2021CSB001	2021CSB004	2021CSB006	2021CSB007
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SOFTWARE ENGINEERING LABORATORY

ASSIGNMENT - 6

DATA MODELLING OF SOFTWARE DEVELOPMENT

GROUP - 1

IIEST SHIBPUR

USE CASE 1 (RESIDENT)

1 ENTITY IDENTIFICATION

ENTITY	DESCRIPTION
RESIDENT	Stores information about residents (ID, Name, Dietary Preferences, etc.)
MEAL	Represents a specific meal offered (ID, Name, Date, Description, Nutritional Info)
MENU	Groups meals offered on a specific date (ID, Date, Breakfast, Lunch, Dinner)
MESS BILL	Tracks a resident's mess charges for a period (ID, Resident ID, Month, Total Amount, Breakdown)
FEEDBACK	Captures resident feedback on meals (ID, Resident ID, Meal ID, Rating, Comment)

USE CASE 1 (RESIDENT)

2

ATTRIBUTE IDENTIFICATION

ENTITY	DESCRIPTION
RESIDENT	ID, Name, Email, Room Number, Dietary Preferences (vegetarian, allergies)
MEAL	ID, Name, Date, Description (ingredients, preparation method), Nutritional Info (calories, protein, carbs)
MENU	ID, Date, Breakfast (Meal ID), Lunch (Meal ID), Dinner (Meal ID)
MESS BILL	ID, Resident ID, Month, Total Amount, Breakdown (individual meal charges)
FEEDBACK	ID, Resident ID, Meal ID, Rating (star rating), Comment (textual feedback)

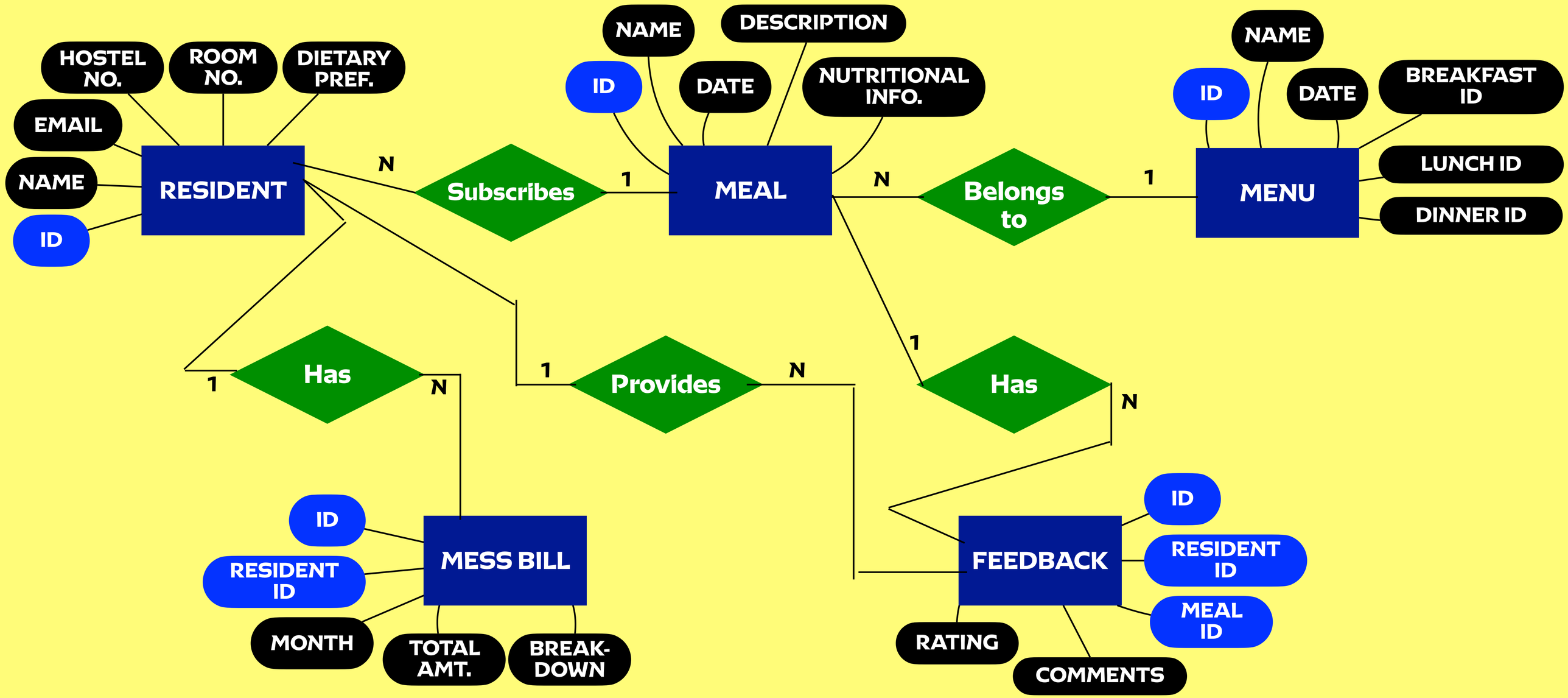
USE CASE 1 (RESIDENT)

