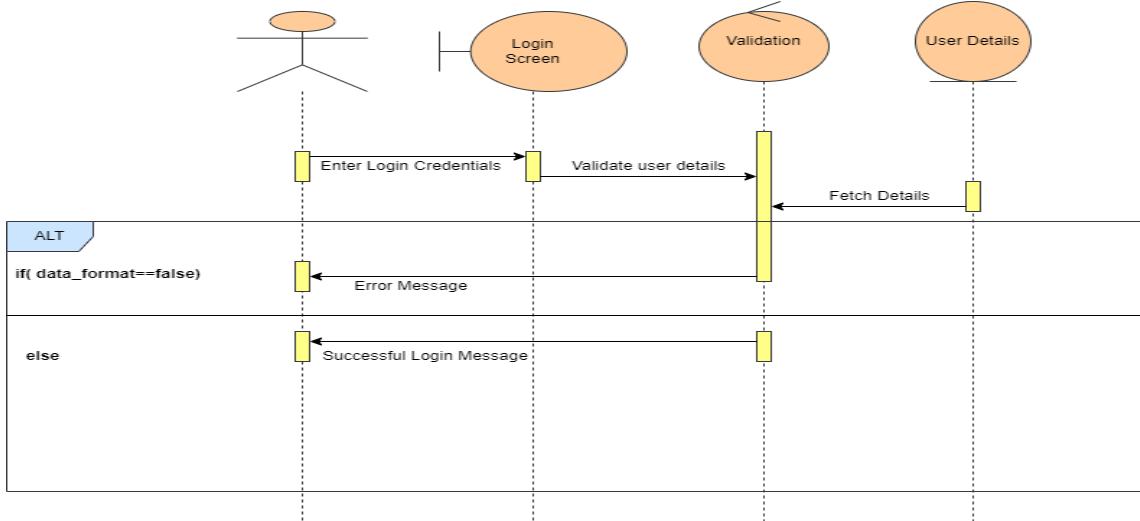


Fig. 3.4 Login Sequence Diagram

Fig 3.4 explains about the process of login where user send the details to the screen then validate those details. If details are not correct from fetched data from database, then an error message is displayed.

3.2.3 Sequence Diagram of Donation Process

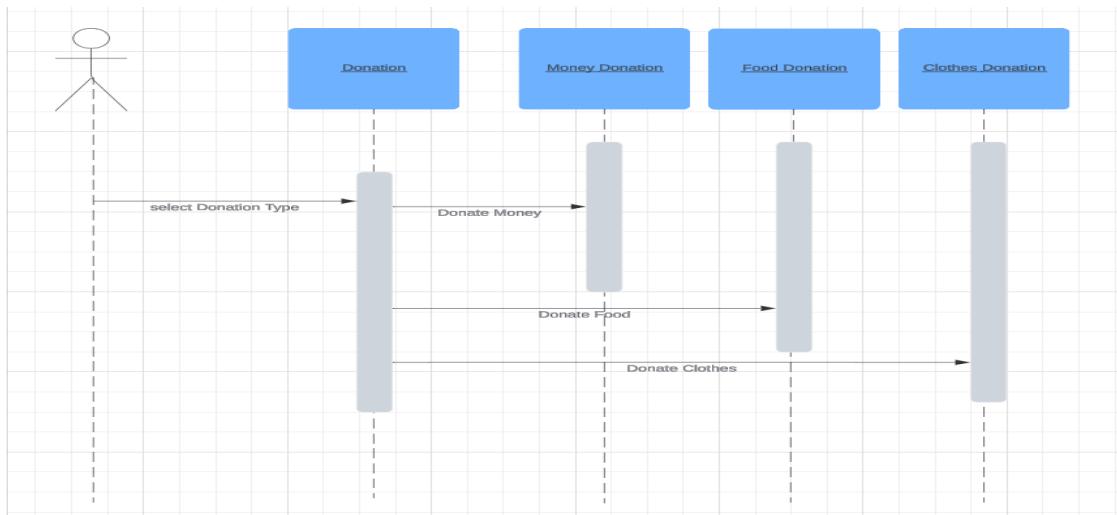


Fig. 3.5 Donation Sequence Diagram

Fig 3.5 explains about how Donation, money donation and food donation and clothe donation follow how to send details etc.

3.2.4 Sequence Diagram of Donar Request Accept Process

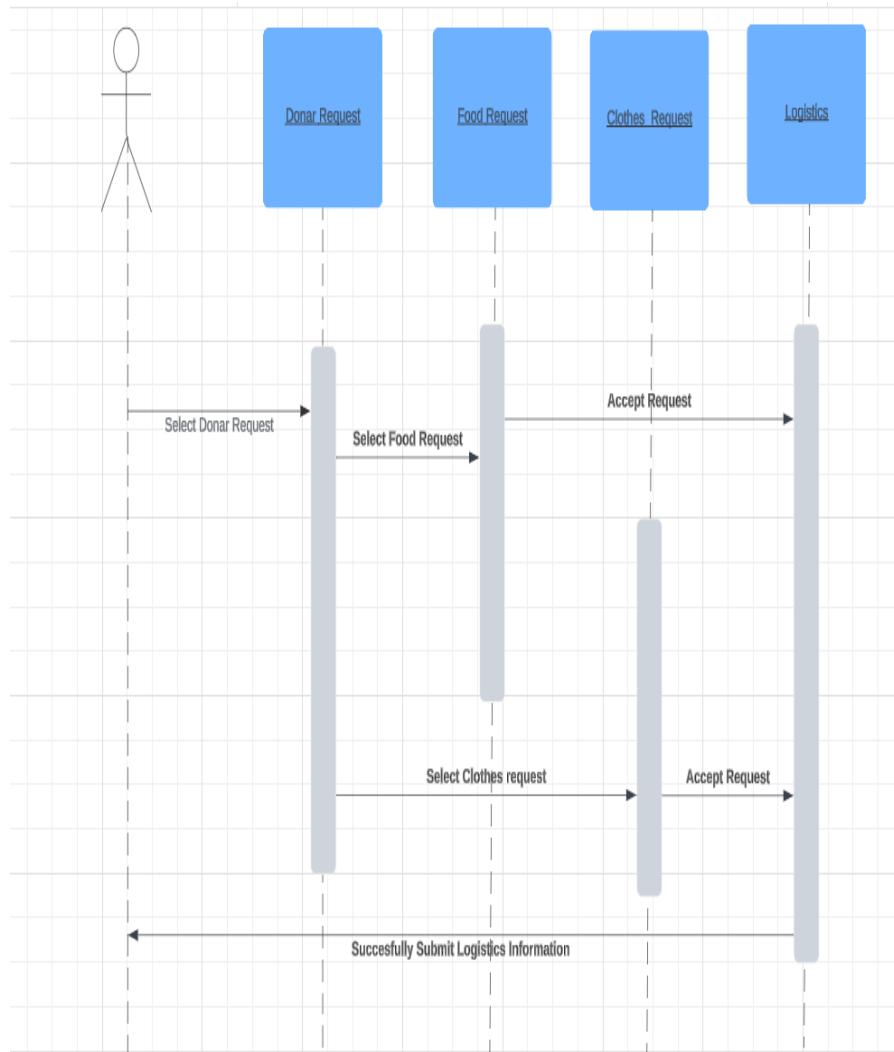


Fig. 3.6 Government Scheme Sequence Diagram

Fig 3.6 explains about how user will select Government Schemes, and then provide the fully Schemes information to them. Then user will download full information in pdf.

3.3 Use Case Diagram

In Use Case Diagram we elaborate about the purpose, actor, pre-condition, post- condition,

basic flow, and alternate flow of all the use cases. In our system there are two actors, one is an old user and other is the new user who interacts with the use cases of the mock interview system.

It explains the details and conditions of the system to be fulfilled in order to successfully complete each use case.

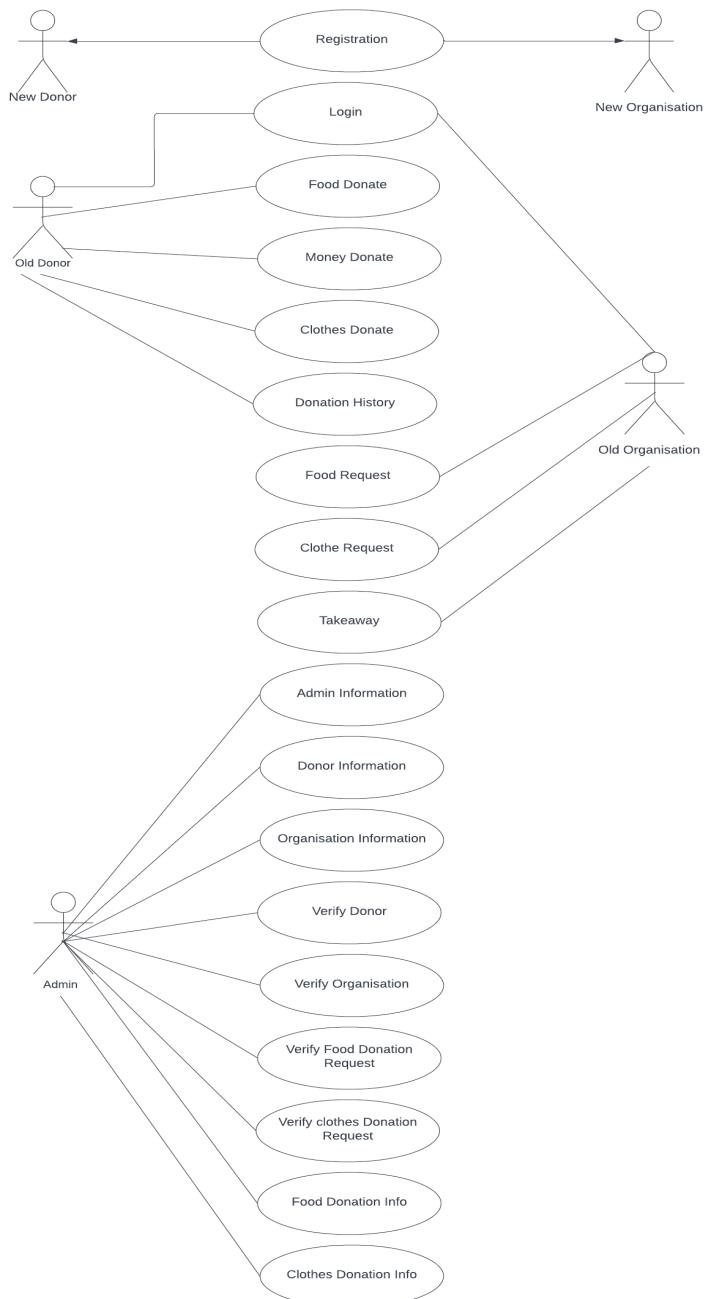


Fig.3.7 Use Case Diagram of Zero Hunger

Fig 3.7 Explains the use case diagram of Zero Hunger and having two interfaces where its shows all the process where new user registered first then he will login to the system and old user login directly and admin having other case diagram.

