Aim: To construct a Data Flow Diagram to depict the functional/informational view of system.

Theory:

A data flow diagram (DFD) is a graphical representation of the flow of data within a system. It visualizes how data moves from one process to another, how it's stored, and how it's transformed within the system. DFDs are commonly used in software engineering to model the structure and behavior of systems, aiding in system analysis, design, and documentation.

Key components and concepts in a DFD are :

1. **External Entities:** External entities are entities outside the system being modeled that interact with the system. These can be users, other systems, or organizations. External entities are represented by rectangles in the DFD.

2. **Processes:** Processes represent the functions or transformations that occur within the system. Each process receives input data, performs some action, and produces output data. Processes are represented by circles or ovals in the DFD.

3. **Data Stores:** Data stores represent where data is stored within the system. They can be databases, files, or any other storage mechanism. Data stores are represented by rectangles with two parallel lines on one side in the DFD.

4. **Data Flows**: Data flows represent the movement of data between processes, external entities, and data stores. They show the direction of data flow and what data is being transferred. Data flows are represented by arrows in the DFD.

DFDs are typically organized into multiple levels, each providing a different level of detail and abstraction. The most commonly used levels are:

Level 0 (Context Diagram):

This is the highest-level DFD and provides an overview of the entire system.It includes only one process representing the entire system, external entities interacting with the system, and major data flows between them.It helps in understanding the system's boundaries and its interactions with external entities.

Level 1:

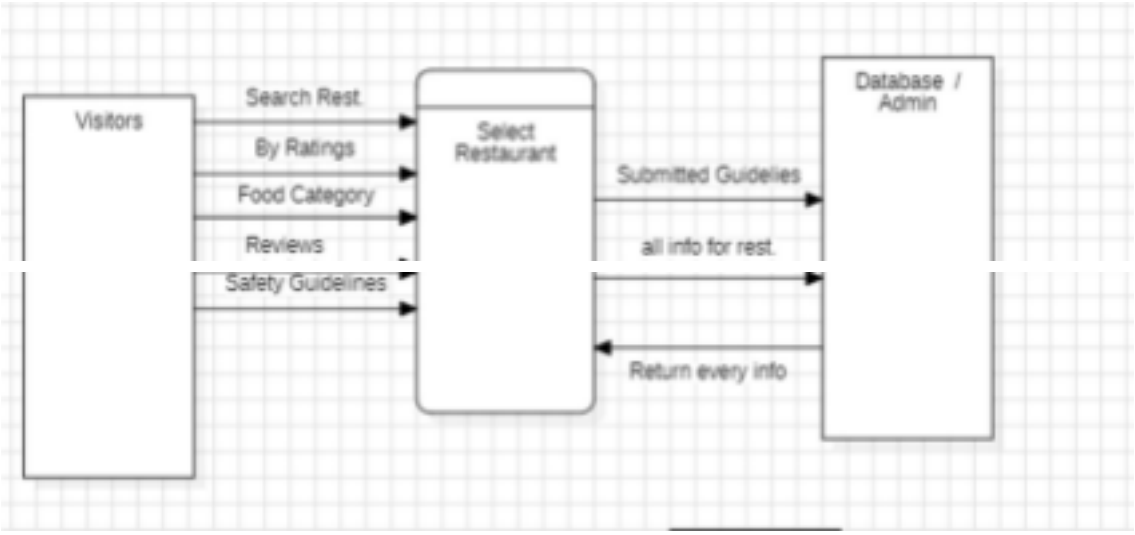
Level 1 DFDs provide a more detailed view of the system by decomposing the single process in the context diagram into subprocesses.It breaks down the system into major functional areas or modules, each represented by a separate process.External entities, data stores, and major data flows are retained from the context diagram but are now connected to specific subprocesses.It helps in understanding the major functions or modules within the system and their interactions.

Level 2 and Beyond:

These levels provide further decomposition of processes from the level above.Each subprocess from the previous level is decomposed into more detailed subprocesses until a sufficient level of detail is achieved.External entities, data stores, and data flows are refined accordingly to reflect the decomposition of processes.These levels provide the most detailed view of the system, showing individual processes and their interactions.