3 RELATIONSHIP DEFINITION

ENTITY 1	ENTITY 2	JUSTIFICATION	TYPE
RESIDENT	MEAL	One resident can subscribe to one meal. One meal can be subscribed to by many residents.	N : 1
MEAL	MENU	One meal belongs to one menu. One menu comprises many meals.	N : 1
RESIDENT	MESS BILL	One resident has many mess bills. One mess bill belongs to one resident.	1 : N
RESIDENT	FEEDBACK	One resident provides many feedbacks. One feedback belongs to one resident.	1 : N
MEAL	FEEDBACK	One meal has many feedbacks. One feedback belongs to one meal.	1 : N

USE CASE 1 (RESIDENT)

4 ENTITY RELATIONSHIP DIAGRAM



USE CASE 1 (RESIDENT)

5

DATABASE SCHEMA

TABLE : RESIDENT

COLUMN NAME	DATATYPE	DESCRIPTION	PRIMARY KEY	FOREIGN KEY
Resident_ID	Integer	Unique identifier for a resident	Yes	
Name	Text	Resident's full name		
Email	Text	Resident's email address		
Hostel_No	Text	Resident's hostel number		
Room_No	Text	Resident's room number in the hostel		
Dietary_Pref	Text	Comma-separated list of Dietary Restrictions (if any)		

USE CASE 1 (RESIDENT)

5

DATABASE SCHEMA

TABLE : MEAL

COLUMN NAME	DATATYPE	DESCRIPTION	PRIMARY KEY	FOREIGN KEY
Meal_ID	Integer	Unique identifier for a meal	Yes	
Name	Text	Name of the meal (e.g., breakfast, lunch, dinner)		
Date	Date	Date on which the meal is offered		
Description	Text	Description of the meal (ingredients, method)		
Nutritional _Info	Text	Nutritional information (calories, protein, etc.)		

USE CASE 1 (RESIDENT)

5

DATABASE SCHEMA

TABLE : MENU

COLUMN NAME	DATATYPE	DESCRIPTION	PRIMARY KEY	FOREIGN KEY
Menu_ID	Integer	Unique identifier for a menu	Yes	
Date	Date	Date for which menu applies		
Breakfast_ID	Integer	Foreign key referencing a Meal (breakfast)		Meal (ID)
Lunch_ID	Integer	Foreign key referencing a Meal (lunch)		Meal (ID)
Dinner_ID	Integer	Foreign key referencing a Meal (dinner)		Meal (ID)

USE CASE 1 (RESIDENT)

5

DATABASE SCHEMA

TABLE : MESS BILL

COLUMN NAME	DATATYPE	DESCRIPTION	PRIMARY KEY	FOREIGN KEY
ID	Integer	Unique identifier for a Mess Bill	Yes	
Resident_ID	Integer	Unique identifier for a Resident	Yes	Resident (ID)
Month	Integer	Month of bill		
Total Amount	Integer	Total amount of the bill in that month		
Breakdown	Integer	Breakdown of bill (without taxes)		

USE CASE 1 (RESIDENT)

5

DATABASE SCHEMA

TABLE : FEEDBACK

COLUMN NAME	DATATYPE	DESCRIPTION	PRIMARY KEY	FOREIGN KEY
ID	Integer	Unique identifier for a Mess Bill	Yes	
Resident_ID	Integer	Unique identifier for a Resident	Yes	Resident (ID)
Meal_ID	Integer	Unique identifier for a Meal	Yes	Meal (ID)
Rating	Integer	Rating out of 5		
Comments	Text	Comments provided in feedback		

USE CASE 2 (WARDEN)

1 ENTITY IDENTIFICATION

ENTITY	DESCRIPTION
MESS BILL	Stores information about resident mess bills for a period (ID, Resident ID, Month, Total Amount, Breakdown).
FEEDBACK	Captures resident feedback on meals (ID, Resident ID, Meal ID, Rating, Comment).