3.3.1 Use Case Description of Registration

Purpose:

The purpose is to register the user into the system who is new to the system.

Actor:

New Donor and Organization

Pre-condition:

None

Post-condition:

The Donor will successfully register to the system.

Basic Flow:

- The user will enter the name, email, phone, college details of themselves.
- The System will check the format of the details.
- If the details of the user are correct, then it will successfully register the user.

Alternate Flow:

If the details entered by the user are not in the right format, then it will return the error message to the user.

3.3.2 Use Case Description of Login

Purpose:

The purpose is to Login the user into the system.

Actor:

Old Donor and Organization

Pre-condition:

The user must be registered into the system.

Post-condition:

The User will successfully Logged in to the system.

Basic Flow:

- The user will enter the email and password.
- The System will check the email and password from the database.
- If the details of the user are correct, then it will successfully Logged in the user.

Alternate Flow:

If the details entered by the user are not correct, then it will return the error message to the user.

3.3.3 Use Case Description of Donation

Purpose:

The purpose is to specify the process of Donation.

Actor:

Old Donor and organization

Pre-condition:

The user must be logged in to the system.

Post-condition:

The Donation process is specified.

Basic Flow:

- The Donor will select the types of Donation i.e. Food, Clothes.
- The Donor will choose the Donation type.
- The Donor history of Donation.

Alternate Flow:

If the Donation type select by the Donor and is not shown in this section then he will go To donation type.

3.3.4 Use Case Description of Found New Donor

Purpose:

The purpose is to take the details of new pests.

Actor:

Old Donor

Pre-condition:

- The user must be logged in to the system.
- The user must be confirmed that related Donation information that will not be available in the pest section.

Post-condition:

The user will successfully fill all details related to pest.

Basic Flow:

The user will enter the details of new pests.

Alternate Flow:

If the detail of Donation is not found in Donate section then user fill the all related Donation detail in form.

3.3.5 Use Case Description of Organization

Purpose:

The purpose is to give information of different organization.

Actor:

Old organization

Pre-condition:

The user must be logged in to the system.

Post-condition:

The organizations are specified.

Basic Flow:

The user will select the Organization.

Alternate Flow:

If there is no internet connection, then the Donation cannot be shown.

CHAPTER 4

PROPOSED WORK

4.1 Dataset Description

A dataset comprises similar sets of information that are made up of distinct elements but can be modified by a computer. In our dataset model, there are many table i.e. user details, admin table etc.

4.1.1 Donor Table

It stores the details of the donor such as name, email, password, number, id, address, age.

Table 1: Users Table
Description

Field	Type	Null	Key	Default
c_name	Varchar(255)	No		None
c_email (username)	Varchar(255)	No	Unique Key	None
c_number	bigint(20)	No		None
c_id	int(25)	No	Primary Key	None
c_password	Varchar(255)	No		None
c_address	Varchar(255)	No		None
c_age	Int(22)	No		None
c_status	Varchar(255)	No		None
adhaar	bigint(255)	No		None
profile	Varchar(255)	No		None
fadhaar	Varchar(255)	No		None
badhaar	Varchar(255)	No		None

c_city	Varchar(255)	No		None
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4.1.2 Admin Table

It stores the details of the admin such as name, email, password, number, id, address.

Table 2: Admin Table Description

Field	Type	Null	Key	Default
a_name	Varchar(255)	No		None
a_email (username)	Varchar(255)	No	Unique Key	None
a_number	bigint(20)	No		None
a_id	int(11)	No	Primary Key	None
a_password	Varchar(255)	No		None
a_address	Varchar(255)	No		None

4.1.3 Query Table

It stores the details of the query such as name, id, email, number, message.

Table 3: Query Table Description

Field	Type	Null	Key	Default
q_id	int(25)	No	Primary Key	None
q_name	Varchar(255)	No		None
q_email	Varchar(255)	No		None
q_number	bigint(255)	No		None
q_message	Varchar(255)	No		None

4.1.4 Organization Table

It stores the details of the organizations such as name, id, email, address, zila, field.

Table 4: Organizations Table Description

Field	Type	Null	Key	Default
o_id	int(255)	No	Primary Key	None
o_name	Varchar(255)	No		None

<code>o_email</code>	Varchar(255)	No	Unique Key	None
<code>o_gender</code>	Varchar(255)	No		None
<code>o_field</code>	Varchar(255)	No		None
<code>o_password</code>	Varchar(255)	No		None
<code>o_number</code>	Bigint(20)	No		None
<code>o_address</code>	longtext	No		None
<code>o_zila</code>	Varchar(255)	No		None
<code>o_status</code>	Varchar(255)	No		None
<code>organization</code>	Varchar(255)	No		None
<code>registration</code>	Varchar(255)	No	Unique Key	None

4.1.5 Driver Table

It stores the details of the driver such as id, name, number, vehicle.

Table 5: Driver Table Description

Field	Type	Null	Key	Default
<code>d_id</code>	int(255)	No	Primary Key	None
<code>d_name</code>	Varchar(255)	No		None
<code>d_number</code>	Bigint(20)	No		None
<code>d_vehicle</code>	Varchar(255)	No		None
<code>d_image</code>	Varchar(255)	No		None
<code>d_date</code>	Datetime	No		None
<code>f_id</code>	Int(255)	No		None
<code>c_id</code>	Int(255)	No		None
<code>o_email</code>	Varchar(255)	No		None

4.1.6 Food Donate Table

It stores the details of the food donation such as number of packets, status, date, image, address.

Table 6: Food Donate Table Description

Field	Type	Null	Key	Default
f_id	int(25)	No	Primary Key	None
f_name	Varchar(255)	No		None
f_email	Varchar(255)	No		None
f_packets	Varchar(255)	No		None
f_status	Varchar(255)	No		None
f_image	Varchar(255)	No		None
f_address	Longtext	No		None
f_type_name	Varchar(255)	No		None
f_date	datetime	No		None
f_zila	Varchar(255)	No		None

4.1.7 Cloth Donate Table

It stores the details of the cloth donation as number of bags, status, date, image, address.

Table 7: Cloth Donate Table Description

Field	Type	Null	Key	Default
cl_id	int(25)	No	Primary Key	None
cl_name	Varchar(255)	No		None
cl_email	Varchar(255)	No		None
cl_bags	int(255)	No		None
cl_status	Text	No		None
cl_image	Varchar(255)	No		None

cl_address	Longtext	No		None
cl_date	datetime	No		None
cl_zila	Varchar(255)	No		None

4.1.8 Money Donate Table

It stores the details of the money donation such as upi id, status, date, reference, address.

Table 8: Money Donate Table Description

Field	Type	Null	Key	Default
m_id	int(25)	No	Primary Key	None
m_name	Varchar(255)	No		None
m_email	Varchar(255)	No		None
upi_id	Varchar(255)	No		None
m_status	Varchar(255)	No		None
m_image	Varchar(255)	No		None
reference	Varchar(255)	No		None
m_date	Datetime	No		None

4.2 Technology Description

- **Selection of Operating System:** Our website is platform independent, so it does not depend on the operating system.
- **Selection of Software:** Visual Studio, XAMPP is used to create our software.
- **Languages Used:** HTML, CSS, MYSQL, PHP, JAVASCRIPT.

CHAPTER 5

SYSTEM REQUIREMENTS AND SPECIFICATION

5.1 System Requirement Specification

System Requirement Specification (SRS) is a fundamental document, which forms the foundation of the software development process. The System Requirements Specification (SRS) document describes all data, functional and behavioral requirements of the software under production or development. An SRS is basically an organization's understanding (in writing) of a customer or potential client's system requirements and dependencies at a particular point in time (usually) prior to any actual design or development work. It's a two-way insurance policy that assures that both the client and the organization understand the other's requirements from that perspective at a given point in time. The SRS also functions as a blueprint for completing a project with as little cost growth as possible. The SRS is often referred to as the "parent" document because all subsequent project management documents, such as design specifications, statements of work, software architecture specifications, testing and validation plans, and documentation plans, are related to it. It is important to note that an SRS contains functional and non-functional requirements only. It doesn't offer design suggestions, possible solutions to technology or business issues, or any other information other than what the development team understands the customer's system requirements.

5.2 Hardware Specification

- RAM: 1GB and Higher
- Processor: intel i3 and above
- Hard Disk or SSD: 128GB: Minimum

5.3 Software Specification

- OS: Windows or Linux or macOS
- Xampp
- Language: html, css, mysql, javascript, php

5.4 Functional Requirements

Functional Requirement defines a function of a software system and how the system must behave when presented with specific inputs or conditions. These may include calculations, data manipulation and processing and other specific functionality. In this system following are the functional requirements:

- connect to the Datasets.

- user select options.
- show and download the results.

5.5 Non-Functional Requirements

- The system should be easy to maintain.
- The system should be compatible with different platforms.
- The system should be fast as customers always need speed.
- The system should be accessible to online users.
- The system should provide many functionalities and user-friendly interfaces.
- The system should produce result in pdf or other document.

