WASTE FOOD MANAGEMENT AND DONATION

Submitted in partial fulfilment of the requirements of the degree

BACHELOR OF ENGINEERING IN INFORMATION TECHNOLOGY

By

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(AY 2020-21)

CERTIFICATE

This is to certify that the Mini Project entitled **"Waste Food Management and Donation for NGO and Restaurants"** is a bonafied work of Digesh Ghevade (14), Sanskruti Kalambe (26), Janhavi Kamble (29), Sakshi Kanoje (30) submitted to the University of Mumbai in partial fulfilment of the requirement for the award of the degree of "Bachelor of Engineering" in "Information Technology".

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Mini Project Approval

This Mini Project entitled **"Waste Food Management and Donation for NGO and Restaurants"** by Digesh Ghevade (14), sakshi kanoje(30), Sanskruti Kalambe (26), janhavi kamble (29) is approved for the degree of Bachelor of Engineering in Computer Engineering.

Examiners

1……

(Internal Examiner Name & Sign)

2……

(External Examiner name & Sign)

Date:

Place:

Contents

ABSTRACT

A drastic increase can be seen in food waste. As per data given by The Indian Express (https://indianexpress.com/article/opinion/columns/food-waste-index-report-india-coronavirus-hunder-index-7261909/) As per the Food Waste Index Report 2021, a staggering 50 kg of food is thrown away per person every year in Indian homes.

This Web-based Food Waste Management system can assist in collecting the leftover food from hotels & restaurants to distribute among those in need. NGOs that are helping poor communities to battle against starvation & malnutrition can raise a request for food supply from restaurants through this website. Once the request is accepted, the NGOs can collect the food from the restaurants for its distribution. In this way this Web-based food waste management system will help restaurants to reduce food waste and will help in feeding the poor and needy people.

ACKNOWLEDGEMENT

We take immense pleasure in thanking Dr. Geeta Latkar ,director of MGM's College of Engineering for having permitted us to carry out this project work. Also, we would like to thank the Head of Computer Engineering department, Prof. Swati Sinha for permitting us to pursue this project. We wish to express our deep sense of gratitude to our Project Guide, Prof. Swati Sinha for her able guidance and useful suggestions, which helped us in completing the project work in time. We would like to thank him for his valuable assistance in the project work. Words are inadequate in offering my thanks to the entire staff of I.T for providing us with all amenities and facilities. The success of this project would not have been possible without the constant encouragement, advice and support from a vast number of people. We, the members of the team, who developed "Waste Food Management and Donation for NGO and Restaurants" are very delighted to take the opportunity to acknowledge whole heartedly the innumerable guidance and support extended to us by our guide.

List of Figures

1. INTRODUCTION

1.1 Introduction

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 website for Waste Food Management and donation.

In this system, we have tried to reduce restaurant food wastage by giving waste food to NGOs. NGOs will raise a request, in case of any leftover food restaurants have. This request is sent to the restaurant manager of that particular restaurant. The NGO Manager then approves the request and assigns it to one of the NGO employees for takeaway and forwards the request to the restaurant. The leftover food at the restaurant can be given to NGOs at the end of the day. The admin can track the history of restaurants and NGOs for the leftover foods.

1.2 Motivation

Currently there is a widespread pandemic COVID-19 in the world to streamline processes and improve current Waste Food Management System and can help to feed the needy.

A drastic increase can be seen in food waste. As per data given by Food and Agriculture Organization (http://www.fao.org/food-loss-and-food-waste/flw-data), 1/3rd of food produced for human consumption is wasted globally, which accounts for almost 1.3 billion tons per year. On the other hand, also as per WHO 20% of the population face extreme food shortages. Hence there is a need to come up with a solution that can avoid food waste & can help feed the needy.

This Web-based Food Waste Management system can assist in collecting the leftover food from hotels & restaurants to distribute among those in need. NGOs that are helping poor communities to battle against starvation & malnutrition can raise a request for food supply from restaurants through this website. Once the request is accepted, the NGOs can collect the food from the restaurants for its distribution. In this way this web-based food waste management system will help restaurants to reduce food waste and will help in feeding the poor and needy people.

1.3 Problem Statement & Objective

The sharp increase in large amount of wastage of food makes the need for donation of food. In highly populated country like India, food wastage is a big issue. A lot of food is thrown away in garbage bins, streets, and landfills have proof to prove it.
Instead of wasting food we can put them in use by donating them to various organizations such as orphanages old age home, NGO's, etc.

The project aims at satisfying in reduction of wastage of food and donate the available left-over food to the NGO through donation over the internet. The website shall ask the Restaurants/doner to register their details into the website and then they can login and upload the food details to donate. Similarly, the volunteers from NGO can register/login into the system and view the food donation list donated by the Restaurant/doner. NGO volunteers can also request for food, that request post will directly visible to restaurant page.

objectives:

This website Provides following objectives:

- The main objective of the proposed system is to reduce wastage of food and making food availability to the NGO.
- This system creates a common collaboration between a Restaurants and a volunteer from the NGO where the Restaurants uploads availability of the food.
- In this system NGO's can also sent food request to Restaurants.
- Outside Doner can also Donate food to NGO. For them no need to register into the website they can simply fill Donation Form.
- This system can be used by restaurants, and NGOs to donate leftover foods to the needy.
- Replaces the traditional way of waste food management and helps to needy people to get fresh food directly from restaurants.

2. LITERATURE SURVEY

2.1 Survey of existing system

This section discusses finding and observation done by some research works on website/application of Waste food management and donation system. The gathered information on these related papers strengthens and supports the research study.

1. Literature Studies According to Hassan Hjjdiab, Ayesha Anzer, Hadeel Tabaza, Wedad Ahmed. (2018) in their study entitled “A Food Wastage Reduction Mobile Application”, they defined the wastage of the food can be prevented or at least decreased using political rules and technology. They identified the use of mobile technology to reduce food waste management and built an android mobile application that allows restaurants to donate and share their foods and leftovers with people in need. Their proposed solution reduced food wastage by facilitating food sharing in UAE community using mobile technology. Their proposed solution "Food waste reduction app" comprises of two logins; user login and restaurant login. Their app will enable users to register, login, view items, add items, add items to cart, remove an item from the cart, and log out. This app is using the firebase storage and real-time database. Any user in need can see all the food images donated by different users and add it to his or her cart.
   In similar manner, the researchers planned in their application Extending their app to have many types of donating users either from organizations such as restaurants, or a family or a single user. Subsequently, the researchers planned to Adding the location (GPS) facility to our apps. The donating user should specify the location of the shared food. Adding the time and date of each meal shared by users. Making the app supports multiple platforms.

2. On the other hand, study entitled “Aahar-Food Donation App” done by Mrigank Mathur, Ishan Srivastava, Vaishnavi Rai and Assistant Prof. Mr. S. Kalidass (2021), the researchers developed an application for donation. Their proposed application would eliminate food waste and also fulfil various prerequisites, such as clothes, books, utensils, and so on, of penniless associations. The main goal of their application is to build and create a simple but powerful framework that can be used without fear of data breaches or technicalities by anyone. They said proposed application developed using android-based, generated using java and xml on Android Studio, involves site association and will provide a stage for contributors and searchers after they register effectively in the system.
   The advantages of their product, since they use applications like Google Map and GPS, the cost of project construction is economically feasible. The machine will still be live, providing a 24/7 service. At a relatively low cost, the machine can make food available. Some disadvantage of their product, Availability of internet to use application. Cannot prevent fraud users from entering their product.