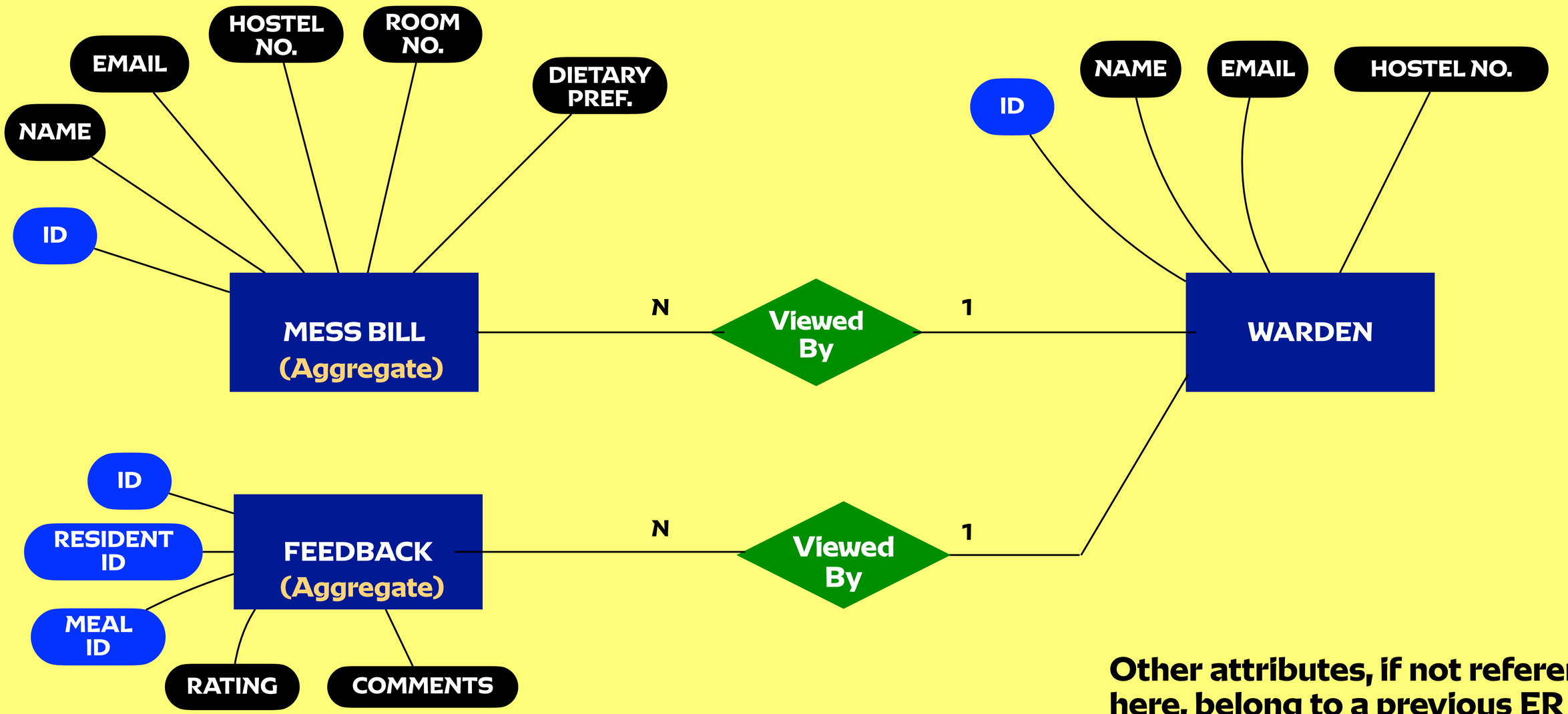
2 RELATIONSHIP DEFINITION

ENTITY	DESCRIPTION
MESS BILL	Does not have direct relationships with other entities for wardens. Aggregate data from Mess Bills is used for budget monitoring.
FEEDBACK	Wardens can view reports summarizing feedback, but they cannot access individual entries.