CHAPTER-6

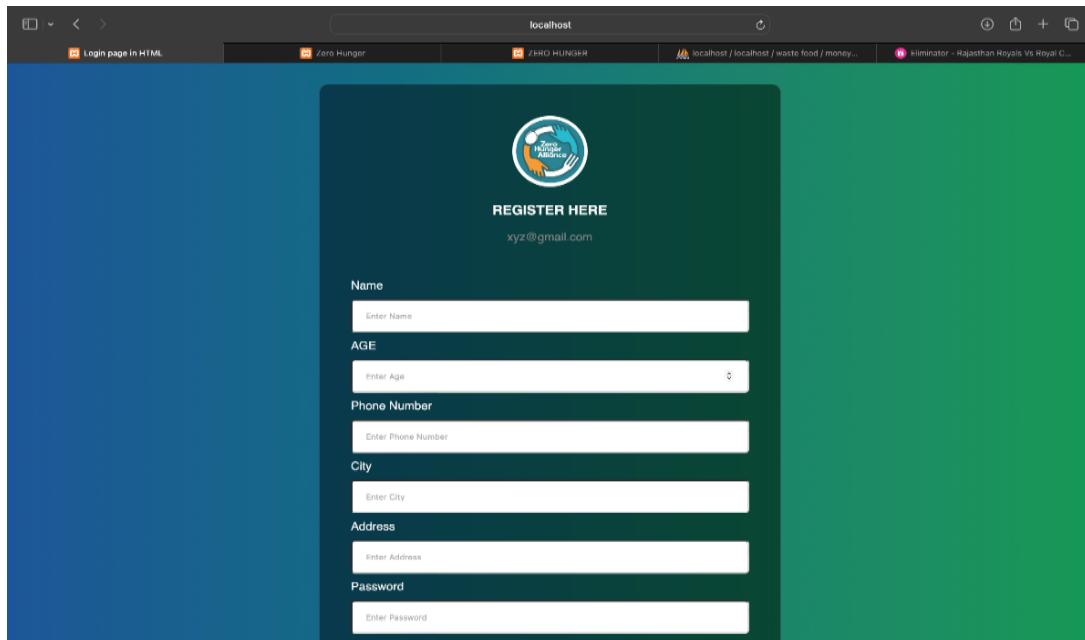
SCREENSHOTS OF WEB APPLICATION

This chapter show all screenshots of all process with having three interfaces. Donor, NGO interface and Admin interface.

6.1 Donor Interface

This will show all screenshots of process of user interface and having many functionalities.

6.1.1 Register Page



City
Enter City

Address
Enter Address

Password
Enter Password

Upload Profile Picture
Choose File no file selected

Upload Aadhaar Front
Choose File no file selected

Upload Aadhaar Back
Choose File no file selected

Adhaar Number
Enter Adhaar

Remember me

Register

already a member? [login here!](#)

Fig. 6.1 Register Page

Fig 6.1 Register page, to register a new user. They will fill all details and all details are important and only if every detail is filled then he will login.

6.1.2 Login Page

SIGN IN

NOTE: Sign in with your username and password

Your username
Enter Username

Your password
Enter Password

Select Type
Donar

Remember me [Forgot Password?](#)

Login

Not a member? [Donor can Register here!](#)
For Organisation [Organisations can Register here!](#)

Fig. 6.2 Login Page

Fig 6.2 Login page, there will be a login by old user and then they will get to access all functions of the web.

6.1.3 Home Page

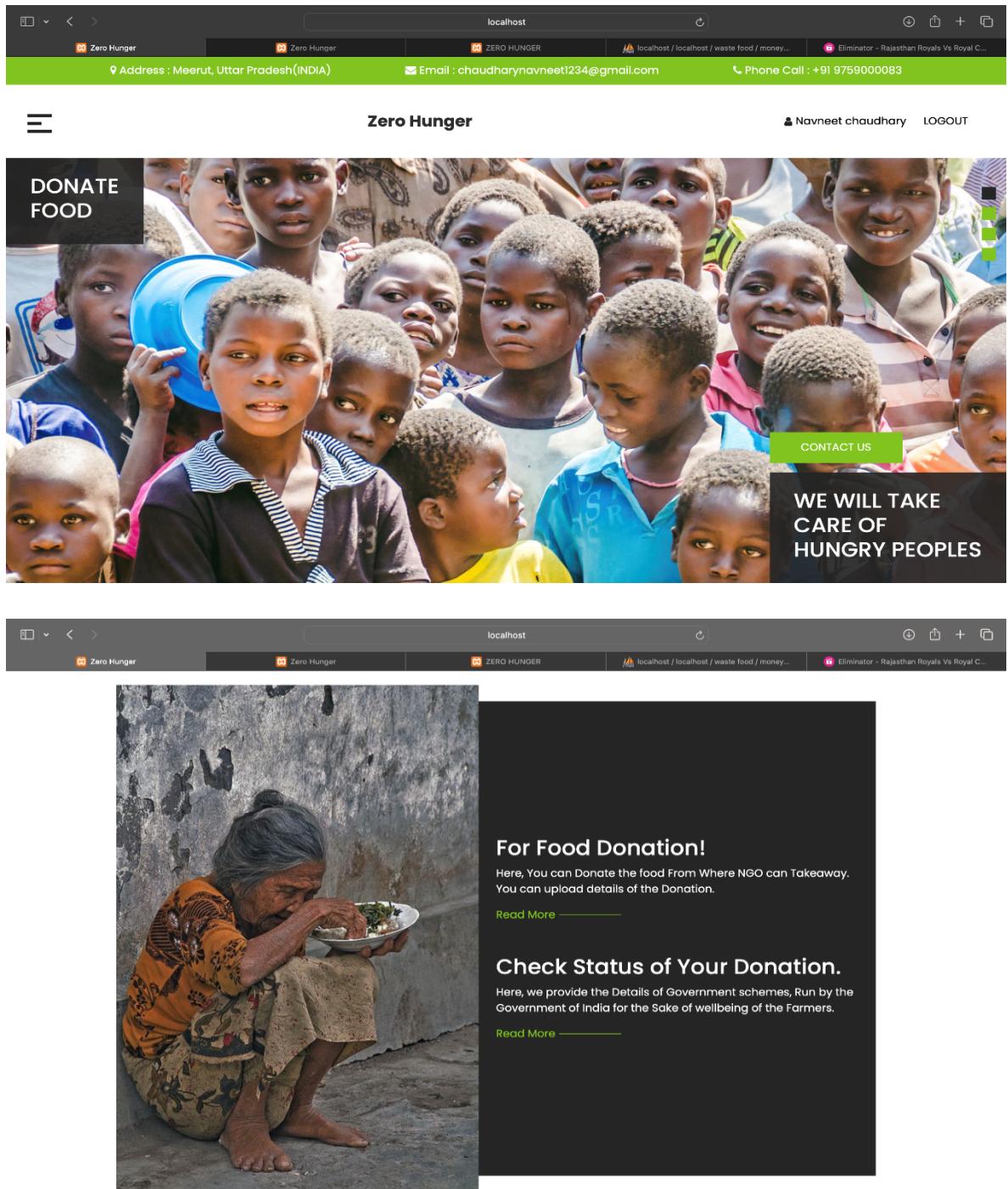


Fig. 6.3 Home Page

Fig 6.3 Home page, It is the home page, It will be very attractive and shows the introduction to web on this page.

6.1.4 Donation Page

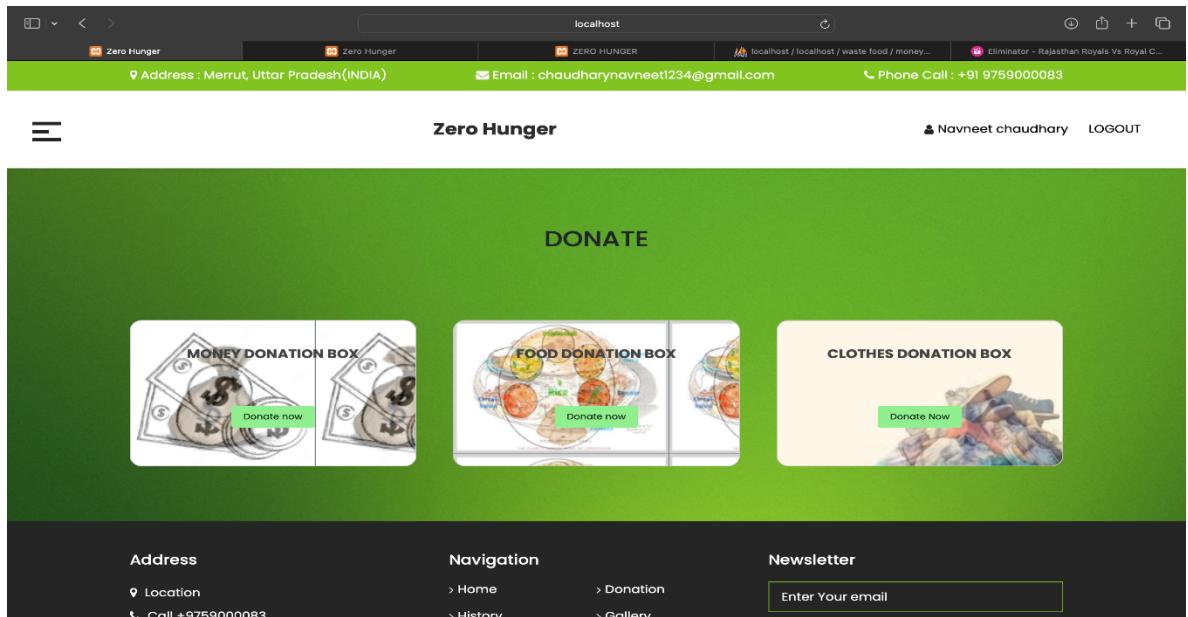


Fig. 6.4 Donation Page

Fig 6.4 This page shows various options of the Donations.

6.1.5 Food Donation Page

Fig. 6.5 Food Donation Page

Fig 6.5 This page is all about Food Donation.