3. In the study entitled “Food For You (F4U) Mobile Charity Application” undertaken by Suraya Masrom, Abdullah Sani Abd. Rehman, Farah Azahar, Nasiroh Omar (2018), they defined that, Peoples use mobile application for various purposes and the trend is increasing from year to year. Therefore, F4U mobile application has the potential to get a huge number of users and thus beneficial to resolving the poverty, hunger, and food waste global issues. the fundamental function that should be provided by the mobile application are: - Allow users to register either as a needy, donator, and supplier. Allow users to login into the system. Allow users to view their profile and make changes for their account profile. The ideas presented in their paper related to the system design, architecture and testing is beneficial for researchers who intend to develop other kinds of mobile applications.

4. In the literature studies according to R. Adline Freeda, M.S. Sahlin Ahamed (2018) in their study entitled “Mobile Application for Excess Food Donation and Analysis”, they defined to develop an android 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. Their paper provides a new automated measuring and accounting system, which helps discover trends in food wastage by correlating the food wastage with various other parameters like number of people generating that food, day of week and time of day. Another part of their paper was an LED display that presents the gross food waste that has been generated, associated cost of the food being dumped and an online portal wherein people can get more detailed information using easy to understand graphs and charts. Main motive of their application is Donating the excess food that provides the location of where excess food are available &details of the food quantity available and sends immediate alerts to nearby NGO's, orphanage, volunteers to collect them.

2.2 Limitation of existing system

This Research studies does not cover main motive of Management and Donation System for NGO. In our proposed system there is a direct connection between Restaurants and NGO no third party will include in between. This system can be directly used by restaurants, and NGOs to donate leftover foods to the needy.

In our system, common people can play role in saving food wastage and help the needy, because we are providing Donation Form for the outside user.

Our system is more user friendly. In this Restaurant and NGO will handle their own data.

Both Restaurant and NGO can post their need of food/availability of food, and both can take action related to that.

2.3 Mini project modules

NAME	Sub pages
Restaurant module	1)restaurant home page 2)donation request posts page 3)restaurant own post
NGO module	1)NGO home page 2) donation posts of restaurants page 3)NGO’s own page
Admin module	1)Restaurant and NGO authentication after they register

3. PROPOSED SYSTEM

3.1 Introduction

Wasting food is a common problem in our society. Food waste management is crucial since it can improve our environmental and economic sustainability. According to "Food waste in the Swiss food service industry–Magnitude and potential for reduction,", food waste is a significant issue around the world. It is predicted through a survey that more than 58 percent of food that people produce for consumption is wasted every day. Whereas, more than 60 percent of people in the third world countries are dying in malnutrition without proper food for a living. Therefore, the technologically developed countries are emphasizing more on this issue. Therefore, that less food can be wasted and can be distributed to the needy people.

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 Management and Donation Website. Hence, a Waste Food Management and donation system which provide direct connection between two parties i.e., Restaurants and NGO might be needed to address these issues.

