# Data-Driven Solution for Sustainable Development Goal: Zero Hunger

## Step 1: Choose an SDG and Identify a Specific Problem

SDG Selected: Goal 2: Zero Hunger

Specific Problem: Food insecurity in urban areas due to lack of access to affordable, nutritious food.

## Step 2: Design and Implement a Relational Database

### Database Schema:

1. Tables:

#### Users

Stores information about individuals seeking food assistance.

Fields: UserID (Primary Key), Name, Address, Phone, Email, HouseholdSize, Income

#### FoodBanks

Contains information about food banks available in the area.

Fields: FoodBankID (Primary Key), Name, Location, ContactNumber, OperatingHours

#### FoodItems

Lists the food items available at each food bank.

Fields: FoodItemID (Primary Key), FoodBankID (Foreign Key), ItemName, Quantity, ExpirationDate

#### Requests

Tracks food assistance requests made by users.

Fields: RequestID (Primary Key), UserID (Foreign Key), FoodItemID (Foreign Key), RequestDate, Status (e.g., Pending, Fulfilled, Canceled)

## Step 3: Write SQL Queries to Retrieve and Analyze Data

### Example SQL Queries:

#### 1. Retrieve all food banks and their available food items:

SELECT f.Name AS FoodBankName, fi.ItemName, fi.Quantity  
FROM FoodBanks f  
JOIN FoodItems fi ON f.FoodBankID = fi.FoodBankID;

#### 2. Count the number of food assistance requests per user:

SELECT u.Name, COUNT(r.RequestID) AS TotalRequests  
FROM Users u  
LEFT JOIN Requests r ON u.UserID = r.UserID  
GROUP BY u.UserID;

#### 3. Find food items nearing expiration in the next 7 days:

SELECT ItemName, ExpirationDate  
FROM FoodItems  
WHERE ExpirationDate BETWEEN CURDATE() AND DATE\_ADD(CURDATE(), INTERVAL 7 DAY);

## Step 4: Use Microsoft Excel for Data Visualization and Analysis

#### 1. Data Import:

Use Excel's Data Connection feature to import data from the SQL database using the above queries.

#### 2. Data Visualization:

- Charts: Create charts to visualize:  
 - Total requests per food bank (bar chart)  
 - Expiration of food items (line graph)  
 - User demographics related to food requests (pie chart)

#### 3. Analysis Tools:

- Utilize Excel functions to analyze trends, such as:  
 - Average number of requests per user.  
 - Total food items available by type or food bank.

## Final Notes

- Feedback Loop: Implement a feedback mechanism for users to evaluate the service and provide insights into improving food distribution.  
- Continuous Improvement: Regularly update the database with new food items and requests, and analyze data trends to adapt strategies effectively.