USE CASE 2 (WARDEN)

3

ENTITY RELATIONSHIP DIAGRAM



Other attributes, if not referenced to here, belong to a previous ER diagram.

USE CASE 2 (WARDEN)

4

DATABASE SCHEMA

TABLE : MESS BILL

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for a Mess Bill
Resident_ID	Integer	Unique identifier for a Resident
Month	Integer	Month of bill
Total Amount	Integer	Total amount of the bill in that month
Breakdown	Integer	Breakdown of bill (without taxes)

USE CASE 2 (WARDEN)

4

DATABASE SCHEMA

TABLE : FEEDBACK

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for a Mess Bill
Resident_ID	Integer	Unique identifier for a Resident
Meal_ID	Integer	Unique identifier for a Meal
Rating	Integer	Rating out of 5
Comments	Text	Comments provided in feedback

USE CASE 2 (WARDEN)

5

PLEASE NOTE

Wardens cannot access individual resident mess bills or detailed feedback entries due to privacy concerns. They view reports with aggregated data (e.g., average meal ratings, common comments, total expenses by category)

Security measures should be implemented to restrict access to sensitive data (e.g., individual resident information) based on user roles

USE CASE 3 (MESS MANAGER)

1

ENTITY IDENTIFICATION

ENTITY	DESCRIPTION
INVENTORY ITEM	Represents items used for cooking (ID, Name, Unit, Stock Level, Category).
MEAL	Represents a specific meal offered (ID, Name, Date, Description, Nutritional Info, Cost).
SUBSCRIPTION	Tracks resident meal subscriptions (ID, Resident ID, Meal ID, Date, Status).
ATTENDANCE	Records resident attendance for each meal (ID, Resident ID, Meal ID, Date, Status).

USE CASE 3 (MESS MANAGER)

2

ATTRIBUTE IDENTIFICATION

ENTITY	DESCRIPTION
INVENTORY ITEM	ID, Name, Unit, Category, Stock_Level
MEAL	ID, Name, Date, Nutritional_Info, Description, Cost
SUBSCRIPTION	ID, Resident_ID, Meal_ID, Date, Status
ATTENDANCE	ID, Resident_ID, Meal_ID, Date, Status

USE CASE 3 (MESS MANAGER)

