Surplus Food Waste Management System

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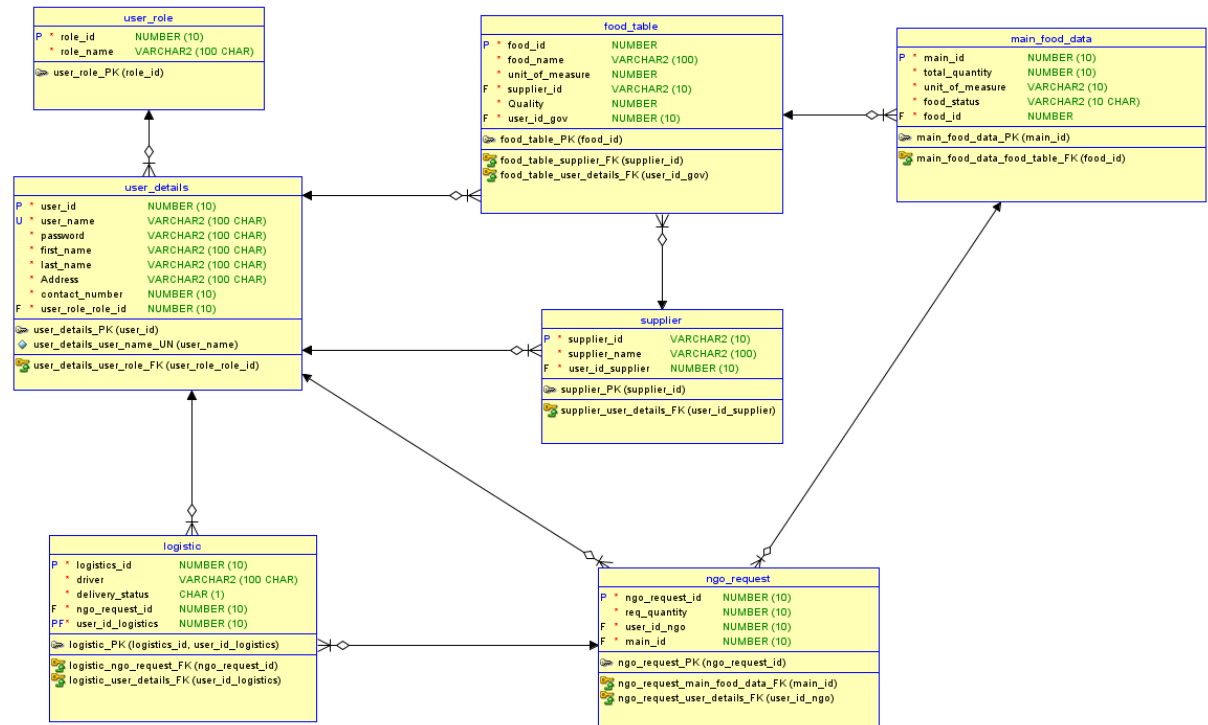Ramya Karuthappandian
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Business Problem & Objectives

- Business Problem:
  - Excess food waste from suppliers leads to resource loss and social issues
  - Need an automated system to manage surplus food distribution efficiently

Solution Overview

- Our Solution:
  - Role-based data management (Suppliers, NGOs, Logistics, Government).
  - Automated triggers and processes for quality checks and quantity management.
  - Comprehensive reporting to justify automation.

Relational model

user_role

P	* role_id	NUMBER (10)
	* role_name	VARCHAR2 (100 CHAR)

user_role_PK (role_id)

food_table

P	* food_id	NUMBER
	* food_name	VARCHAR2 (100)
	* unit_of_measure	NUMBER
F	* supplier_id	VARCHAR2 (10)
	* Quality	NUMBER
F	* user_id_gov	NUMBER (10)

food_table_PK (food_id)

food_table_supplier_FK (supplier_id)
food_table_user_details_FK (user_id_gov)

main_food_data

P	* main_id	NUMBER (10)
	* total_quantity	NUMBER (10)
	* unit_of_measure	VARCHAR2 (10)
	* food_status	VARCHAR2 (10 CHAR)
F	* food_id	NUMBER

main_food_data_PK (main_id)

main_food_data_food_table_FK (food_id)

user_details

P	* user_id	NUMBER (10)
U	* user_name	VARCHAR2 (100 CHAR)
	* password	VARCHAR2 (100 CHAR)
	* first_name	VARCHAR2 (100 CHAR)
	* last_name	VARCHAR2 (100 CHAR)
	* Address	VARCHAR2 (100 CHAR)
	* contact_number	NUMBER (10)
F	* user_role_role_id	NUMBER (10)

user_details_PK (user_id)
user_details_user_name_UN (user_name)

user_details_user_role_FK (user_role_role_id)

supplier

P	* supplier_id	VARCHAR2 (10)
	* supplier_name	VARCHAR2 (100)
F	* user_id_supplier	NUMBER (10)

supplier_PK (supplier_id)

supplier_user_details_FK (user_id_supplier)

logistic

P	* logistics_id	NUMBER (10)
	* driver	VARCHAR2 (100 CHAR)
	* delivery_status	CHAR (1)
F	* ngo_request_id	NUMBER (10)
PF	* user_id_logistics	NUMBER (10)

logistic_PK (logistics_id, user_id_logistics)

logistic_ngo_request_FK (ngo_request_id)
logistic_user_details_FK (user_id_logistics)

ngo_request

P	* ngo_request_id	NUMBER (10)
	* req_quantity	NUMBER (10)
F	* user_id_ngo	NUMBER (10)
F	* main_id	NUMBER (10)

ngo_request_PK (ngo_request_id)

ngo_request_main_food_data_FK (main_id)
ngo_request_user_details_FK (user_id_ngo)

Key Components

- Implemented Components:
  - Physical & Logical Data Models
  - Views, Triggers
  - Stored Procedures, Functions, Packages
  - Exception Handling & Security

Flow

- Supplier logs in and submits surplus food details (quantity, quality, unit of measure)
- Automated trigger validates quality and updates MAIN_FOOD_DATA
- NGO users view available food via role-based view and place requests
- Trigger ensures requested quantity ≤ available stock; updates stock
- Logistics team views approved requests, picks up food, updates status
- Government officials access quality-compliance reports via secure view
- Stored procedures and functions handle business rules and exceptions
- Reports are generated: availability, quality, request status, logistics, compliance

Thank you