3.2 Architecture/Framework-

- DFD level 0-

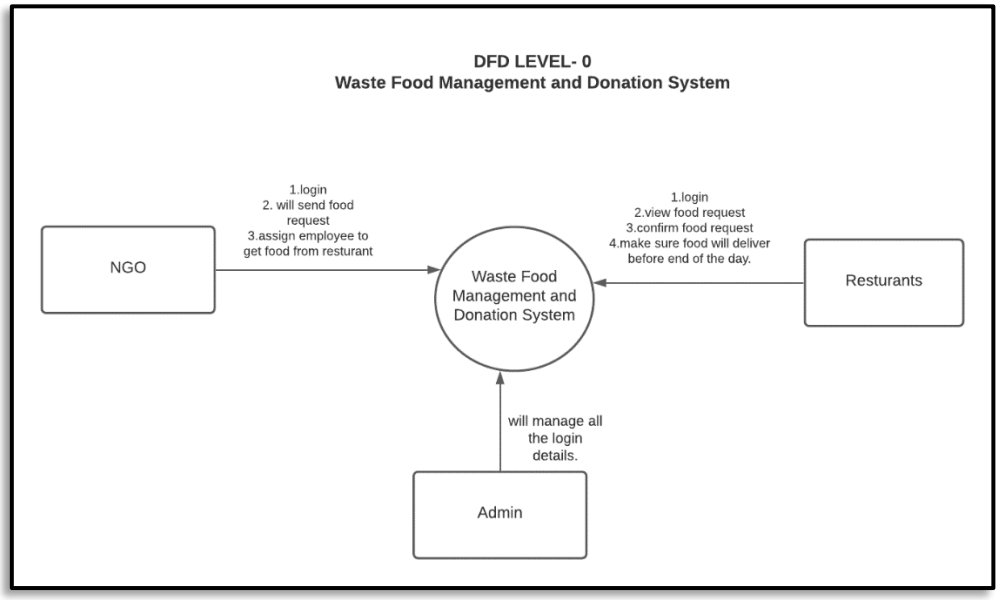

Fig. 3.2.1

- DFD level 1-

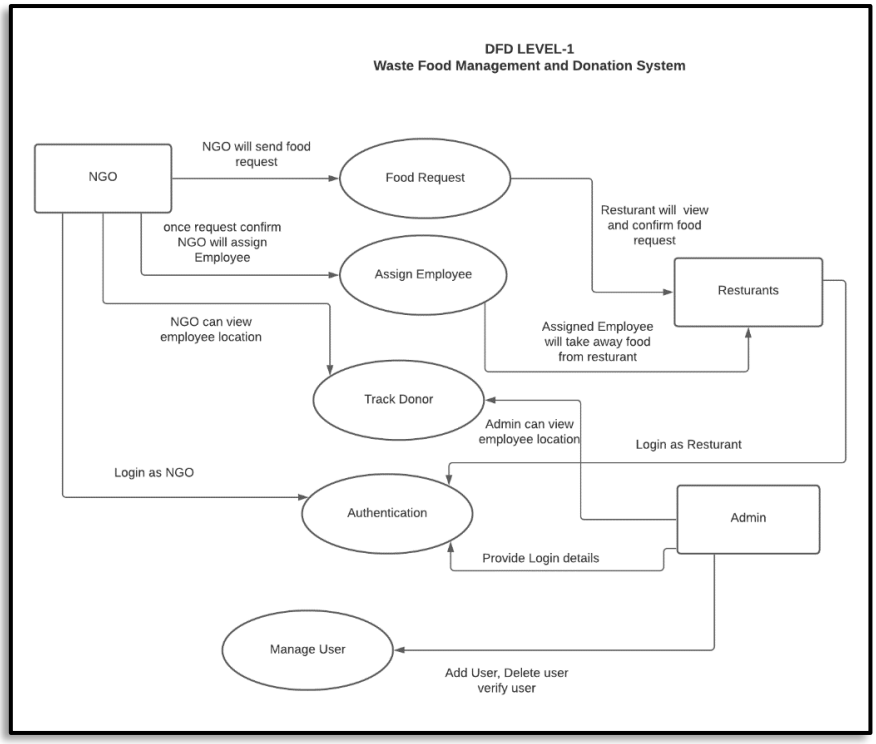

Fig. 3.2.2

- DFD level 2-

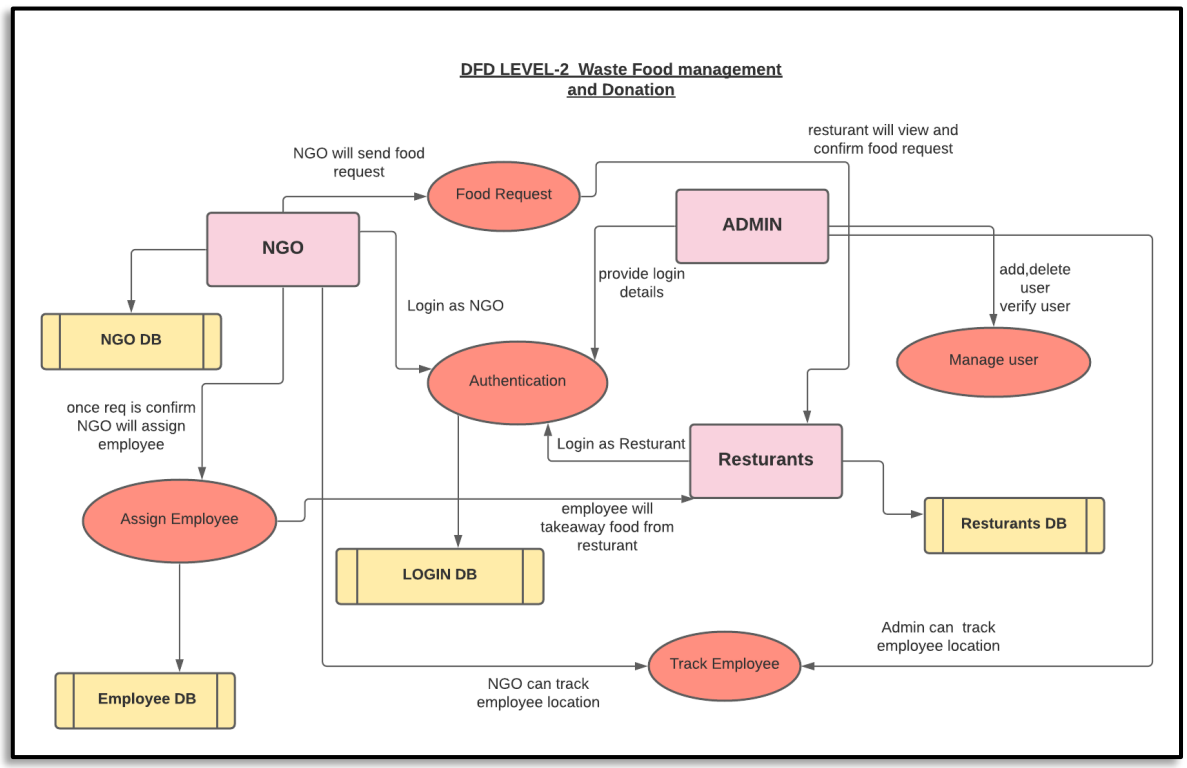

Fig. 3.2.3

3.3 Algorithm and Process Design-

- **Project Flow Chart**

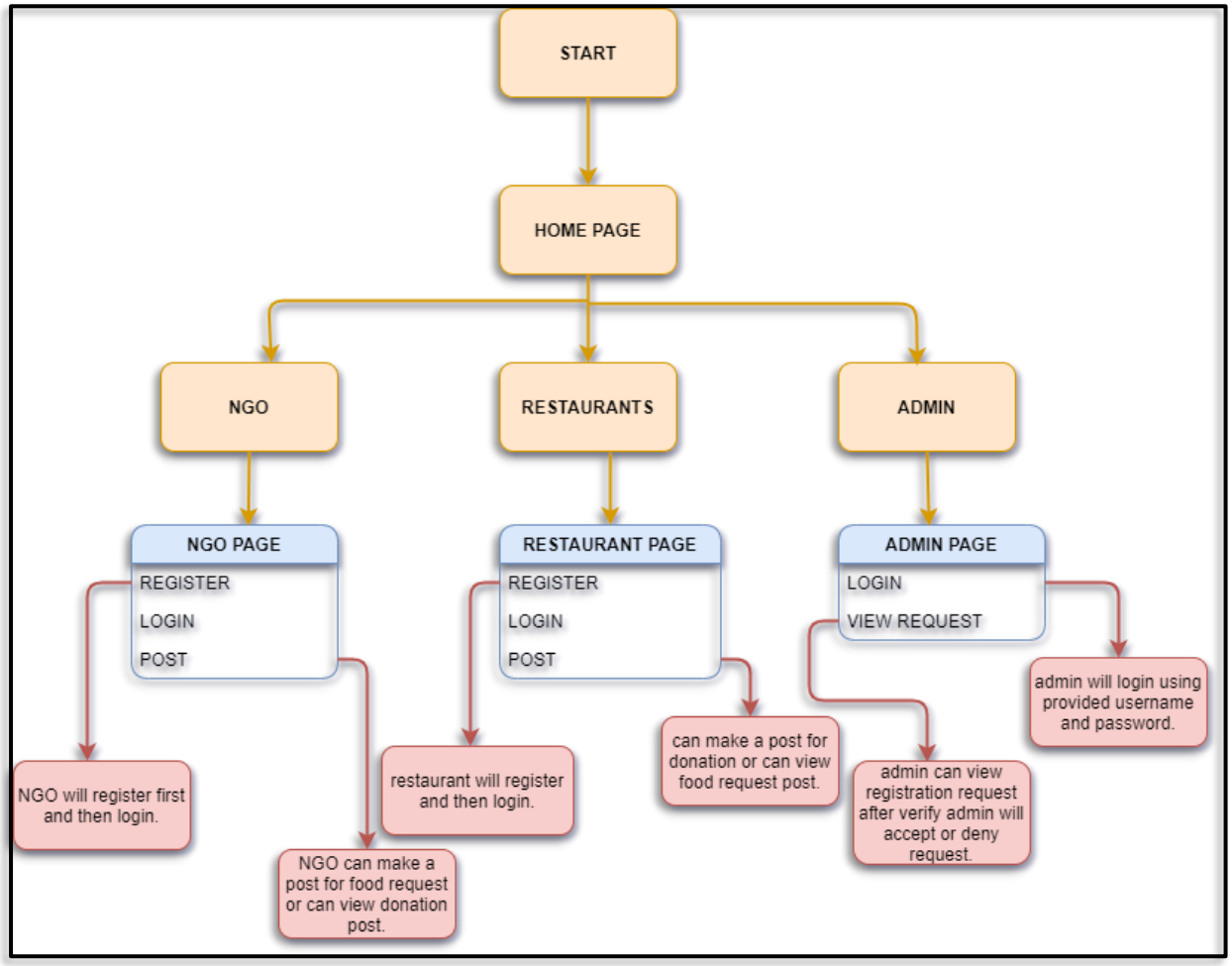

Fig. 3.3.1

- **Restaurant Page Flow Chart**

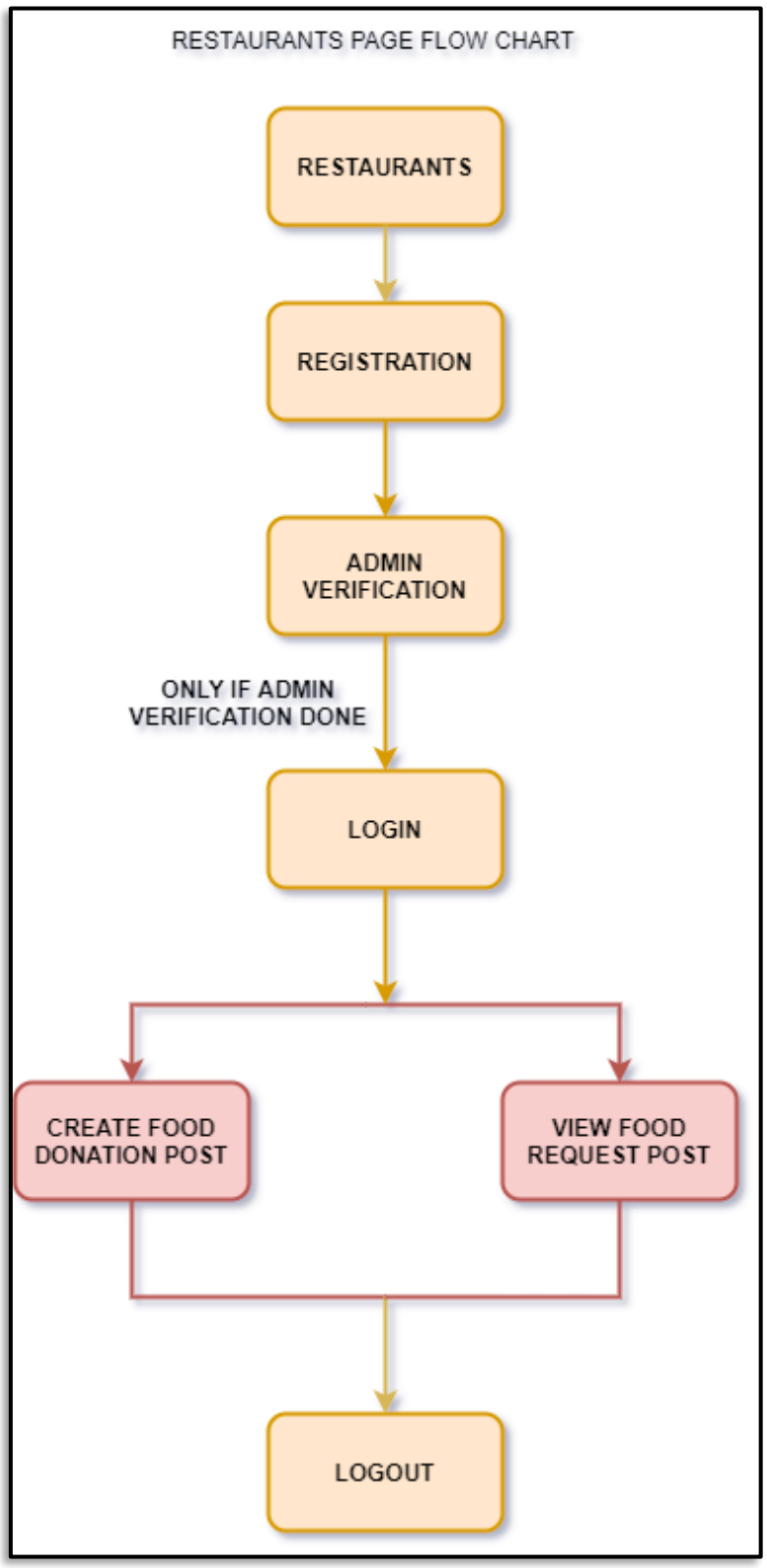

