Project Phase - III

Apartment Management System

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ER-model to Relational model

Entities

APARTMENT_COMPLEX

1. Change : We made Block_name as the primary key of APARMENT_COMPLEX Entity.
2. We mapped this entity to three relations one having only atomic values and atomic values of composite attributes. The second and third relations, BLOCK_COLOR and BLOCK_MANAGER_PHNO are made to map each of the two multivalued attributes Block_color and phone_number.

COMPLAINT, COMPLAINT_HISTORY

1. Change : we added a new attribute complaint_number .
2. Since it has subclasses , we mapped it as an attribute in the relation itself and ignored the extra attribute that was present in one of the four subclasses of these entity types.

EXPENDITURE

1. Change: we added a new attribute "Transaction_id" and made it the primary key.
2. We mapped each subclass to a new relation with the primary key, transaction_id.
3. Change: we removed both attributes, Bonus and Advances, since they will mostly contain NULL value.

VISITOR

1. Change : we added a new attribute Visitor_number and made it the primary key.
2. We mapped the atomic values and atomic values of the composite attributes to attributes of relation in relational model.

OWNER, OWNERSHIP_HISTORY, TENANT, TENANT_HISTORY, EMPLOYEE, EMPLOYEE_HISTORY, COMMITTEE

1. We divided each into two relations, first one with atomic values and atomic values of composite attributes and the other with multivalued attribute phone number and the primary of the first one.

COMMITTEE_TENURE

1. We mapped the atomic values and atomic values of the composite attributes to attributes of relation in relational model.
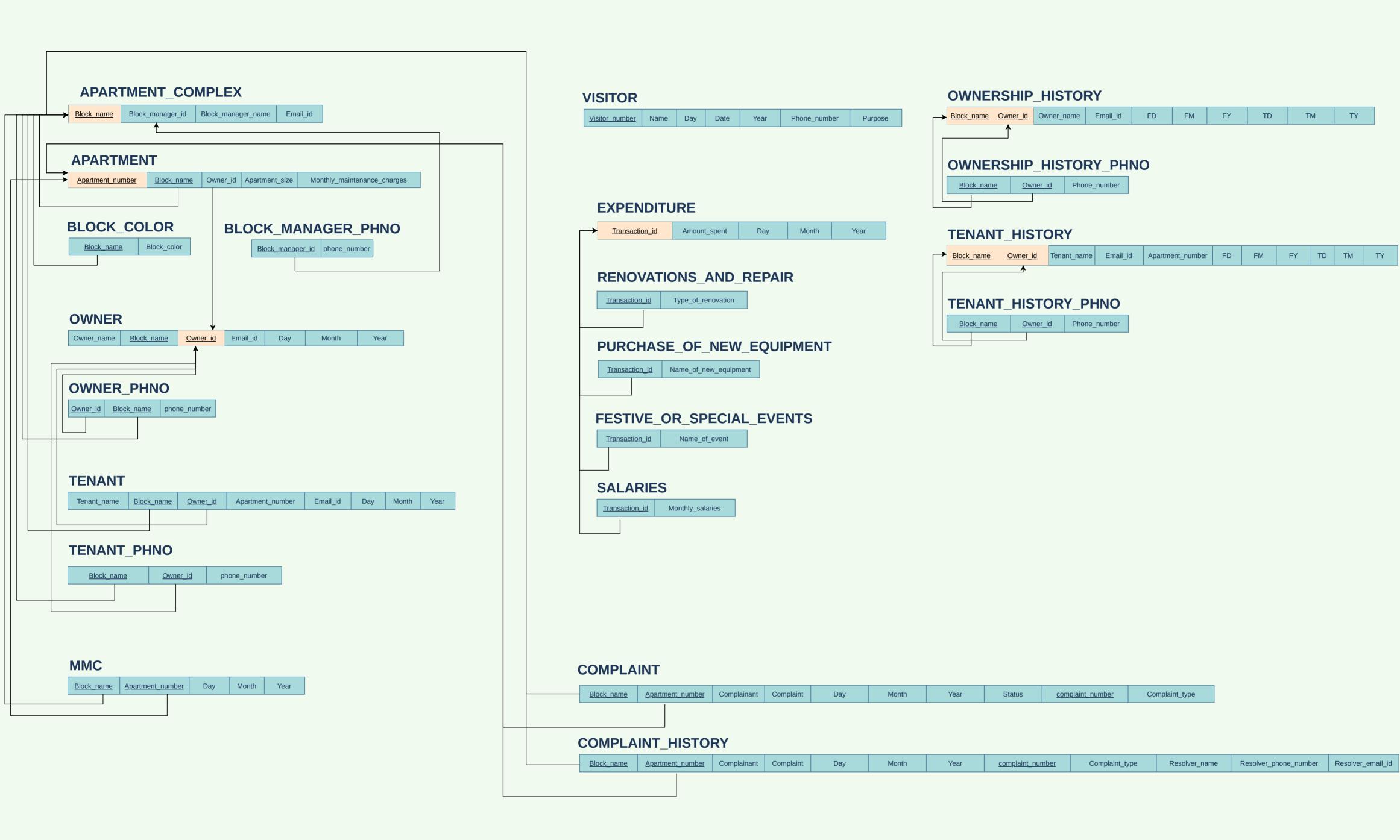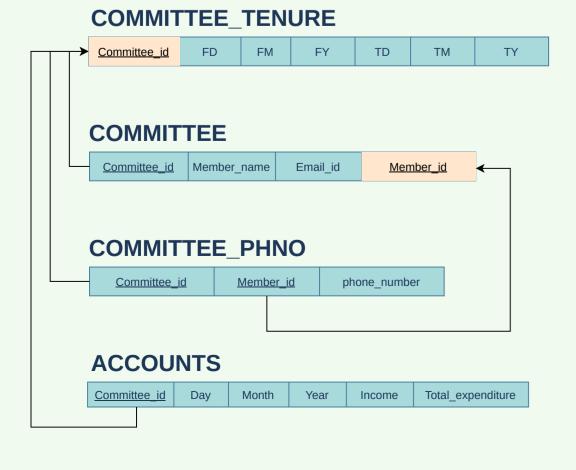
ACCOUNTS, MMC