6.1.6 Money Donation Page

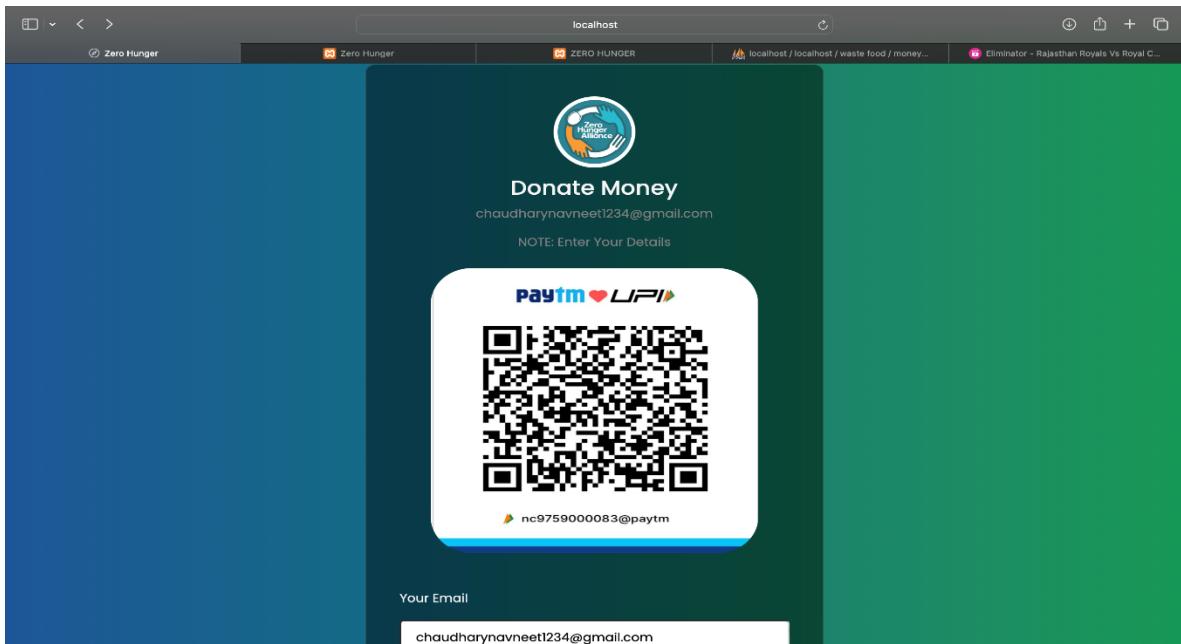


Fig. 6.6 Money Donation Page

Fig 6.6 This page is all about Money Donation.

6.1.7 Clothes Donation Page

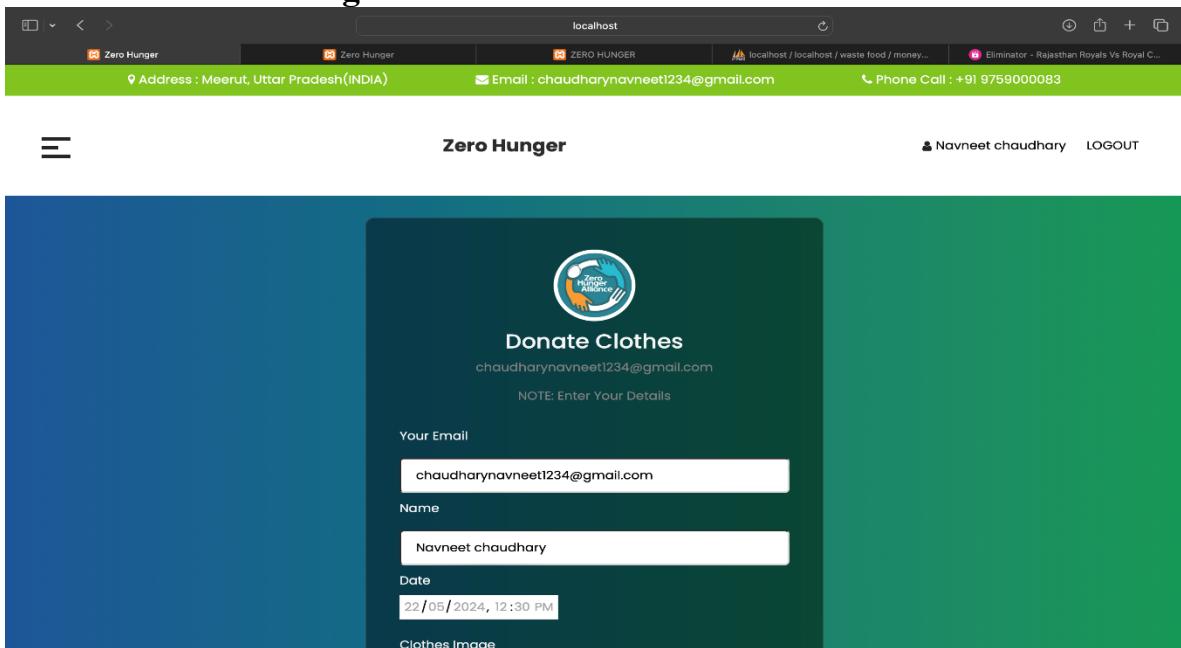


Fig. 6.7 Clothes Donation Page

Fig 6.7 This page is all about Donating the Clothes to the Needy.

6.1.8 Food Donation History Page

SR.NO	NAME	DATE	TYPE	PACKETS	IMAGE	ADDRESS	STATUS
1	NAVNEET CHAUDHARY	2024-05-19 23:33:00	saw	22		jwbh	Not verified
2	Navneet chaudhary	2024-05-11 11:14:00	Kg resort	1 kg of dal		svdsag	verified
3	Navneet chaudhary	2024-05-11 10:10:00	bhwgehw	34		gdhwgdq	Delivered
4	NAVNEET CHAUDHARY	2024-05-05 21:53:00	bhaha	65		cbjhabsah	Delivered

Fig. 6.8 Food Donation History Page

Fig 6.8 This page shows the history of Food donation.

6.1.9 Clothes Donation History Page

SR.NO	NAME	DATE	ADDRESS	BAGS	IMAGE	STATUS
1	NAVNEET CHAUDHARY	2024-04-08 14:44:00	bcjansjsnq	5		verified

Fig. 6.9 Clothes Donation History Page

Fig 6.9 This page shows the history of Clothes donation.

6.2 Admin Interface

This will show all screenshots of process of admin interface and having many functionality.

6.2.1 Admins Information Page

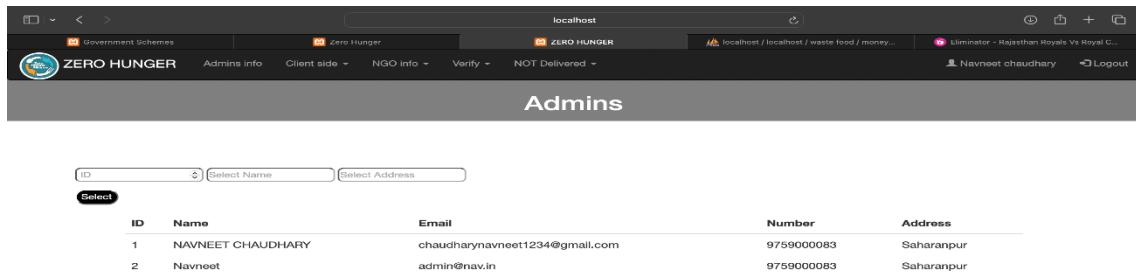


Fig. 6.10 Admin Information Page

Fig 6.10 Their show all information of admins with that having search out functionality.

6.2.2 Donor Information Page

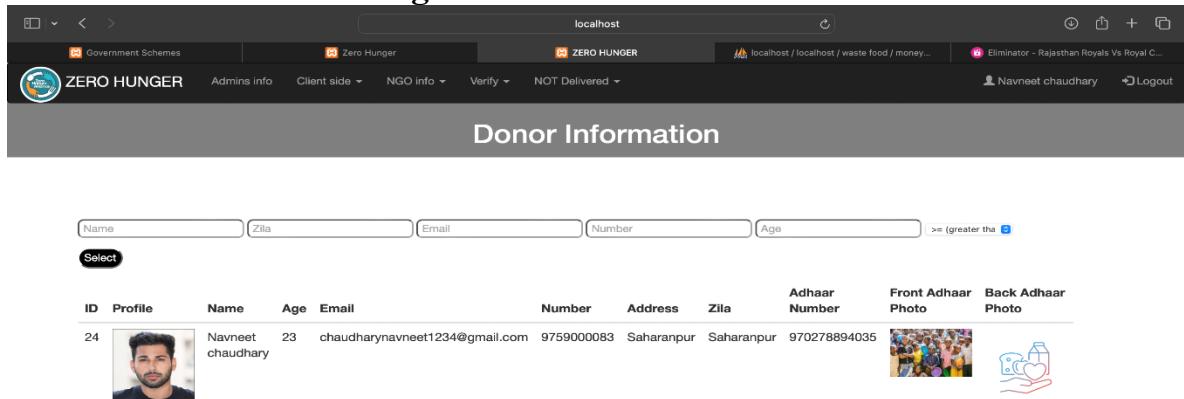


Fig. 6.11 Clients Information Page

Fig 6.11 This page shows the Information of all existing Donors.

6.2.3 Verify Donor

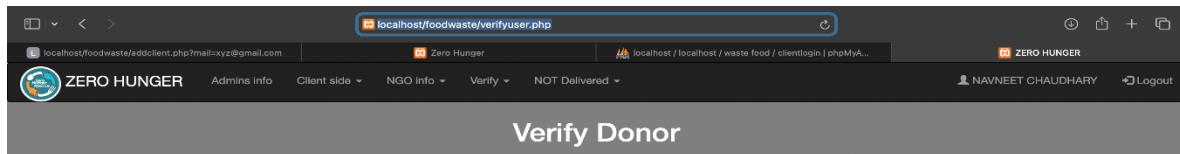


Fig. 6.12 Verify Donor Page

Fig 6.12 This page deals with the part of Verification of Donors.

6.2.4 Organization Information

ID	Name	Gender	Email	Number	Organisation	Registration Number	Field	Zila	Address
1	Navneet	male	navneet.2224mca1013@kiet.edu	9759000083	Navneet pvt ltd.	svqjquyq72518	food	Saharanpur	Saharanpur

Fig. 6.13 Organization Information Page

Fig 6.13 Shows the details of Organizations.