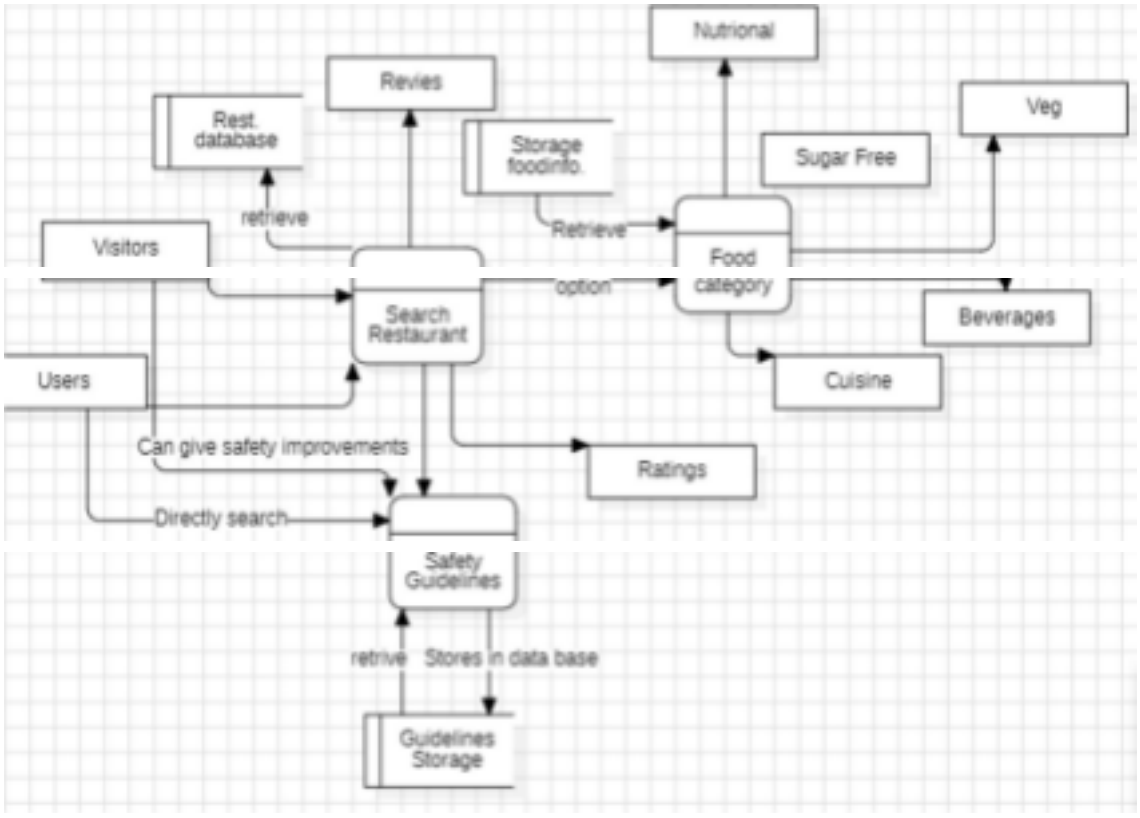
1) SEARCH RESTAURANT:

LEVEL 0:



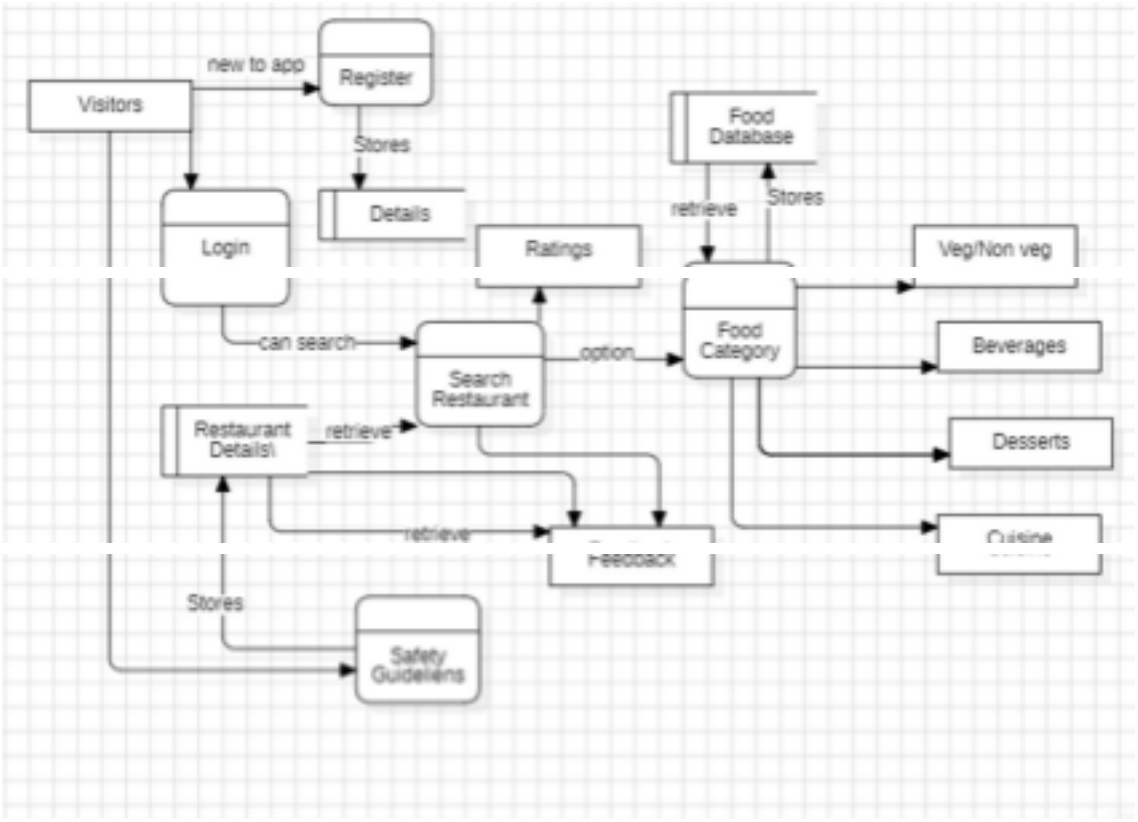
- **Admin Interaction:** This level illustrates the system's interaction with an external entity known as the "Admin," who has the capability to manage restaurant information.
- **Search Functionality:** A process named "Search Res." is depicted, which accepts user input and executes a search operation, presumably based on restaurant details.
- **Search Results:** The output generated by the "Search Res." process is directed towards the "Select Restaurant" process, indicating that it presents options based on the search criteria.
- **Restaurant Selection**: The "Select Restaurant" process enables users to pick a specific restaurant from the search results.
- **Restaurant Data Storage:** All information pertaining to restaurants is stored in a data store named "all info. for Restaurant."

LEVEL 1:



- **Multi-Criteria Search:** Users (referred to as "Visitors") can search for restaurants based on various criteria, such as dietary needs and safety ratings.
- **Detailed Restaurant Data:** Extensive restaurant information is stored in data stores like "Nutritional Database" and "Safety Guidelines."
- **Reviews and Filtering:** Reviews are stored separately and are retrieved based on the selected restaurant. Food categories might also be retrieved to facilitate search filtering.
- **Admin Management:** An "Admin" interacts with the system, likely involved in managing restaurant data or safety guidelines.
- **Data Flow Connections:** Processes such as "Search Restaurant" initiate data flows to retrieve relevant details from various data stores.
- **Limited Control Flow View:** The focus of the DFD is on the flow of data rather than the sequence of user actions or specific administrative tasks.

LEVEL 2:



- **User Actions:** The system interacts with an external entity labeled "Visitors," implying that users can search for restaurants and potentially place food orders.

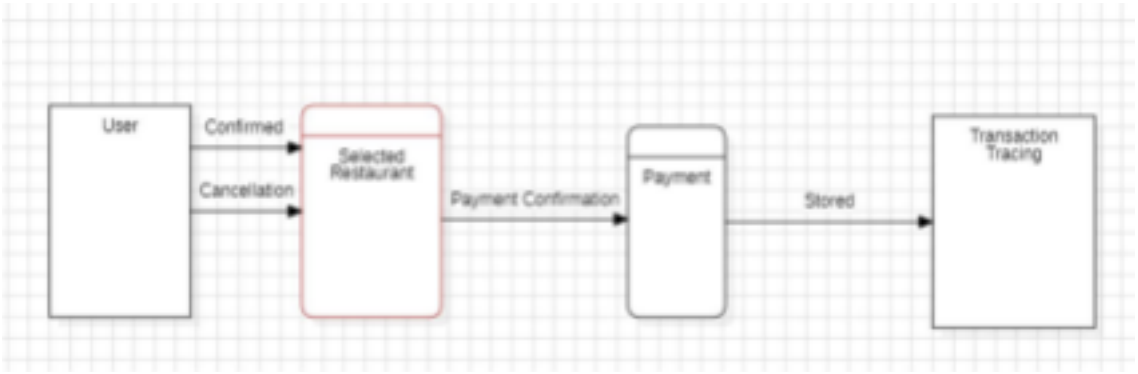
- **Search Functionality:** A process named "Search Res." is responsible for executing searches based on restaurant details.