1. We mapped atomic attributes to attributes of the corresponding relations in the relational model.
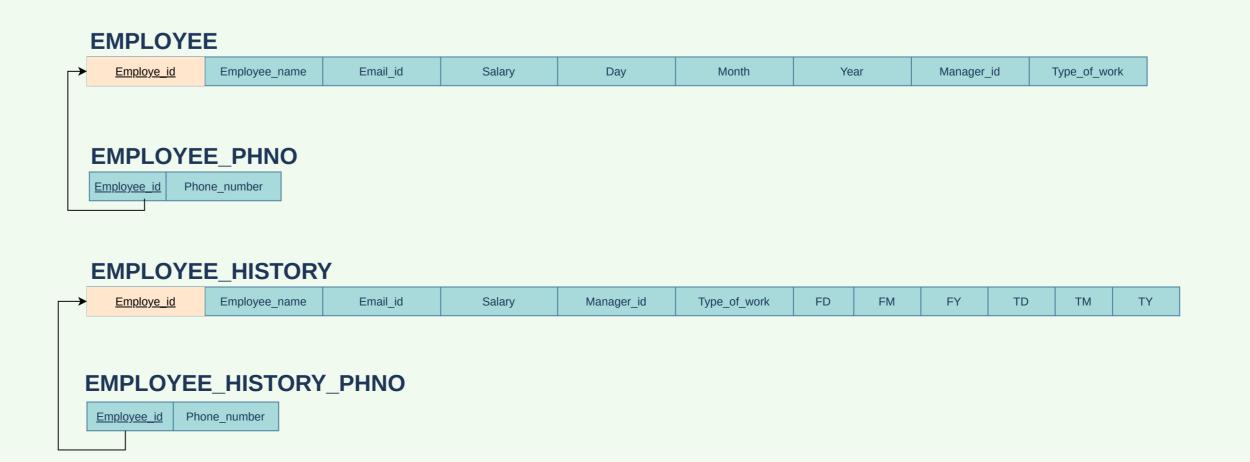
Project Phase - III

Apartment Management System
Relational Model

APARTMENT_COMPLEX

Block_name	Block_manager_id	Block_manager_name	Email_id

APARTMENT

Apartment_number	Block_name	Owner_id	Apartment_size	Monthly_maintenance_charges

BLOCK_COLOR

Block_name	Block_color

BLOCK_MANAGER_PHNO

Block_manager_id	phone_number

OWNER

Owner_name	Block_name	Owner_id	Email_id	Day	Month	Year

OWNER_PHNO

Owner_id	Block_name	phone_number

TENANT

Tenant_name	Block_name	Owner_id	Apartment_number	Email_id	Day	Month	Year

TENANT_PHNO

Block_name	Owner_id	phone_number

MMC

Block_name	Apartment_number	Day	Month	Year

VISITOR

Visitor_number	Name	Day	Date	Year	Phone_number	Purpose

EXPENDITURE

Transaction_id	Amount_spent	Day	Month	Year

RENOVATIONS_AND_REPAIR

Transaction_id	Type_of_renovation

PURCHASE_OF_NEW_EQUIPMENT

Transaction_id	Name_of_new_equipment

FESTIVE_OR_SPECIAL_EVENTS

Transaction_id	Name_of_event

SALARIES

Transaction_id	Monthly_salaries

OWNERSHIP_HISTORY

Block_name	Owner_id	Owner_name	Email_id	FD	FM	FY	TD	TM	TY

OWNERSHIP_HISTORY_PHNO

Block_name	Owner_id	Phone_number

TENANT_HISTORY

Block_name	Owner_id	Tenant_name	Email_id	Apartment_number	FD	FM	FY	TD	TM	TY

TENANT_HISTORY_PHNO

Block_name	Owner_id	Phone_number

COMPLAINT

Block_name	Apartment_number	Complainant	Complaint	Day	Month	Year	Status	complaint_number	Complaint_type

