3. Data Organization(Collection) and Horizontal Fragmentation Structure:

In this project, data is organized and distributed through multiple MongoDB collections, where each collection represents a specific logical component such as Users, Food Menu, and Orders.

To achieve better scalability and performance, each collection is horizontally fragmented meaning its data is divided into logical parts (fragments) based on a selected fragmentation attribute.
These fragments are distributed across three MongoDB databases (DB1, DB2, DB3) for efficient query processing and load balancing.

a. User Information Collection

Purpose:
Stores details of all system users such as students, teachers, admins, and cafeteria staff.
Provides secure login, authentication, and role-based access.

Fragmentation Attribute: role

Fragment Name	Database	Description	Fragmentation Basis
User_Frag1	DB1	Contains all records of Students	role = "Student"
User_Frag2	DB2	Contains all records of Teachers	role = "Teacher"
User_Frag3	DB3	Contains all records of Admins & Staff	role IN ("Admin", "Staff")

b. Food Menu Collection

Purpose:
Holds all cafeteria food items, categorized by time slot (Morning, Lunch, Evening) with details such as item name, price, and availability.

Fragmentation Attribute: time_slot

Fragment Name	Database	Description	Fragmentation Basis
Menu_Frag1	DB1	Morning menu items	time_slot = "Morning"
Menu_Frag2	DB2	Lunch menu items	time_slot = "Lunch"
Menu_Frag3	DB3	Evening menu items	time_slot = "Evening"

c. Order Information Collection

Purpose:
Stores all order records with user IDs, ordered items, quantities, total cost, and order status (pending, preparing, completed, cancelled).

Fragmentation Attribute: order_time

Fragment Name	Database	Description	Fragmentation Basis
Order_Frag1	DB1	Morning orders	order_time < 11:00 AM
Order_Frag2	DB2	Lunch orders	11:00 AM ≤ order_time ≤ 3:00 PM
Order_Frag3	DB3	Evening orders	order_time > 3:00 PM