- **Search Results:** The output from the "Search Res." process feeds into the "Select Restaurant" process, which suggests that it offers options based on the search criteria.

- **Restaurant Selection and Details:** After selecting a restaurant, the "Retrieve Details" process fetches information about that restaurant, potentially including menus.

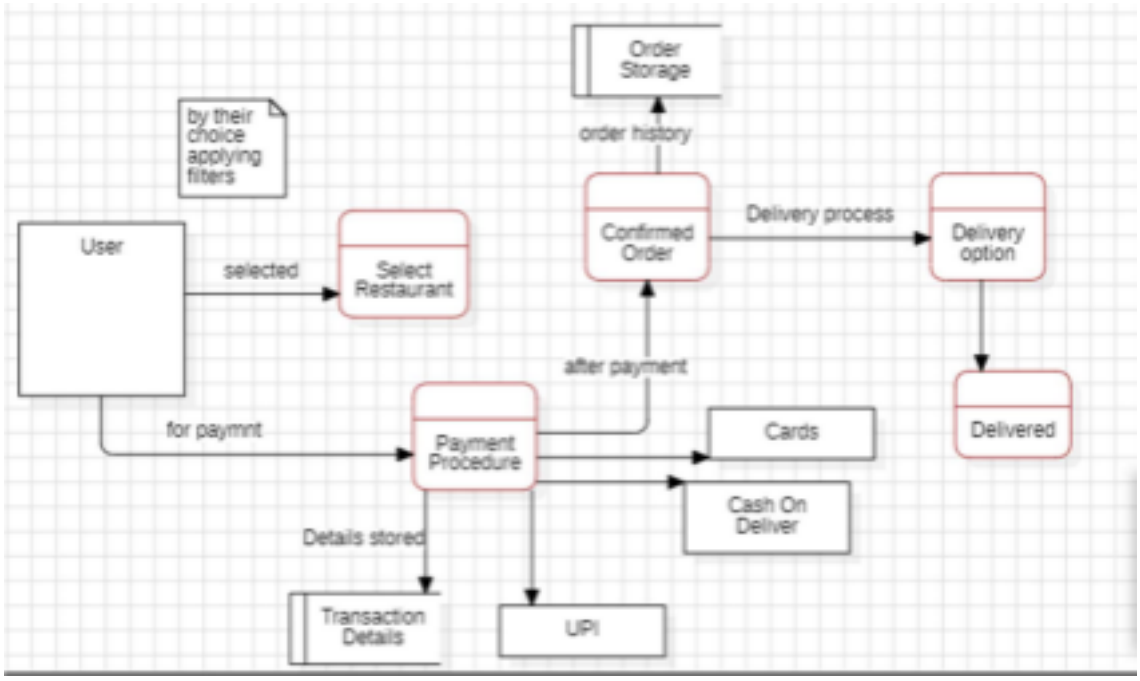
- **Food Ordering:** Once a restaurant is selected and details are retrieved, users can proceed with ordering food.

2) BOOKING AND PAYMENT:
LEVEL 0:



- **Restaurant System:** The data flow diagram (DFD) illustrates an online restaurant ordering system.
- **User Interaction:** The system engages with an external entity labeled "User," indicating that users can search for restaurants and place food orders.
- **Search Functionality:** The "Search Res." process accepts user input and conducts a search for restaurants, typically based on criteria provided by the user.
- **Search Results and Selection:** Output from the "Search Res." process is directed to the "Select Restaurant" process, implying it presents options based on the search criteria. Users can then select a restaurant from the search results.
- **Order Processing:** Once a restaurant is chosen, users can proceed to order food. This initiates processes for placing the order and sending it to the restaurant.

LEVEL 1:



- **Delivery Focus:** The system primarily revolves around a delivery process, with users ordering and deliveries being confirmed.