COMPLAINT_HISTORY

Block_name	Apartment_number	Complainant	Complaint	Day	Month	Year	complaint_number	Complaint_type	Resolver_name	Resolver_phone_number	Resolver_email_id

COMMITTEE_TENURE

Committee_id	FD	FM	FY	TD	TM	TY

COMMITTEE

Committee_id	Member_name	Email_id	Member_id

COMMITTEE_PHNO

Committee_id	Member_id	phone_number

ACCOUNTS

Committee_id	Day	Month	Year	Income	Total_expenditure

EMPLOYEE

Employe_id	Employee_name	Email_id	Salary	Day	Month	Year	Manager_id	Type_of_work

EMPLOYEE_PHNO

Employee_id	Phone_number

EMPLOYEE_HISTORY

Employe_id	Employee_name	Email_id	Salary	Manager_id	Type_of_work	FD	FM	FY	TD	TM	TY

EMPLOYEE_HISTORY_PHNO

Employee_id	Phone_number

Relational model in First Normal Form

In this step we added all the functional dependencies and since we don't have any multivalued or composite attributes in the relational model, it is in first normal form.

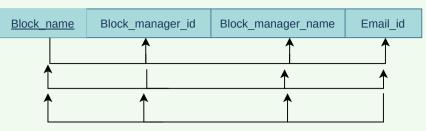# Relational model in Second Normal

The relations having only single attributes as primary keys are in 2NF. There are relations having more than one attribute for the primary key but there are no non-prime attributes which are partially dependent on the primary key. Hence we do not have to normalize it to 2NF since it is already in 2NF.

1. The entity, APARTMENT_COMPLEX has three functional dependencies on a single atomic primary key.Hence it is in 2NF. There are no partial dependencies in it.
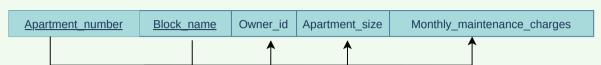
Relational model in Third Normal

We didn't have to normalize the relational model further into 3NF since it is already in the third normal form i.e., there are no functional dependencies that have transitive dependencies on primary key(s).
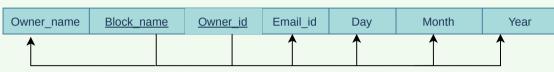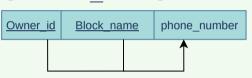
Project Phase - III

Apartment Management System
Functional Dependencies
and
First Normal Form

APARTMENT_COMPLEX

Block_name	Block_manager_id	Block_manager_name	Email_id

APARTMENT

Apartment_number	Block_name	Owner_id	Apartment_size	Monthly_maintenance_charges

BLOCK_COLOR

Block_name	Block_color

BLOCK_MANAGER_PHNO

Block_manager_id	phone_number

OWNER

Owner_name	Block_name	Owner_id	Email_id	Day	Month	Year

OWNER_PHNO

Owner_id	Block_name	phone_number

TENANT

Tenant_name	Block_name	Owner_id	Apartment_number	Email_id	Day	Month	Year

TENANT_PHNO

Block_name	Owner_id	phone_number

MMC

Block_name	Apartment_number	Day	Month	Year

COMMITTEE_TENURE

Committee_id	FD	FM	FY	TD	TM	TY

COMMITTEE

Committee_id	Member_id	Member_name	Email_id

COMMITTEE_PHNO

Committee_id	Member_id	phone_number

ACCOUNTS

Committee_id	Day	Month	Year	Income	Total_expenditure

VISITOR

visitor_number	Phone_number	Name	Day	Date	Year	Purpose

EXPENDITURE

Transaction_id	Amount_spent	Day	Month	Year

RENOVATIONS_AND_REPAIR

Transaction_id	Type_of_renovation

PURCHASE_OF_NEW_EQUIPMENT

Transaction_id	Name_of_new_equipment

FESTIVE_OR_SPECIAL_EVENTS

Transaction_id	Name_of_event

SALARIES

Transaction_id	Monthly_salaries

OWNERSHIP_HISTORY

Block_name	Owner_id	Owner_name	Email_id	FD	FM	FY	TD	TM	TY

OWNERSHIP_HISTORY_PHNO

Block_name	Owner_id	Phone_number

TENANT_HISTORY

Block_name	Owner_id	Tenant_name	Email_id	Apartment_number	FD	FM	FY	TD	TM	TY

TENANT_HISTORY_PHNO

Block_name	Owner_id	Phone_number

COMPLAINT

Block_name	Apartment_number	Complainant	Complaint	Day	Month	Year	Status	complaint_number	Complaint_type

COMPLAINT_HISTORY

Block_name	Apartment_number	Complainant	Complaint	Day	Month	Year	complaint_number	Complaint_type	Resolver_name	Resolver_phone_number	Resolver_email_id

EMPLOYEE

Employe_id	Employee_name	Email_id	Salary	Day	Month	Year	Manager_id	Type_of_work

EMPLOYEE_PHNO

Employee_id	Phone_number

EMPLOYEE_HISTORY

Employe_id	Employee_name	Email_id	Salary	Manager_id	Type_of_work	FD	FM	FY	TD	TM	TY

EMPLOYEE_HISTORY_PHNO

Employee_id	Phone_number