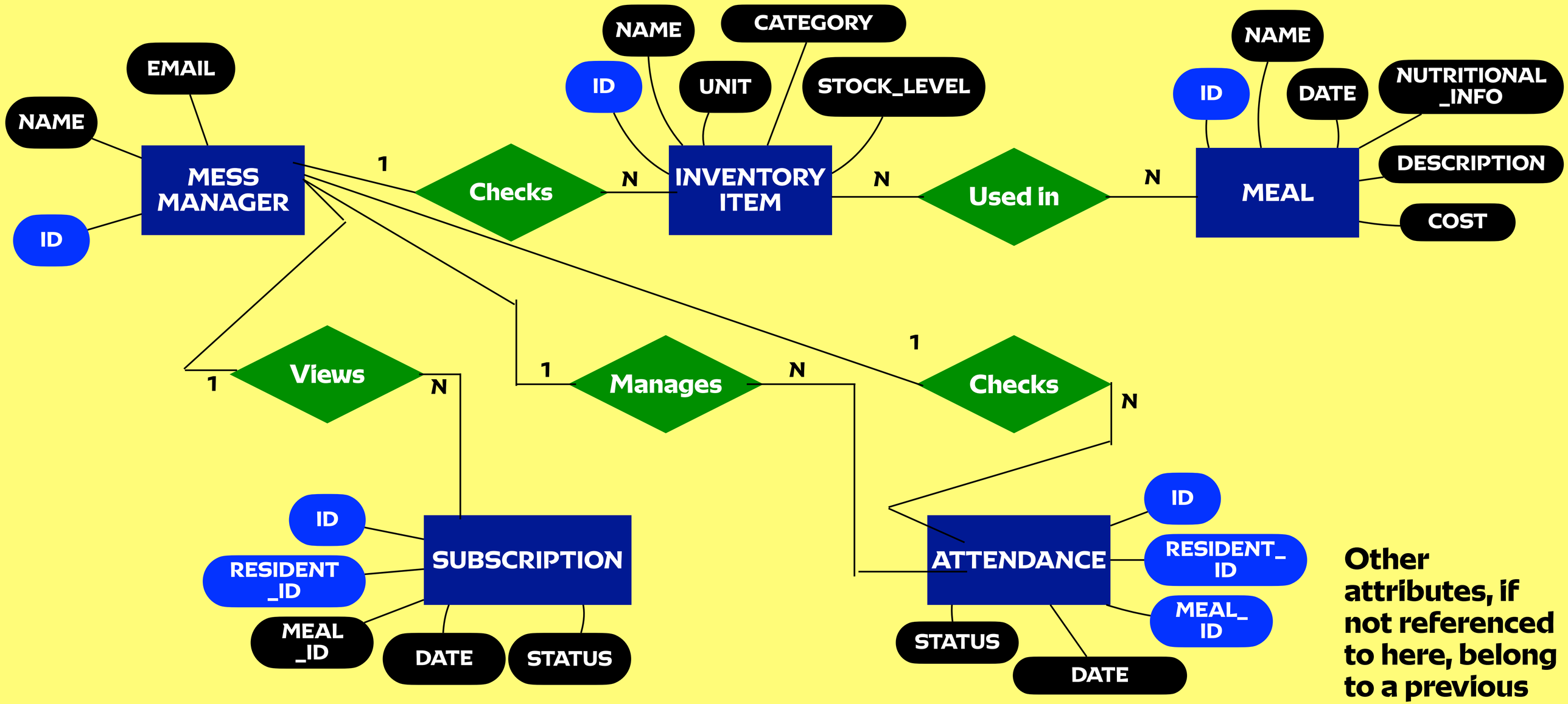
3

RELATIONSHIP DEFINITION

ENTITY	DESCRIPTION
INVENTORY ITEM	Used in many Meals (many-to-many relationship)
MEAL	Has a cost associated with it.
SUBSCRIPTION	Represents resident choices for meals.
ATTENDANCE	Records which residents consumed a particular meal.

USE CASE 3 (MESS MANAGER)

4 ENTITY RELATIONSHIP DIAGRAM



Other attributes, if not referenced to here, belong to a previous ER diagram.

USE CASE 3 (MESS MANAGER)

5

DATABASE SCHEMA

TABLE : INVENTORY_ITEM

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for an inventory item
Name	Text	Name of the inventory item (e.g., rice, lentils)
Unit	Text	Unit of measurement (e.g., kg, liters)
Stock_Level	Integer	Current stock level of the inventory item
Category	Text	Category of the item (e.g., staples, vegetables)

USE CASE 3 (MESS MANAGER)

5

DATABASE SCHEMA

TABLE : MEAL

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for a meal
Name	Text	Name of the meal (e.g., breakfast, lunch, dinner)
Date	Date	Date on which the meal is offered
Description	Text	Description of the meal (ingredients, method)
Nutritional_Info	Text	Nutritional information (calories, protein, etc.)
Cost	Decimal	Cost associated with preparing the meal

USE CASE 3 (MESS MANAGER)

5

DATABASE SCHEMA

TABLE : SUBSCRIPTION

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for a resident's meal subscription
Resident_ID	Integer	Foreign key referencing Resident table (ID)
Meal_ID	Integer	Foreign key referencing Meal table (ID)
Date	Date	Date on which the resident subscribed to the meal
Status	Text	Status of the subscription (active, canceled)

USE CASE 3 (MESS MANAGER)

5

DATABASE SCHEMA

TABLE : ATTENDANCE

COLUMN NAME	DATATYPE	DESCRIPTION
ID	Integer	Unique identifier for an attendance record
Resident_ID	Integer	Foreign key referencing Resident table (ID)
Meal_ID	Integer	Foreign key referencing Meal table (ID)
Date	Date	Date on which the meal was offered
Status	Text	Status of attendance (present, absent)