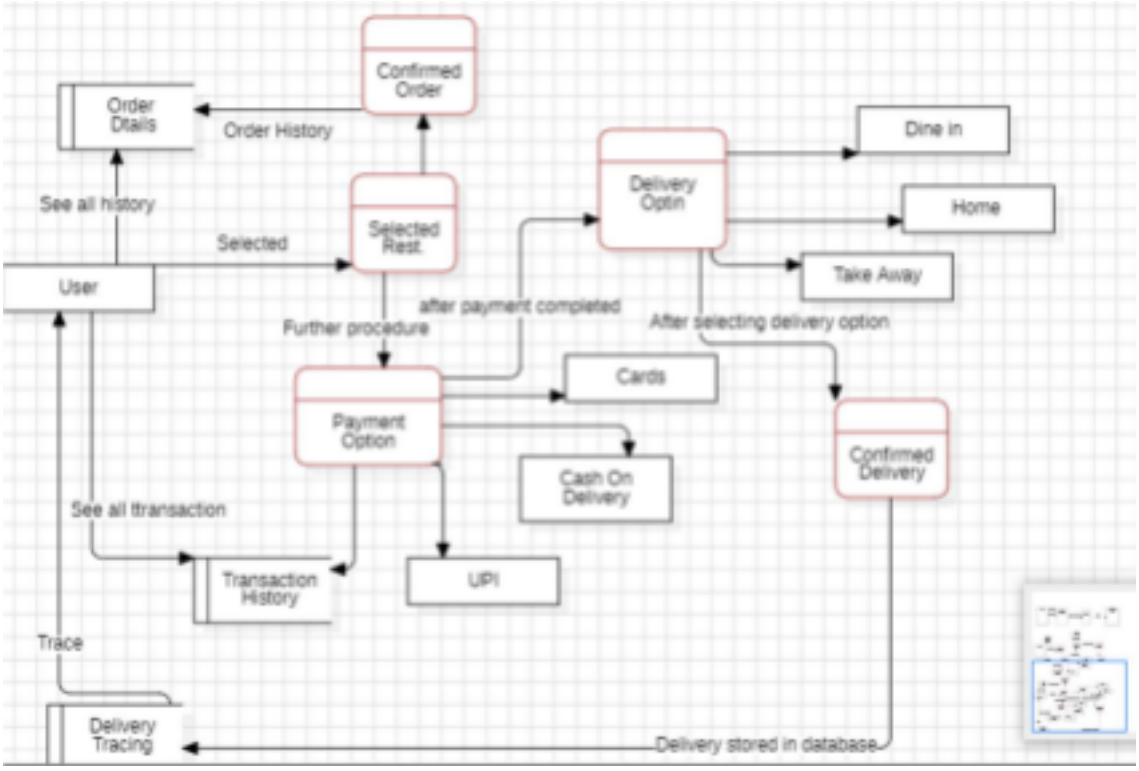
- **User Orders:** The system interacts with an external entity labeled "User," indicating users can explore restaurants, select items, and place orders.

- **Order Confirmation:** Following payment, users receive an order confirmation.

- **Delivery Options:** Users have the choice of selecting a delivery option, potentially including home delivery or cash on delivery.

- **Delivery Process:** After an order is confirmed and a delivery option is chosen, the Delivery Process is activated.

LEVEL 2:



Restaurant Ordering System: The DFD portrays a system emphasizing online restaurant ordering with dine-in and delivery options.

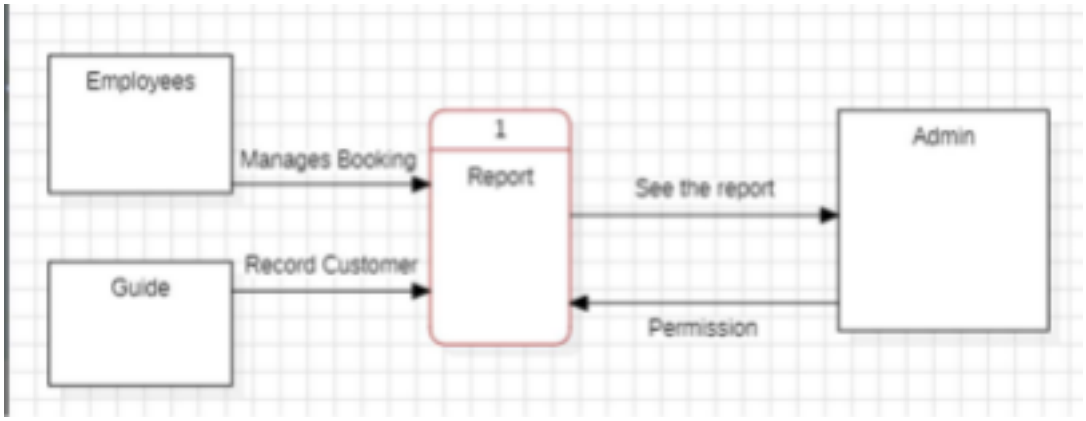
- **User Interaction:** The system interfaces with two external entities:
    1. User: Users can search for restaurants, peruse menus, and place orders.
    2. Admin: An Admin can manage the system, potentially including tasks such as adding restaurants or editing menus.