Fig. 3.3.2

- **NGO Page Flow Chart**

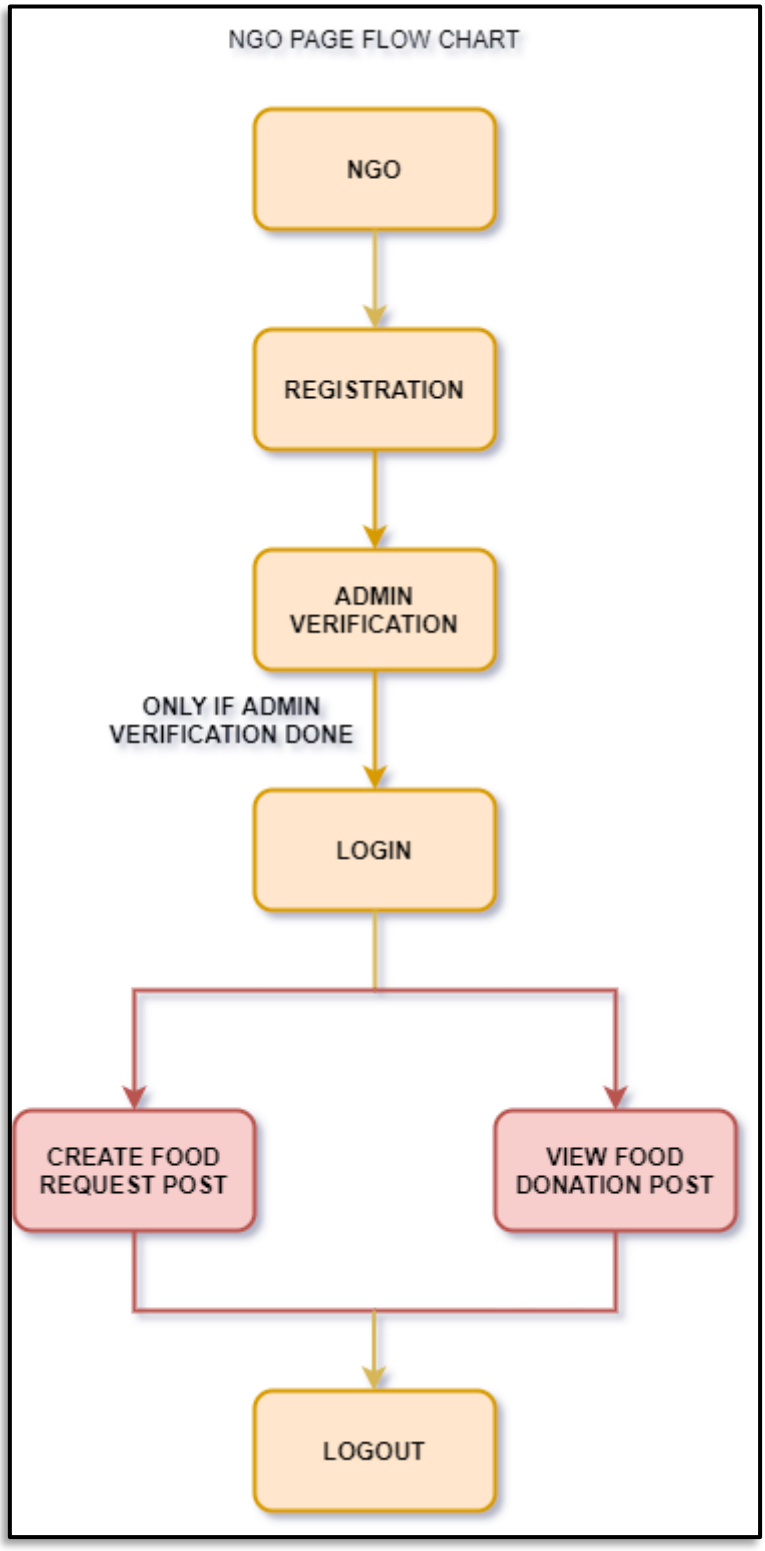

Fig. 3.3.3

- **Admin Page Flow Chart**

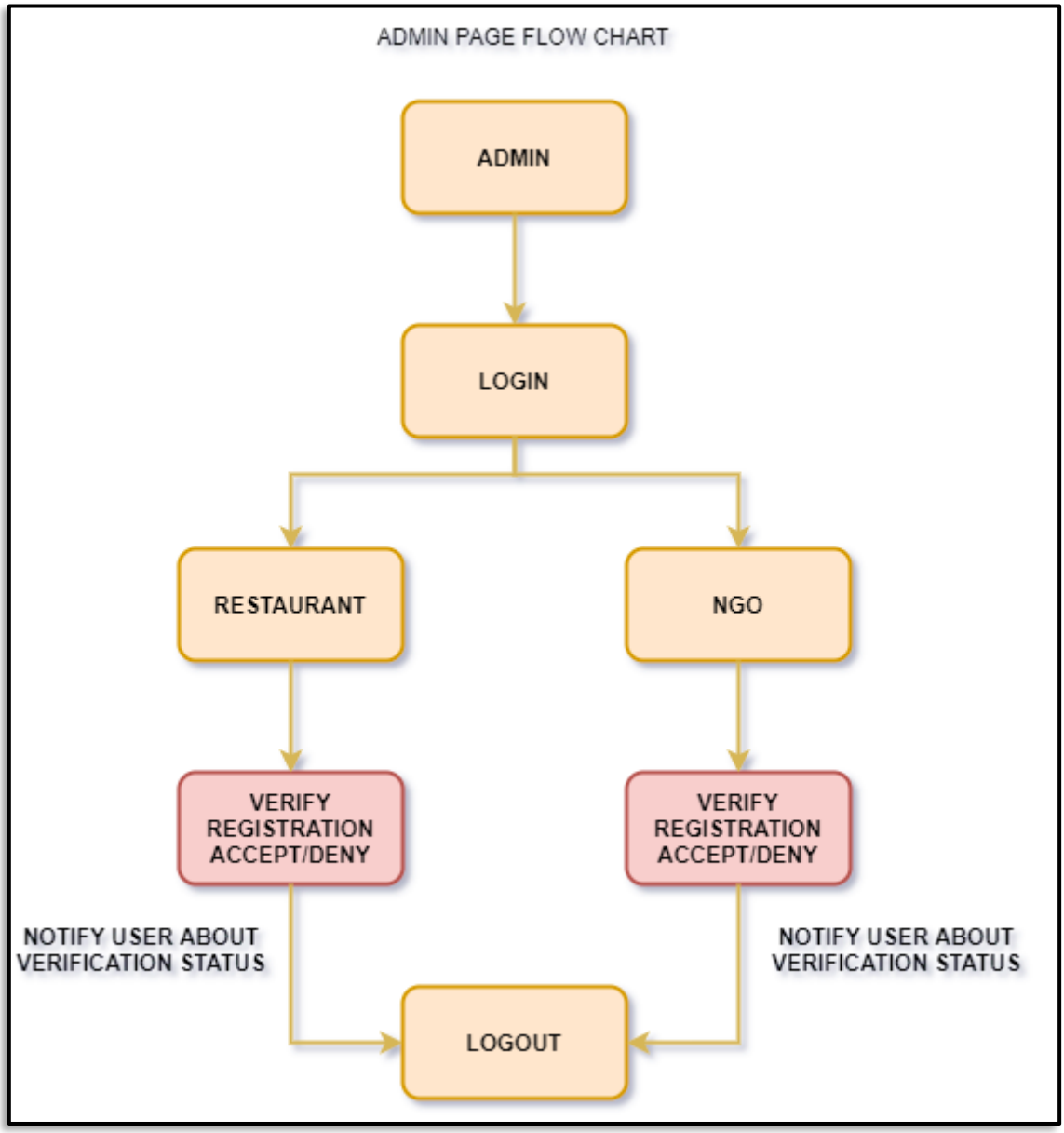

Fig. 3.3.4

3.4 Details of Hardware & Software

Resources Required-

PROCESSOR	2x1.6GHz CPU
RAM	256 MB
OPERATING SYSTEM	Windows 7 and above

Language Used:

- **Front-end**

a) HTML: Hypertext Markup Language.
b) DBMS: Database Management system.
c) CSS: Cascading Style Sheet
d) JavaScript: Nowadays, JavaScript is used everywhere on the web. Advantages of JavaScript-

- Speed
- Simplicity
- Popularity
- Server load

- **Back-end**

a) SQL- structured query language It's often used on the backend of business websites to provide access to user data.
b) PHP: Hypertext Preprocessor- server-side scripting language that is used to create dynamic web pages that can interact with databases**.**