6.2.5 Verify Food Donation Information

The screenshot shows a web application interface titled "Food Donation Information". At the top, there are search fields for "Enter Email" and "Enter zila", and a "Select" button. Below is a table with the following data:

ID	Image	Name	Email	Phone Number	Address	Zila	packets	Date	Status
10		Navneet chaudhary	chaudharynavneet123@gmail.com	9759000083	jwbh	Saharanpur	22	2024-05-19 23:33:00	Not verified

Actions for the row include "Verified" and "Delete" buttons.

Fig. 6.14 Verify Food Donation Information Page

Fig 6.14 This part deals with the Donation of food and its verification.

6.2.6 Verify Clothes Donation

The screenshot shows a web application interface titled "Clothes Donation Information". At the top, there are search fields for "Enter Email" and "Enter Location", and a "Select" button. Below is a table with the following data:

ID	Image	Name	Email	Phone Number	Address	Zila	Bags	Date	Status
3		Navneet chaudhary	chaudharynavneet123@gmail.com	9759000083	kg resort	saharanpur	34	2024-05-22 21:02:00	Not verified

Actions for the row include "Verified" and "Delete" buttons.

Fig. 6.15 Verify Clothes Donation

Fig 6.15 Clothes donation verification Information is done here at this page.

6.3 NGO Interface

6.3.1 Request Page

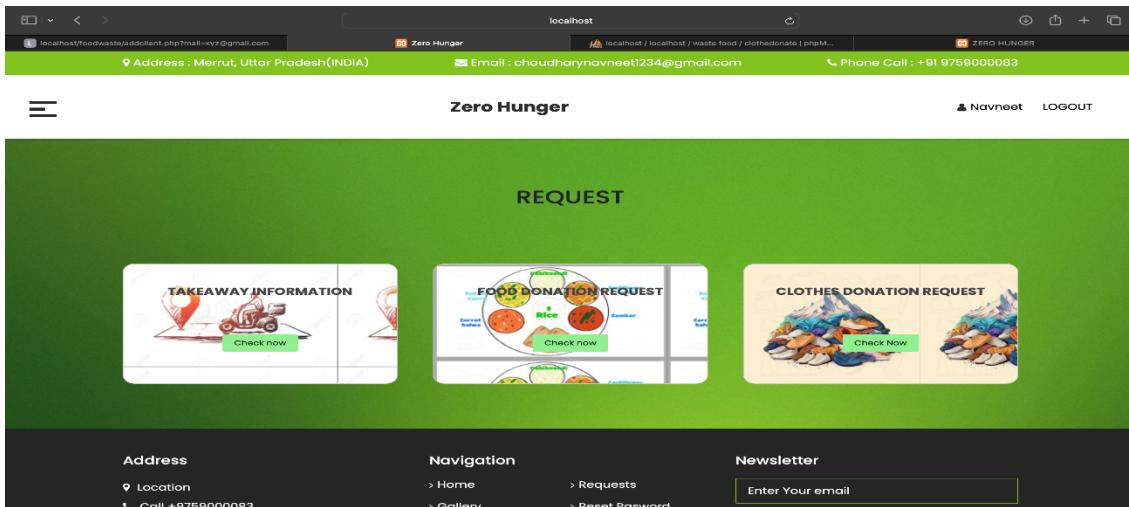


Fig. 6.16 Request Page

Fig 6.16 This is the request page at NGO Interface.

6.3.2 Food Donation Request Page

SR.NO	NAME	DATE	TYPE	PACKETS	IMAGE	ADDRESS	STATUS
1	Navneet chaudhary	2024-05-11 11:14:00	Kg resort	1 kg of dal		svdsag	verified <button>Accept</button>

Fig. 6.17 Food Request Page

Fig 6.17 This page deals with the Food Donation requests managed by NGOs.

6.3.3 Clothes Donation Request Page

Clothes Donation Request

Note

- * Not verified: Food Donation till not verify by Admin or till Not Found any organisation which take away from destination.
- * Verified: Successfully Verify by Admin or soon takeaway from their.
- * Accept: Successfully Accept by NGO.

SR.NO	NAME	DATE	BAGS	IMAGE	ADDRESS	STATUS	
1	NAVNEET CHAUDHARY	2024-04-08 14:44:00	5		bcjansnsq	verified	<button>Accept</button>

Address
Location: Meerut,Uttar Pradesh(India)
Call +9759000083

Navigation
> Home
> Requests
> Gallery
> Reset Password

Newsletter
Enter Your email

Fig. 6.18 Clothes Request Page

Fig 6.18 This page deals with the Clothes Donation requests managed by NGOs

6.3.4 Logistics Details Page

Driver Details

navneet.2224mca1013@kiet.edu

NOTE: Enter Details

Organisation Email

Name

Driver Photo

no file selected

Date-Time for Pickup

Fig. 6.19 Logistics Details Page

Fig 6.19 This page deals with the details of Logistics.

6.3.5 Takeaway Information Page

localhost

localhost / localhost / waste food / clothedonate | phoM...

ZERO HUNGER

Address : Merrut, Uttar Pradesh(INDIA)

Email : chaudharynavneet1234@gmail.com

Phone Call : +91 9759000083

Zero Hunger

Navneet LOGOUT

Driver Information

Note

- * Not verified: Food Donation till not verify by Admin or till Not Found any organisation which take away from destination.
- * Verified: Successfully Verify by Admin or soon takeaway from their.
- * Delivered: Successfully Takeaway from destination.

SR.NO	DRIVER NAME	DRIVER PH.NUMBER	DONAR NAME	DATE	PACKETS	IMAGE	ADDRESS	STATUS
1	navneet	236276756	Madhav Sharma	2024-05-05 20:54:00	56		qdhqvwgwewhb	Delivered
2	madhav	313561415	NAVNEET CHAUDHARY	2024-04-09 14:12:00	4		hbdhbhqbhqbjwj	Delivered
3	hvshx	321536425	NAVNEET CHAUDHARY	2024-05-05 21:53:00	65		cbjhabsah	Delivered

Fig. 6.20 Takeaway Information Page

Fig 6.20 This page deals with Takeaway information and management.

CHAPTER-7

TESTING

Testing is a process of executing a program with intent of finding an error. Testing presents an interesting anomaly for the software engineering. The goal of the software testing is to convince system developer and customers that the software is good enough for operational use. Testing is a process intended to build confidence in the software. Testing is a set of activities that can be planned in advance and conducted systematically. Software testing is often referred to as verification & validation.

7.1 Unit Testing

In this testing we test each module individually and integrate with the overall system. Unit testing focuses verification efforts on the smallest unit of software design in the module. This is also known as module testing. The module of the system is tested separately. This testing is carried out during programming stage itself. In this testing step each module is found to work satisfactorily as regard to the expected output from the module. There are some validation checks for fields also. It is very easy to find error debut in the system.

7.2 Validation Testing

At the culmination of the black box testing, software is completely assembled as a package, interfacing errors have been uncovered and corrected and a final series of software tests. Asking the user about the format required by system tests the output displayed or generated by the system under consideration. Here the output format is considered the of screen display. The output format on the screen is found to be correct as the format was designed in the system phase according to the user need. For the hard copy also, the output comes out as specified by the user. Hence the output testing does not result in any correction in the system.

7.3 Functional Testing

Functional tests provide systematic demonstrations that functions tested are available as specified by the business and technical requirements, system documentation, and user manuals. Functional testing is centered on the following items: Valid Input: identified classes of valid input must be accepted. Invalid Input: identified classes of invalid input must be rejected. Functions: identified functions must be exercised. Output: identified classes of application outputs must be exercised. Systems/Procedures: interfacing systems or procedures must be invoked. Organization and preparation of functional tests is focused on requirements, key functions, or special test cases Before functional testing is complete, additional tests are identified and the effective value of current tests is determined.

7.4 Integration Testing

Data can be lost across an interface; one module can have an adverse effect on the other sub functions when combined may not produce the desired major functions. Integrated testing is the systematic testing for constructing the uncover errors within the interface. The testing was

done with sample data. The Developed system has run successfully for this sample data. The need for integrated test is to find the overall system performance.

7.5 User acceptance testing

User Acceptance Testing is a critical phase of any project and requires significant participation by the end user. It also ensures that the system meets the functional requirements. Some of my friends were who tested this module suggested that this was really a user-friendly application and giving good processing speed.

CHAPTER-8

PERFORMANCE ANALYSIS

8.1 Performance metrics

It functions by stating a goal for how long a specific application transaction or web request must take. Those transactions are then labeled as failed, too slow, tolerating (sluggish), or satisfied (fast) requests. A mathematical formula is then applied to give a score from 0 to 1.

Time to First Byte

TTFB is the time required to request information from the server and to transfer the information that was requested. In simple terms, it is the time from the point where you navigate to a webpage through to when it starts to render. This period of time includes:

- The server request can differ according to internet connection and location
- The time needed to process a request or form a response
- The time needed to send information based on the question

Return time equals 40% of the total TTFB. The slower the TTFB, the more time it will take for your user to view any content on your site.

Speed Index

The speed index is another metric that relates to the user experience—specifically, to when and what the visitor sees. The speed index is an indicator of how readily the above-the-fold content appears on a screen. It is sensitive to the quality of the web connection and the size of the viewpoint. This makes it an essential part of optimizing web applications for different screen sizes.

Time to Interactive

This indicator measures how much time elapses before a page is fully interactive, meaning the first contentful point takes place, event handlers are registered for most of the visible elements, and the website reacts to user action.

Error Rate

A performance metric that tracks the percentage of request issues you incur in relation to the overall number of requests. You should watch this number as any spike will indicate that you are looking at a significant failure in the near future.

Peak Response Time

Measure the longest response time for the total number of requests traveling through the server. This will provide you with an understanding of where your web application is underperforming or having trouble fulfilling requests. It can also help you isolate the cause more easily.

CHAPTER-9

CONCLUSION & FUTURE ENHANCEMENT

In conclusion, the Anti Pesto project has successfully addressed a crucial need in the agricultural sector by providing a comprehensive platform for farmers to access information about pests and insects. The website's integration of government schemes further empowers farmers with knowledge and resources to enhance crop protection and overall agricultural productivity. The user-friendly interface and regularly updated content contribute to the project's effectiveness in bridging the information gap that often hinders sustainable farming practices.