- **Search and Ordering:** Users can utilize the "Search Restaurant" feature to find dining options. Upon selecting a restaurant, users can choose between dining in or taking away. If take away is preferred, a Delivery Option (e.g., home delivery or cash on delivery) can be chosen.

- **Payment Processing:** After selecting an order and delivery option, users proceed to payment.
- **Order Completion:** Upon successful payment, the system triggers Further Procedure (for dine-in orders) or Delivery Tracing (for take-away orders).

3) USER MANAGEMENT SYSTEM:

LEVEL 0:



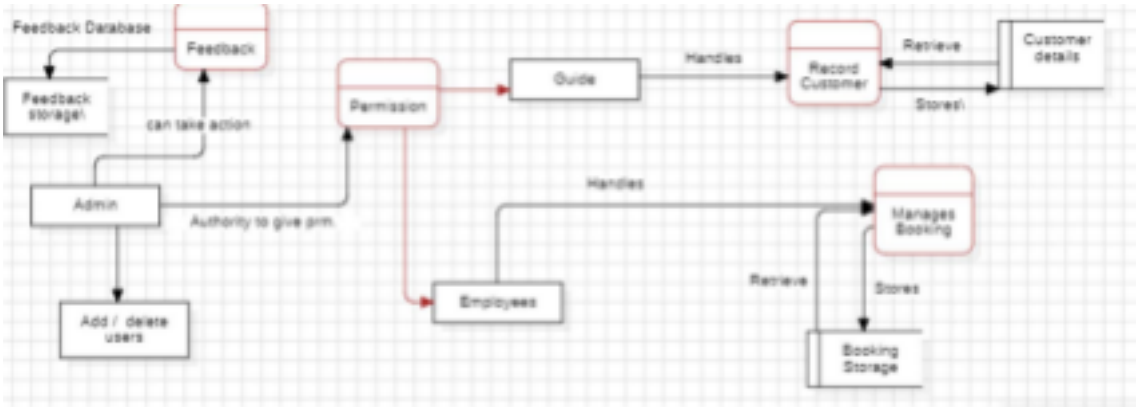
- **Restaurant Management System:** The data flow diagram (DFD) illustrates a system tailored for restaurant management, likely facilitating tasks such as booking and feedback handling.

- **External Interactions:** The system engages with two external entities:
    1. Employees: Employees have access to manage bookings, which may involve tasks like making reservations or updating booking statuses.
    2. Admin: Administrators possess permissions to grant access to users and access reports.

- **Booking Management:** The process "Manages Booking" handles bookings, likely entailing interactions between Employees and the system.

- **Feedback Mechanism:** The system allows users to Provide Feedback, which is subsequently stored.

LEVEL 1:



Employee Information System: The DFD outlines a system designated for managing employee information, possibly within a department or organization.

- **External Entity:** The system interacts with an external entity labeled "Admin," indicating an administrator can oversee employee information within the system.

- **Data Processes:** There are three primary processes:
    1. Add/Delete Users: Allows the Admin to add new employees to the system or remove existing ones.

2. Edit Employee Details: Permits the Admin to modify employee information within the system. 3. Manage Booking: Indicates a link to a separate booking system, potentially enabling the Admin to manage employee bookings.

- **Data Storage:** Employee information is stored in a data store named "Employee Database."

- **Data Flow:** Data flows between the processes and the data store. For example, "Add/Delete Users" sends data to the "Employee Database" when adding new employees.

LEVEL 2:

Restaurant Booking and Feedback System: The DFD illustrates a system devised for managing restaurant bookings and feedback.

- **External Interactions:** The system interfaces with three external entities:
  1. Customers: Customers can explore restaurants, check availability, reserve tables, and offer feedback on their experiences.
  2. Admin: The Admin can oversee the system, encompassing tasks like adding/deleting restaurants and managing user permissions.
  3. Restaurants: Restaurants update availability and potentially manage bookings.

- **Booking and Availability:** Customers can Search Restaurants and View Availability to book a table. Upon selecting a restaurant, customers can Make Reservations.

- **Feedback Mechanism:** Customers can Provide Feedback, which is stored in the system.

- **Restaurant Management:** Restaurants can update their Availability to reflect booking statuses. The degree of restaurant management within the system varies depending on the specific design.

- **Admin Control:** The Admin can Add/Delete Restaurants, potentially Manage Permissions for other users, and generate Reports based on system-stored information.

Result: Sequence diagram has been designed and studied.