3.5 Result

- **Home Page**

Fig. 3.5.1

- **Restaurant Registration Page**

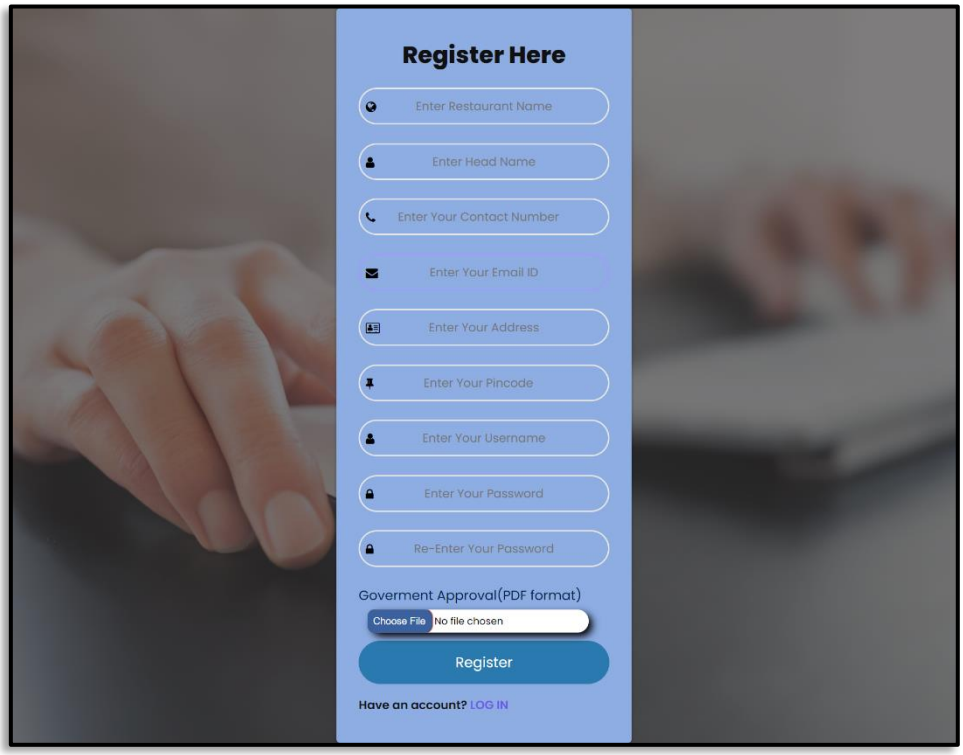

Fig. 3.5.2

- **Restaurant Login page**

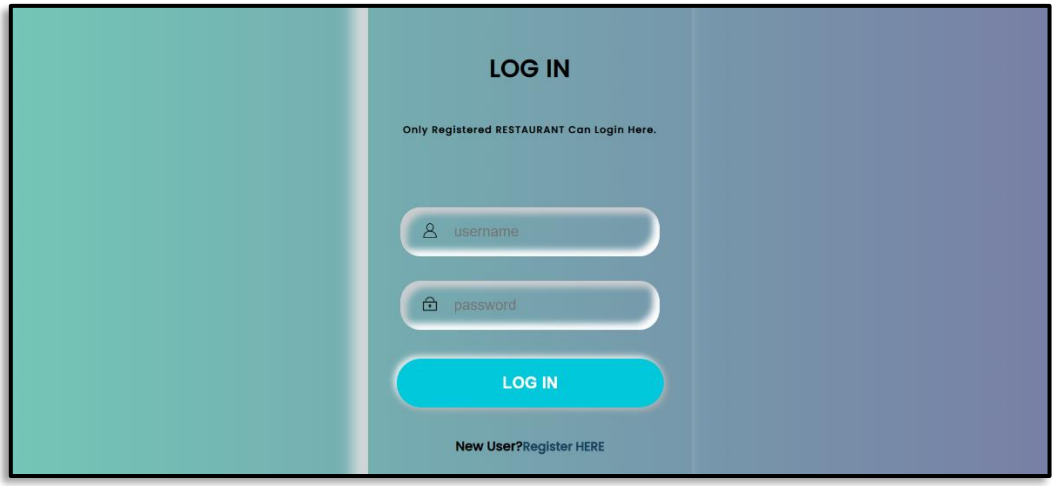

Fig. 3.5.3

- **NGO Registration Page**

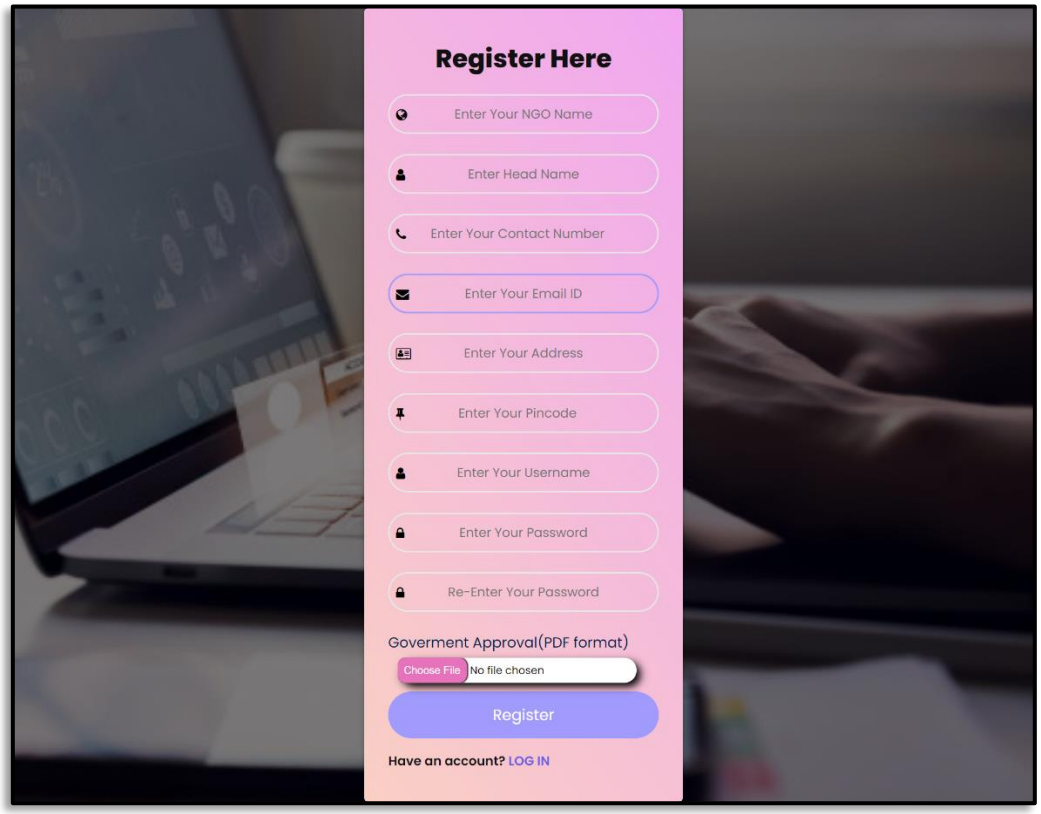

Fig. 3.5.4

- **NGO Login Page**

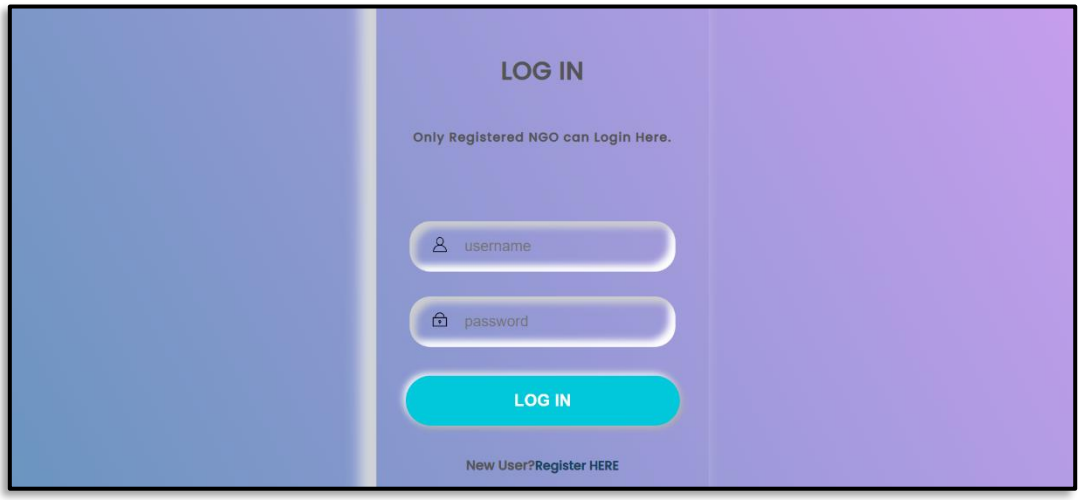

Fig. 3.5.5

- **Admin Login Page**

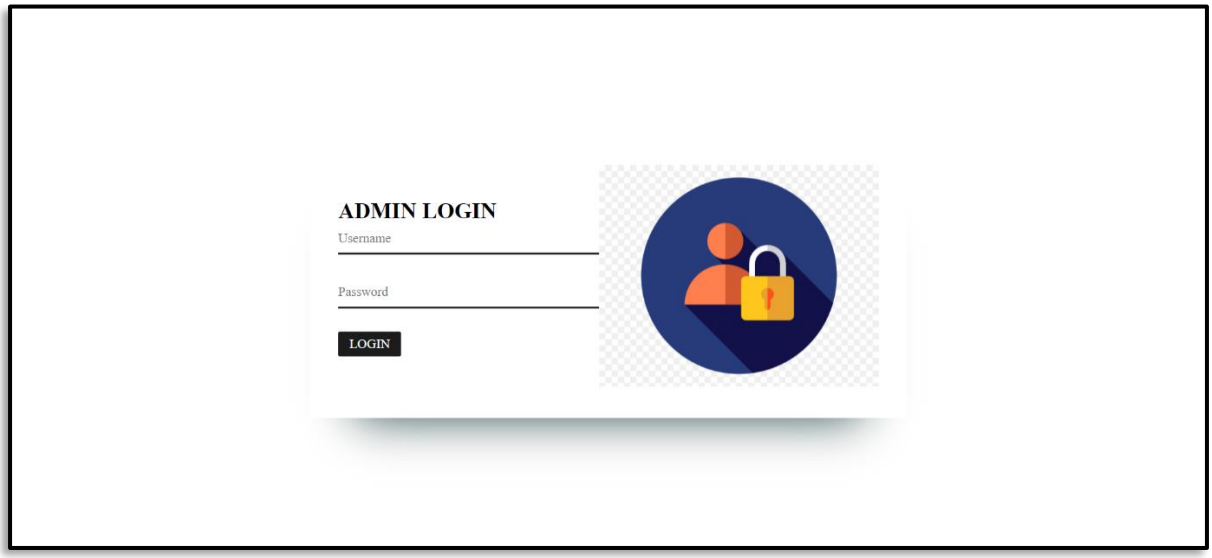

Fig. 3.5.6

- **Admin Restaurant Authentication Page**

Fig. 3.5.7

- **Admin NGO Authentication Page**

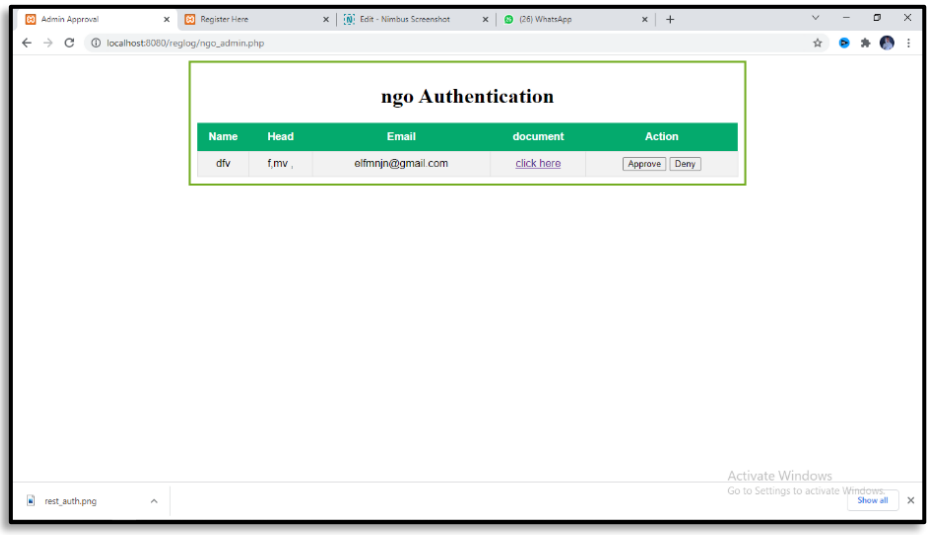

Fig. 3.5.8

- **Restaurant Home Page**

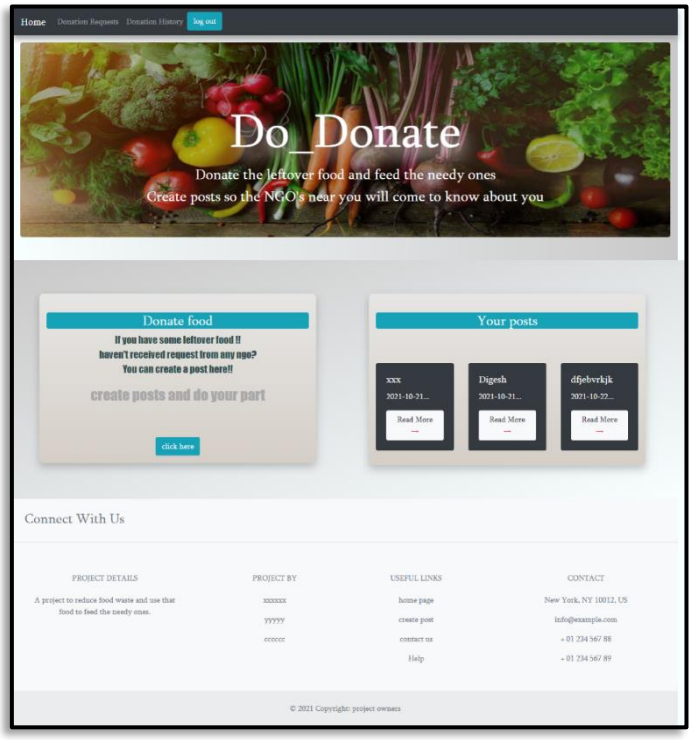

Fig. 3.5.9

- **Restaurant Create Post**

Fig. 3.5.10

- **Restaurant Post View**

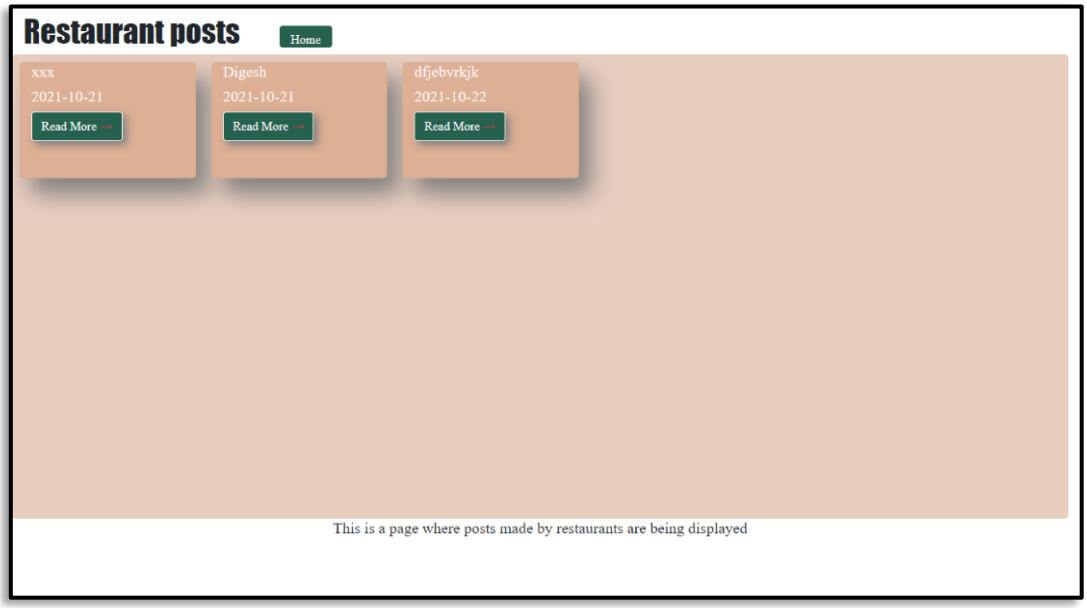

Fig. 3.5.11