Future Enhancement

Looking ahead, there are several avenues for future enhancement of the Anti Pesto platform. Firstly, incorporating machine learning algorithms could enable more accurate pest predictions and tailored recommendations based on specific geographical regions and crop types. Additionally, expanding the scope to include real-time weather data and advanced analytics would further enhance the platform's utility. Collaborations with agricultural research institutions and pest control experts could ensure that the platform remains at the forefront of emerging pest management strategies.

Furthermore, the Anti Pesto project could explore mobile applications and localized language support to reach a wider audience, especially in rural areas. Continuous user feedback and engagement will be crucial for refining the platform and ensuring its relevance in the dynamic field of agriculture. By staying adaptive and innovative, Anti Pesto has the potential to evolve into an indispensable tool for farmers, contributing significantly to sustainable and resilient agricultural practices.

CHAPTER-10

SYSTEM ARCHITECTURE

10.1 Home Page Code

```
<?php
include('common/mainheader.php')
?>
    <!-- end header section -->
    <!-- slider section -->
    <section class="slider_section position-relative" >
        <div id="customCarousel1" class="carousel slide" data-
ride="carousel">
            <ol class="carousel-indicators">
                <li data-target="#customCarousel1" data-slide-
to="0" class="active"></li>
                <li data-target="#customCarousel1" data-slide-
to="1"></li>
                <li data-target="#customCarousel1" data-slide-
to="2"></li>
                <li data-target="#customCarousel1" data-slide-
to="3"></li>
            </ol>
            <div class="carousel-inner" style="background-image:
url('images/img1.jpeg')">
                <div class="carousel-item active">
                    <div class="box">
                        <div class="baby_detail">
                            <div class="baby_text">
                                <h2>
```

```
        Donate <br />
        Food
    </h2>
</div>

</div>
<div class="care_detail">
<a href="contact.php">
    Contact Us
</a>
<div class="care_text">
    <h2>
        We will take <br />
        Care of <br />
        Hungry Peoples
    </h2>
    </div>
</div>
</div>
<div class="carousel-item">
<div class="box">
<div class="baby_detail">
<div class="baby_text">
    <h2>
        Donate <br />
        Food
    </h2>
</div>
</div>
<div class="care_detail">
<a href="contact.php">
    Contact Us
</a>
<div class="care_text">
    <h2>
        We will take <br />
        Care of <br />
        Hungry Peoples
    </h2>
    </div>
</div>
</div>
<div class="carousel-item">
```

```
<div class="box">
  <div class="baby_detail">
    <div class="baby_text">
      <h2>
        Donate <br />
        Food
      </h2>
    </div>

  </div>
  <div class="care_detail">
    <a href="contact.php">
      Contact Us
    </a>
    <div class="care_text">
      <h2>
        We will take <br />
        Care of <br />
        Hungry Peoples
      </h2>
    </div>
  </div>
</div>
<div class="carousel-item">
  <div class="box">
    <div class="baby_detail">
      <div class="baby_text">
        <h2>
          Donate <br />
          Food
        </h2>
      </div>

    </div>
    <div class="care_detail">
      <a href="contact.php">
        Contact Us
      </a>
      <div class="care_text">
        <h2>
          We will take <br />
          Care of <br />
          Hungry Peoples
        </h2>
      </div>
    </div>
  </div>
</div>
```

```

                </div>
            </div>
        </div>
    </div>
</section>
<!-- end slider section -->
</div>

<!-- service section -->

<section class="service_section ">
    <div class="container">
        <div class="row">
            <div class="col-lg-3 col-md-6">
                <div class="box">
                    <div class="img-box">
                        
                    </div>
                    <div class="detail-box">
                        <h4>
                            Food
                        </h4>
                        <p>
                            Daily requirement of an Human being,Food is any substance consumed to provide nutritional support and energy to an organism.
                        </p>
                    </div>
                </div>
            </div>
            <div class="col-lg-3 col-md-6">
                <div class="box ">
                    <div class="img-box">
                        
                    </div>
                    <div class="detail-box">
                        <h4>
                            Hungry
                        </h4>
                        <p>
                            There is more than enough food produced in the world to feed everyone. Yet as many as 783 million people still go hungry.
                        </p>
                    </div>
                </div>
            </div>
        </div>
    </div>
</section>
<!-- end service section -->
</div>
```

```

        </div>
    </div>
    <div class="col-lg-3 col-md-6">
        <div class="box">
            <div class="img-box">
                
            </div>
            <div class="detail-box">
                <h4>
                    What is Hunger
                </h4>
                <p>Hunger is interconnected issues of poverty, conflict, climate change and health systems all play a role in driving hunger.
                </p>
            </div>
        </div>
        <div class="col-lg-3 col-md-6">
            <div class="box">
                <div class="img-box">
                    
                </div>
                <div class="detail-box">
                    <h4>
                        How to Stop it
                    </h4>
                    <p>
                        By Using our platform we can help Needy people to get Food and clothes Easily. There we support to minimize death from hunger.
                    </p>
                </div>
            </div>
        </div>
    </div>
</section>

<!-- end service section -->

<!-- about section -->

<section class="about_section layout_padding">
    <div class="container-fluid">
        <div class="box">

```

```

<div class="img-box">
    
</div>
<div class="detail-box">
    <h2>
        For Food Donation!
    </h2>
    <p>
        Here, You can Donate the food From Where NGO can
        Takeaway.
        You can upload details of the Donation.
    </p>
    <a href="foooddonate.php">
        <span>
            Read More
        </span>
        <hr />
    </a><br/><br/>
    <h2>
        Check Status of Your Donation.
    </h2>
    <p>
        Here, we provide the Details of Government
        schemes, Run by the Government of India for the Sake of
        wellbeing of the Farmers.
    </p>
    <a href="history.php">
        <span>
            Read More
        </span>
        <hr />
    </a>
    </div>
    </div>
</div>
</section>

<!-- end about section -->

<!-- we have section -->

<section class="wehave_section">
    <div class="container-fluid">
        <div class="box">
            <div class="detail-box">
                <h2>

```

```

        For <br />
        Clothes Donation!
</h2>
<p>

<a href="clothedonate.php">
    <span>
        Read More
    </span>
    <hr />
</a>
</div>
<div class="img-box">
    
</div>
</div>
</div>
</section>

<!-- end we have section -->

<!-- why section -->

<!-- why section -->

<section class="why_section layout_padding">
<div class="container">
    <div class="heading_container">
        <h2>
            Why Choose Us
        </h2>
        <p>
            </p>
        </div>
        </div>
    </div>
    <div class="col-lg-3 col-md-6">
        <div class="box ">
            <div class="img-box">
                
            </div>
            <div class="detail-box">
                <h4>
                    Hungry
                </h4>
                <p>

```

There is more than enough food produced in the world to feed everyone. Yet as many as 783 million people still go hungry.

```
</p>
</div>
</div>
</div>
<div class="col-lg-3 col-md-6">
<div class="box">
    <div class="img-box">
        
    </div>
    <div class="detail-box">
        <h4>
            What is Hunger
        </h4>
        <p>Hunger is interconnected issues of poverty, conflict, climate change and health systems all play a role in driving hunger.
        </p>
        </div>
    </div>
<div class="col-lg-3 col-md-6">
<div class="box">
    <div class="img-box">
        
    </div>
    <div class="detail-box">
        <h4>
            How to Stop it
        </h4>
        <p>
            By Using our platform we can help Needy people to get Food and clothes Easily. There we support to minimize death from hunger.
        </p>
        </div>
    </div>
```

CHAPTER 11

FEASIBILITY STUDY

After doing the project Zero Hunger, study and analyzing all the existing or required functionalities of the system, the next task is to do the feasibility study for the project. All projects are feasible - given unlimited resources and infinite time. Feasibility study includes consideration of all the possible ways to provide a solution to the given problem. The proposed solution should satisfy all the user requirements and should be flexible enough so that future changes can be easily done based on the future upcoming requirements.

11.1 Economical Feasibility

Economic feasibility is a critical aspect of evaluating the viability of a Zero Hunger project, examining the financial investment required against the anticipated returns. The project's economic feasibility is determined by factors such as development costs, operational expenses, and potential revenue streams. Initial investments in website development, security infrastructure, and marketing campaigns are weighed against the projected sales and profitability. Additionally, considerations like maintenance costs, hosting fees, and payment gateway expenses contribute to the economic analysis. The zero Hunger project's viability is further supported by the potential for scalability, cost-effectiveness of technology solutions, and the ability to capitalize on market trends. A positive economic feasibility assessment ensures that the Zero Hunger venture has the potential to generate sustainable revenue and achieve a satisfactory return on investment, making it a financially sound endeavor.

Economic feasibility in the context of an Zero Hunger project encompasses various financial considerations that are crucial for determining its viability and potential success. Here's a more detailed explanation of the aspects involved:

Development Costs: This includes expenses associated with creating the Zero Hunger platform, such as hiring developers, purchasing necessary software, designing the user interface, and integrating essential features like shopping carts, payment gateways, and inventory management systems.

Operational Expenses: These are ongoing costs required to keep the Zero Hunger Project running smoothly. They may include expenses related to website maintenance, customer support, server hosting, inventory management, fulfillment services, and any other operational overheads.

Revenue Streams: This refers to the different sources of income that the Zero Hunger project can potentially generate. Common revenue streams for Zero Hunger Project include product, subscription services, advertising revenue, affiliate marketing, and data monetization.

Projected Sales and Profitability: Based on market research, competitor analysis, and business projections, the expected sales volume and profitability of the Zero Hunger venture are estimated. This involves forecasting demand, setting pricing strategies, and identifying target customer segments to gauge potential revenue generation.

Maintenance Costs: Beyond initial development, there are ongoing expenses associated with maintaining and updating the Zero Hunger platform to ensure optimal performance, security, and user experience. This may include software updates, security patches, bug fixes, and other routine maintenance tasks.

