# Enhanced Hostel Food Wastage Management Documentation

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## 1. Problem Statement:

Food wastage in hostels is a significant issue, leading to economic losses, environmental impact, and ethical concerns. This program aims to address this problem by providing tools for:  
- Analyzing food wastage patterns: Identifying trends and hotspots of wastage at both state and hostel levels.  
- Understanding the causes of wastage: Pinpointing reasons for food waste, such as over-preparation, poor quality, or inadequate planning.  
- Evaluating the effectiveness of prevention measures: Assessing the impact of interventions like food donation programs and quality control.  
- Providing data-driven recommendations: Suggesting strategies to minimize wastage and optimize food management.

## 2. Solution Overview:

The Hostel Food Wastage Management System is a Python-based application that utilizes data analysis and visualization techniques to provide insights into food wastage. It consists of the following modules:  
- Data Analysis: Processes data from CSV files, performs calculations, and generates statistical summaries.  
- Visualization: Creates various plots and charts to visualize data trends and patterns.  
- Reporting: Generates reports summarizing key findings and recommendations.  
- User Interface: Provides a menu-driven command-line interface for user interaction.

## 3. Program Explanation:

The program is structured as a class Hostel\_food\_wastage\_managemnet with several methods, each responsible for a specific analysis or visualization task.

### 3.1. Class Hostel\_food\_wastage\_managemnet:

#### graph\_avg\_food\_waste\_state

Shows the average percentage of food wasted per state as a horizontal bar graph.

#### graph\_food\_consumption\_vs\_wastage

Compares food consumption vs wastage using a pie chart.

#### graph\_meal\_waste

Displays food wastage by meal using a bar graph.

#### graph\_cuisine\_waste

Shows food wastage by cuisine type as a pie chart.

#### graph\_meal\_category\_3d

Visualizes food wastage by meal category using a 3D bar graph.

#### graph\_reasons\_for\_waste

Displays reasons for food waste as a bar graph.

#### graph\_food\_quality\_rating

Shows average food quality rating per hostel by meal time.

#### graph\_transport\_cost

Displays average transportation cost incurred for different NGOs.

#### graph\_leftover\_quantity

Shows average leftover quantity per hostel.

#### graph\_ngo\_feedback

Visualizes NGO feedback distribution per NGO.

#### graph\_transport\_mode\_usage

Displays transport mode usage for donations as a pie chart.

## 4. Data Files:

#### state\_wise\_food\_wastage\_analysis.csv

Columns: State, Total\_Food\_Cooked, Total\_Food\_Consumed, Total\_Food\_Wasted, Avg\_Wastage\_Percentage.

#### food\_wastage\_sheet.csv

Columns: Total Food Prepared (kg), Food Served (kg), Food Wasted (kg), Reasons for Waste.

#### food\_wastage\_data.csv

Columns: Meal Prepared, Food Wasted (kg), Type of Cuisine, Meal Type.

#### data2.csv

Columns: Date, HostelName, MealType, QualityCheck, NGOName, CostIncurred, LeftoverQty, NGOFeedback, TransportMode.

## 5. How to Run the Program:

- Ensure you have Python 3.x installed.  
- Install the required libraries: pandas, matplotlib, seaborn, numpy.  
 pip install pandas matplotlib seaborn numpy  
- Place all the necessary files in the same folder  
- Run the script:  
 python Hostel\_food\_management.py  
- Follow the menu prompts to select analysis options.

## 6. Conclusion:

This program provides a valuable tool for analyzing and managing food wastage in hostels. By providing data-driven insights, it can help hostels and policymakers implement effective strategies to reduce wastage and promote sustainable food practices.