- **NGO Home Page**

Fig. 3.5.12

- **NGO Create Post**

Fig. 3.5.13

- **NGO Post View**

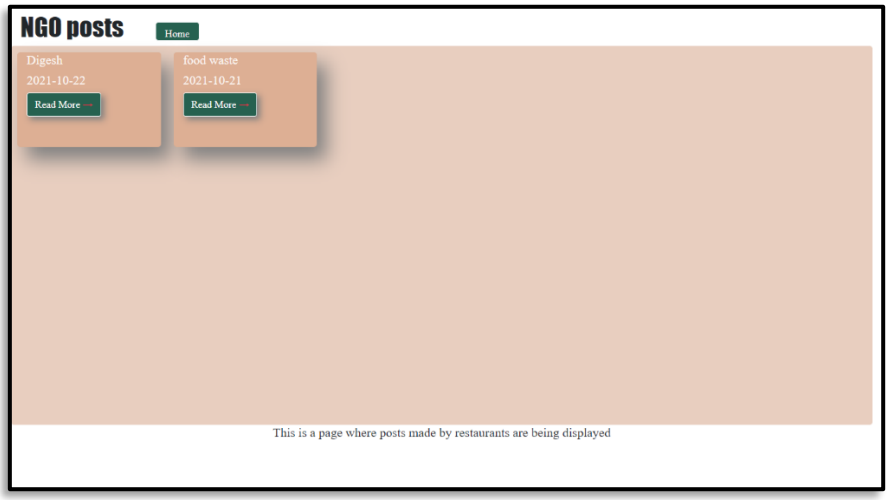

Fig. 3.5.14

- **About Us Page**

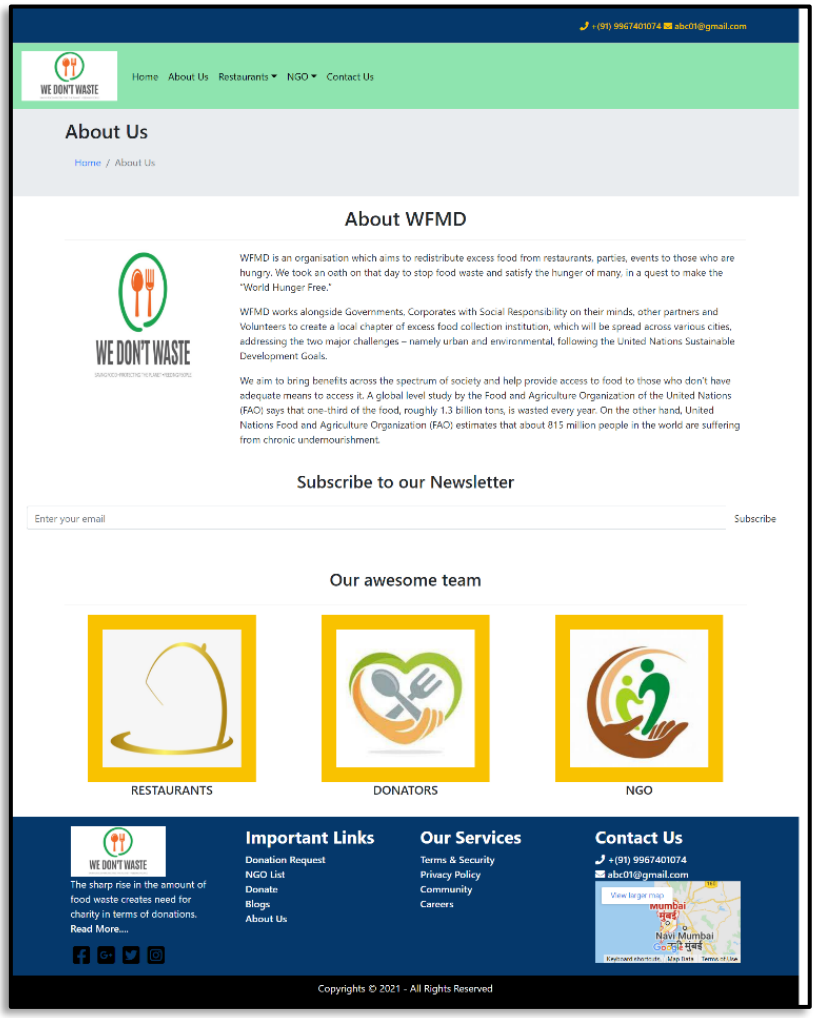

Fig. 3.5.15

- **Contact Us page**

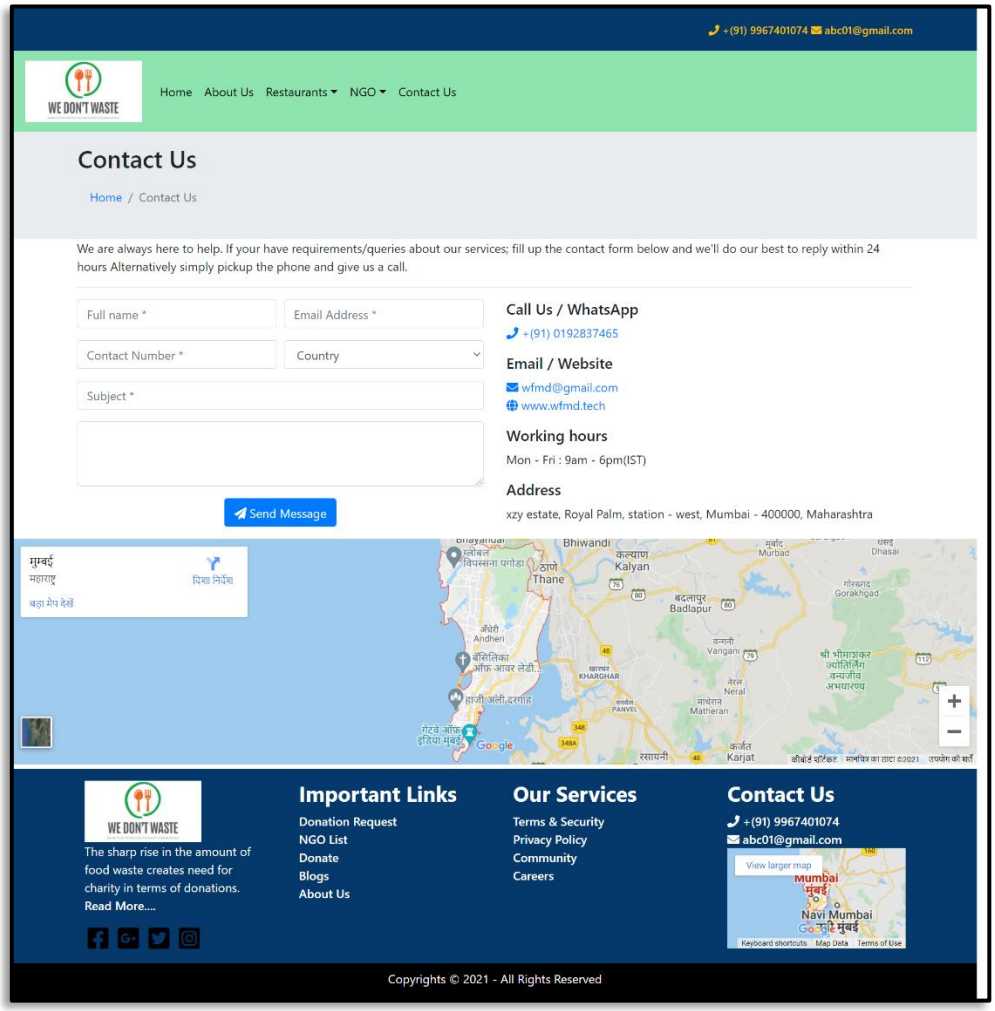

Fig. 3.5.16

3.6 Conclusion and Future Work

This project has been an excellent and good experience. This major project is beneficial to us as we have learned how particular work is planned for particular duration of time and gets completed. This was the first time that we have try to solve a particular problem of the society and made software with a lot of efforts. One of the major challenges that we have face is database connectivity.

Hundreds and thousands of tons of food is wasted, lost or thrown away while millions of people suffer from malnutrition. Therefore, Waste Food Management and donation system is a website developed for NGO and Restaurants which gives importance to reduction of wastage of food and focuses on donation of food. At present we our aiming to avoid the major wastage that is wastage of food.

Future Work:

- In future we can add employee tracking system for both NGO and Restaurants side.
- Adding the location (GPS) facility to our website. The donating user should specify the location of the shared food.
- Adding the time and date of each meal shared by users.
- Making the website supports multiple platforms (cross-platform website).
- In future we are planning to develop Android Application for the same purpose with some extra features.

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