Hosting Fees: The cost of hosting the eZero Hunger website on servers is another significant expense. Factors such as server capacity, bandwidth usage, data storage, and uptime reliability contribute to determining the hosting fees.

Payment Gateway Expenses: Processing payments securely and efficiently is essential for any Zero Hunger business. Payment gateway providers typically charge transaction fees or a percentage of each sale, which adds to the operational costs of the Zero Hunger project.

Scalability: The ability of the Zero Hunger platform to accommodate growth and handle increased traffic, transactions, and data volume without significant disruptions or

performance issues is crucial for long-term success. Scalability often influences both development and operational costs.

Cost-Effectiveness of Technology Solutions: Evaluating the efficiency and cost-effectiveness of technology solutions, such as Zero Hunger platforms, content management systems, analytics tools, and marketing automation software, helps optimize resource allocation and maximize ROI.

11.2 Technical Feasibility

Technical feasibility is a critical component in assessing the viability of an Zero Hunger project, focusing on the technological infrastructure required for its successful implementation. The project's technical feasibility involves evaluating the compatibility and capability of existing or proposed technology to meet the project's objectives. This encompasses considerations such as website development, hosting, database management, and integration with other systems. The platform must ensure security for online transactions, data protection, and user privacy. Scalability and adaptability to future technological advancements are crucial,

Ensuring the Zero Hunger project can evolve with emerging trends. Technical feasibility also.

Involves assessing the availability of skilled resources, expertise, and the feasibility of implementing required features such as mobile responsiveness and application programming interfaces (APIs). A positive technical feasibility study confirms that the chosen technology stack aligns with project requirements, ensuring a robust and sustainable Zero Hunger platform.

Technical feasibility refers to the examination of the technological aspects involved in the successful execution of an Zero Hunger project. Here's a detailed explanation of the components:

Compatibility and Capability of Technology: This involves assessing whether the existing or proposed technological infrastructure is suitable for meeting the objectives of the Zero

Hunger project. It includes evaluating hardware, software, and networking components to ensure they work together seamlessly to support the desired functionality.

Website Development: Technical feasibility evaluates the feasibility of developing the Zero Hunger website or platform, considering factors such as the chosen programming languages, frameworks, content management systems (CMS), and development methodologies. It also includes considerations for responsive design, ensuring the website functions effectively across various devices and screen sizes.

Database Management: Managing databases efficiently is crucial for storing and retrieving product information, customer data, transaction records, and other essential information. Technical feasibility examines database technologies, schema design, data normalization, indexing strategies, and backup and recovery procedures to ensure optimal performance, reliability, and data integrity.

Integration with Other Systems: Zero Hunger platforms often need to integrate with third-party systems and services, such as payment gateways, shipping carriers, inventory management systems, and customer relationship management (CRM) software. Technical feasibility assesses the feasibility of integrating these systems seamlessly while maintaining data consistency, security, and reliability.

Security: Ensuring the security of online transactions, sensitive customer information, and the overall Zero Hunger platform is paramount. Technical feasibility evaluates security measures such as encryption, secure sockets layer (SSL) certificates, firewalls, intrusion detection systems (IDS), and compliance with industry standards like PCI-DSS (Payment Card Industry Data Security Standard).

Scalability and Adaptability: Technical feasibility considers the scalability of the Zero Hunger platform to accommodate growth in user traffic, product inventory, and transaction volume. It also assesses the adaptability of the technology stack to incorporate future advancements and emerging trends in Zero Hunger.

Availability of Skilled Resources and Expertise: Assessing technical feasibility involves evaluating the availability of skilled developers, engineers, designers, and other technical professionals with the expertise required to implement and maintain the Zero Hunger platform effectively.

Mobile Responsiveness and APIs : Technical feasibility examines the feasibility of implementing features such as mobile responsiveness for optimal user experience on Smartphones and tablets. It also assesses the availability and usability of application programming interfaces (APIs) for integrating with external services and enabling customizations and third-party integrations.

11.3 Operation Feasibility

Operational feasibility for an Zero Hunger project involves evaluating whether the proposed system can be effectively integrated into the existing business operations and processes. It assesses the practicality of implementing the Zero Hunger platform within the organizational framework. Factors such as the impact on day-to-day operations, employee training, and workflow adjustments are considered. The operational feasibility study also explores how well the Zero Hunger system aligns with the company's strategic goals and whether it enhances overall efficiency. Assessing the ease of use for both customers and employees, as well as the compatibility with existing software and procedures, is crucial. A positive operational feasibility analysis ensures that the project can be seamlessly integrated, optimizing business processes and contributing to the overall success of the organization.

Operational feasibility assesses whether a proposed project can be implemented effectively from an operational standpoint. Here's a breakdown of the key aspects involved:

Operational Processes: Evaluate the existing operational processes within the organization and determine how the proposed project will fit into or impact these processes. Considerations include workflow changes, resource allocation, and potential disruptions to existing operations.

Resource Availability: Assess the availability of human, financial, and technological resources required to implement and sustain the project. This involves evaluating staffing needs, budgetary constraints, and access to necessary equipment or technology.

Training and Skills: Determine if the organization's staff have the required skills and expertise to support the project. Consider whether additional training or hiring of specialized personnel will be necessary to ensure successful implementation and ongoing operation.

Organizational Structure: Consider how the project will align with the organization's structure and culture. Assess potential impacts on reporting relationships, decision-making processes, and communication channels within the organization.

Risk Management: Identify potential risks and challenges associated with the project's implementation and operation. Develop strategies to mitigate these risks and ensure that the project can proceed smoothly without significant disruptions or adverse consequences.

Regulatory and Legal Compliance: Ensure that the project complies with relevant laws, regulations, and industry standards. Assess any potential legal or regulatory barriers that may affect the project's feasibility and develop strategies to address them.

Change Management: Evaluate the organization's capacity to manage change and adapt to the introduction of new processes or technologies. Develop a change management plan to facilitate smooth transitions and minimize resistance to change among employees.

Measurable Objectives: Define clear and measurable objectives for the project to gauge its success and effectiveness once implemented. Establish key performance indicators (KPIs) to track progress and ensure that the project is meeting its intended goals.

Stakeholder Buy-In: Obtain buy-in and support from key stakeholders within the organization. Communicate the benefits of the project and address any concerns or objections raised by stakeholders to ensure alignment and commitment to the project's success.

2.1 Behavioural Feasibility

Behavioural feasibility assesses the willingness of users, both customers and employees, to accept and adopt the proposed Zero Hunger project. In the context of an Zero Hunger platform, understanding user behaviour is critical for success. It involves studying user preferences, online shopping habits, and their comfort with digital transactions. Customer receptiveness to new features, such as personalized recommendations, secure payment methods, and user-friendly interfaces, is evaluated. Employee buy-in and adaptability to new processes, like order fulfilment and customer support through digital channels, are also considered. A positive behavioural feasibility analysis indicates that the target audience is

Likely to embrace the Zero Hunger platform, fostering customer loyalty and employee satisfaction. This alignment with user behaviour is essential for the project's successful implementation and sustained growth in the competitive Zero Hunger landscape.

Behavioural feasibility assesses the likelihood of users, including both customers and employees, to accept and adopt a proposed Zero Hunger project. It involves understanding and analysing various aspects of user behaviour to gauge their receptiveness and readiness to engage with the platform. Here's a deeper exploration of the elements involved in behavioural feasibility:

User Preferences and Habits: Behavioural feasibility begins with studying the preferences, habits, and behaviours of the target audience. This includes their preferred shopping channels, devices, browsing habits, and purchasing patterns. By understanding how users interact with Zero Hunger platforms, businesses can tailor their offerings and user experience to better meet customer needs and expectations.

Comfort with Digital Transactions: Assessing users' comfort levels with digital transactions is crucial for Zero Hunger success. This involves evaluating factors such as trust in online security measures, previous experiences with online shopping, and attitudes towards sharing personal and financial information online. Addressing concerns related to security and privacy can help alleviate barriers to adoption and encourage users to engage more confidently with the platform.

Receptiveness to New Features: Behavioural feasibility also involves gauging users' receptiveness to new features and functionalities offered by the Zero Hunger platform. Features such as personalized product recommendations, secure payment methods, intuitive navigation, and seamless checkout experiences can enhance user satisfaction and drive engagement. Understanding which features resonate most with users can inform prioritization and development efforts.

Employee Buy-In and Adaptability: In addition to customer behaviour, behavioural feasibility considers the attitudes and adaptability of employees who will be involved in operating and supporting the Zero Hunger platform. This includes assessing their willingness to embrace new processes, tools, and technologies for tasks such as order fulfilment, inventory management, customer support, and marketing. Providing adequate training and support can help ensure employee buy-in and facilitate smooth transitions to digital channels.

User Feedback and Testing: Gathering user feedback through surveys, focus groups, usability testing, and analytics helps validate assumptions and identify areas for improvement. By involving users in the development process and incorporating their input, businesses can create more user-centric experiences that resonate with their target audience.

Alignment with User Behaviour: Ultimately, a positive behavioural feasibility analysis indicates that the Zero Hunger platform aligns well with user behaviour, preferences, and expectations. It suggests that the platform is likely to be embraced by both customers and employees, leading to increased customer loyalty, higher satisfaction levels, and improved employee productivity. This alignment is essential for driving adoption, retention, and sustained growth in the competitive Zero Hunger landscape.

CHAPTER 12

Executive Summary

12.1 Introduction

The Zero Hunger Project aims to address global food insecurity by targeting food waste reduction. With one-third of all food produced globally wasted and millions suffering from hunger, effective food waste management is essential. This project outlines strategic initiatives to mitigate food waste across the supply chain, from production to consumption, ensuring a sustainable approach to achieving Zero Hunger by 2030.

12.2 Objectives

1. Reduce Food Waste: Halve per capita global food waste at the retail and consumer levels by 2030.
2. Enhance Sustainability: Promote sustainable agriculture and food systems.
3. Support Food Security: Redirect surplus food to those in need, ensuring access to nutritious food for all.
4. Educate and Raise Awareness: Increase awareness about food waste and its impact on hunger and the environment.

12.3 Scope and Methodology

The project focuses on:

Data Collection and Analysis: Identifying key waste points in the food supply chain.

Stakeholder Engagement: Involving farmers, retailers, policymakers, and consumers.

Policy Recommendations: Advocating for regulations that support waste reduction.

Technological Innovations: Implementing tech solutions for better inventory and waste management.

Educational Campaigns: Conducting workshops and campaigns to raise awareness.

12.4 Key Strategies

1. Farm Level Interventions

Implementing better harvesting and storage techniques.

Providing training and resources to reduce post-harvest losses.

2. Supply Chain Efficiency

Enhancing transportation and logistics to minimize spoilage.

Developing partnerships with food manufacturers for surplus redistribution.

3. Retail and Consumer Practices

Encouraging retailers to adopt "ugly" produce initiatives.

Educating consumers on proper food storage and usage.

4. Policy and Regulation

Advocating for policies that support food donation and waste reduction.

Working with governments to create incentives for businesses to reduce waste.

12.5 Implementation Plan

1. Phase 1: Assessment and Planning

Conduct a comprehensive assessment of food waste across different regions.

Develop a detailed action plan tailored to regional needs.

2. Phase 2: Pilot Projects

Launch pilot projects in selected regions to test and refine strategies.

Monitor and evaluate the outcomes to inform broader implementation.

3. Phase 3: Scale-Up and Replication

Expand successful models to other regions.

Foster partnerships with local governments, NGOs, and the private sector.

4. Phase 4: Monitoring and Evaluation

Establish metrics for continuous monitoring and evaluation.

Adjust strategies based on feedback and emerging trends.

12.6 Expected Outcomes

1. Reduction in Food Waste

Significant reduction in food waste at various stages of the supply chain.

Increased efficiency in food production and distribution.

2. Improved Food Security

Enhanced access to food for vulnerable populations.

Reduced hunger and malnutrition rates.

3. Environmental Benefits

Lower greenhouse gas emissions from reduced food waste.

Improved use of natural resources.

4. Economic Gains

Cost savings for businesses and consumers.

Economic opportunities through the creation of a circular food economy.

12.7 Challenges and Mitigation Strategies

1. Behavioral Change Resistance

Develop targeted education and incentive programs to foster behavioral change.

2. Infrastructure Limitations

Invest in infrastructure improvements, especially in developing regions.

3. Regulatory Barriers

Advocate for policy reforms and provide technical support to policymakers.

12.8 Conclusion

The Zero Hunger Project's food waste management initiative is a comprehensive approach to reducing food waste and enhancing global food security. Through strategic interventions, collaboration, and innovation, the project aims to create a sustainable food system that ensures no one goes hungry. By addressing the root causes of food waste and implementing scalable solutions, we can make significant strides toward achieving Zero Hunger by 2030.

12.9 Appendices

1. Appendix A: Detailed Data on Global Food Waste
2. Appendix B: Case Studies of Successful Initiatives
3. Appendix C: List of Key Stakeholders and Partners
4. Appendix D: Financial and Resource Allocation Plan
5. Appendix E: Monitoring and Evaluation Framework

12.10 References

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12.11 Current State of Food Waste

Globally, approximately one-third of all food produced is wasted, amounting to about 1.3 billion tons annually. In developed countries, waste predominantly occurs at the consumer and retail levels, while in developing countries, it is mainly due to inadequate infrastructure and logistical challenges. This wastage leads to economic losses estimated at \$940 billion per year and contributes significantly to environmental degradation through methane emissions from landfills.

12.12 Key Challenges

Lack of Awareness and Education: Many consumers and businesses are unaware of the scale of food waste and its impact, leading to habitual wastage.

1. **Inefficient Supply Chains:** Poor infrastructure, storage, and transportation in developing regions contribute to significant post-harvest losses.
2. **Regulatory and Policy Gaps:** Inconsistent policies and regulations regarding food donation and waste management hinder coordinated efforts.
3. **Technological Barriers:** Limited access to technologies that can help in food preservation, waste tracking, and recycling exacerbates the problem.
4. **Economic Incentives:** The economic structure in many regions does not incentivize waste reduction or recycling, making it less appealing for businesses and individuals to adopt sustainable practices.

12.13 Strategies for Improvement

1. **Public Awareness Campaigns:** Educate consumers and businesses about the impact of food waste and promote behavioral changes through targeted campaigns and educational programs.
2. **Supply Chain Enhancements:** Invest in infrastructure improvements, such as better storage facilities and efficient transportation systems, especially in developing countries, to reduce post-harvest losses.
3. **Policy and Regulation:** Develop and implement consistent policies that encourage food donation, waste reduction, and the recycling of food waste. Incentivize businesses to adopt sustainable practices through tax breaks and subsidies.
4. **Technological Innovation:** Support the development and adoption of technologies for food preservation, waste tracking, and recycling. Innovations like

smart packaging, advanced refrigeration, and bioconversion technologies can significantly reduce waste.

5. Collaboration and Partnerships: Foster collaboration among governments, non-profits, businesses, and communities to share best practices and resources. Partnerships can enhance the effectiveness of food redistribution programs and waste management initiatives.

12.14 Recommendations

1.Increase Investment: Allocate more resources towards food waste management infrastructure and technology.

2.Enhance Education: Integrate food waste education into school curriculums and corporate training programs.

3.Strengthen Policies: Advocate for stronger regulations and incentives that promote food waste reduction and recycling.

4. Promote Collaboration: Encourage cross-sector partnerships to leverage collective expertise and resources in combating food waste.

12.15 Testing

1. Data Collection and Monitoring:

Comprehensive data collection and robust national baselines are essential for understanding the scale of food waste and targeting interventions effectively. The Food Waste Index Report 2024 emphasizes the need for consistent measurement and tracking progress to meet Sustainable Development Goals (SDGs).

2. Household and Consumer Behavior:

Consumer education is vital for reducing food waste. Campaigns to increase awareness and change behaviors, such as those implemented in educational institutions, have shown significant reductions in food waste [\[8†source\]](#).

Encouraging consumers to buy only what they need, properly store food, and understand food labeling can further help minimize waste [\[9+source\]](#).

3. Retail and Food Service Sectors:

In retail and food service sectors, strategies include optimizing inventory management, donating unsold but safe food, and composting food scraps. Innovations like using by-products to create new products, as seen with companies turning cucumber water into Bloody Mary mix, can also reduce waste.

4. Legislation and Policy:

Governments can play a crucial role by enacting policies that encourage food donation, improve food waste tracking, and promote sustainable food management practices. Countries like France and Denmark have implemented successful policies requiring restaurants to donate surplus food and using apps to sell leftover food at reduced prices..

5. Technological Solutions:

Technology can aid in food waste reduction through web-based tools and apps that help consumers and businesses track and manage food more efficiently. For instance, apps that alert users to surplus food from restaurants or offer educational resources on food labeling can significantly reduce waste.

6. Public-Private Partnerships:

Collaborative efforts between governments, private sectors, and non-profits are crucial. These partnerships can create comprehensive programs to reduce food waste, such as public-private initiatives that align with the Target-Measure-Act approach, fostering long-term, systemic change.

12.16 Big Bang

In the big-bang approach, most of the developed modules are coupled together to form a complete software system or major part of the system and then used for integration testing. This method is very effective for saving time in the integration testing process.

However, if the test cases and their results are not recorded properly, the entire integration process will be more complicated and may prevent the testing team from achieving the goal of integration testing. A type of big-bang integration testing is called "usage model testing" which can be used in both software and hardware

integration testing. The basis behind this type of integration testing is to run user-like workloads in integrated user-like environments. In doing the testing in this manner, the environment is proofed, while the individual components are proofed indirectly through their use.

Usage Model testing takes an optimistic approach to testing because it expects to have few problems with the individual components.

The strategy relies heavily on the component developers to do the isolated unit testing for their product. The goal of the strategy is to avoid redoing the testing done by the developers, and instead flesh-out problems caused by the interaction of the components in the environment. To be more efficient and accurate, care must be used in defining the user-like workloads for creating realistic scenarios in exercising the environment. This gives confidence that the integrated environment will work as expected for the target customers.

12.17 Top-Down and Bottom-Up

Bottom-up testing is an approach to integrated testing where the lowest level components are tested first, then used to facilitate the testing of higher-level components. The process is repeated until the component at the top of the hierarchy is tested. All the bottom or low-level modules, procedures or functions are integrated and then tested. After the integration testing of lower-level integrated modules, the next level of modules will be formed and can be used for integration testing. This approach is helpful only when all or most of the modules of the same development level are ready.

This method also helps to determine the levels of software developed and makes it easier to Report testing progress in the form of a percentage. Top-down testing is an approach to integrated testing where the top integrated modules are tested, and the branch of the module is tested step by step until the end of the related module. Sandwich testing is an approach to combine top-down testing with bottom-up testing.

12.18 Black-Box Testing

Black box testing is a technique used to test the functionality of a software application without having knowledge of its internal structure or implementation

details. It focuses on the inputs and outputs of the system and verifies if the expected outputs match the desired results. Here are some examples of black box testing techniques that can be applied to the KIET Event Management.

Equivalence Partitioning:

- Identify different categories of inputs for the app, such as valid and invalid inputs, and divide them into equivalence classes.
- Test representative values from each equivalence class to ensure the app behaves consistently within each class.

Boundary Value Analysis:

- Identify the boundaries or limits for inputs in the app, such as minimum and maximum values, and test values at those boundaries.
- Test values just above and below the boundaries to verify the app's behaviour at critical points.

Decision Table Testing:

- Identify the different conditions and rules that govern the behaviour of the app.
- Create a decision table with combinations of conditions and corresponding expected results.
- Test different combinations of conditions to validate the app's decision-making process.

State Transition Testing:

- Identify the different states that the app can transition between.
- Define the valid and invalid transitions between states.
- Test different sequences of state transitions to verify the app's behaviour.

Error Guessing:

- Use experience and intuition to guess potential errors or issues in the app.
- Create test cases based on those guesses to verify if the app handles the errors correctly.

Compatibility Testing:

- Test the app on different platforms, browsers, or devices to ensure compatibility.
- Verify that the app functions correctly and displays appropriately across different environments.

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