

Mini World: Smart Home Installation Service

INTRODUCTION

This project focuses on designing and implementing a database system for a Smart Home Installation Service. The business provides services to customers who request smart home device installations, handled by technicians. The system also manages devices, payments, and maintenance requests.

The purpose of the database is to ensure that all aspects of the business operations are organized and accessible, enabling efficient tracking of installations, devices, customers, technicians, and payments.

SYSTEM REQUIREMENTS

The requirements were gathered by analyzing real-world smart home service workflows.

The database system should be able to:

- Store customer details.
- Record installation requests and assign technicians.
- Keep track of the devices included in each installation
- Handle customer payments for installations.
- Manage maintenance requests submitted by customers.

ENTITIES AND ATTRIBUTES

Customer

- customer_id (PK)
- name
- email
- phone
- address

Installation

- installation_id (PK)
- date
- customer_id
- technician_id
- status

Device

- device_id (PK)
- device_name
- type
- brand

Technician

- technician_id (PK)
- name
- availability
- specialization

Payment

- payment_id (PK)
- installation
- amount
- method
- date

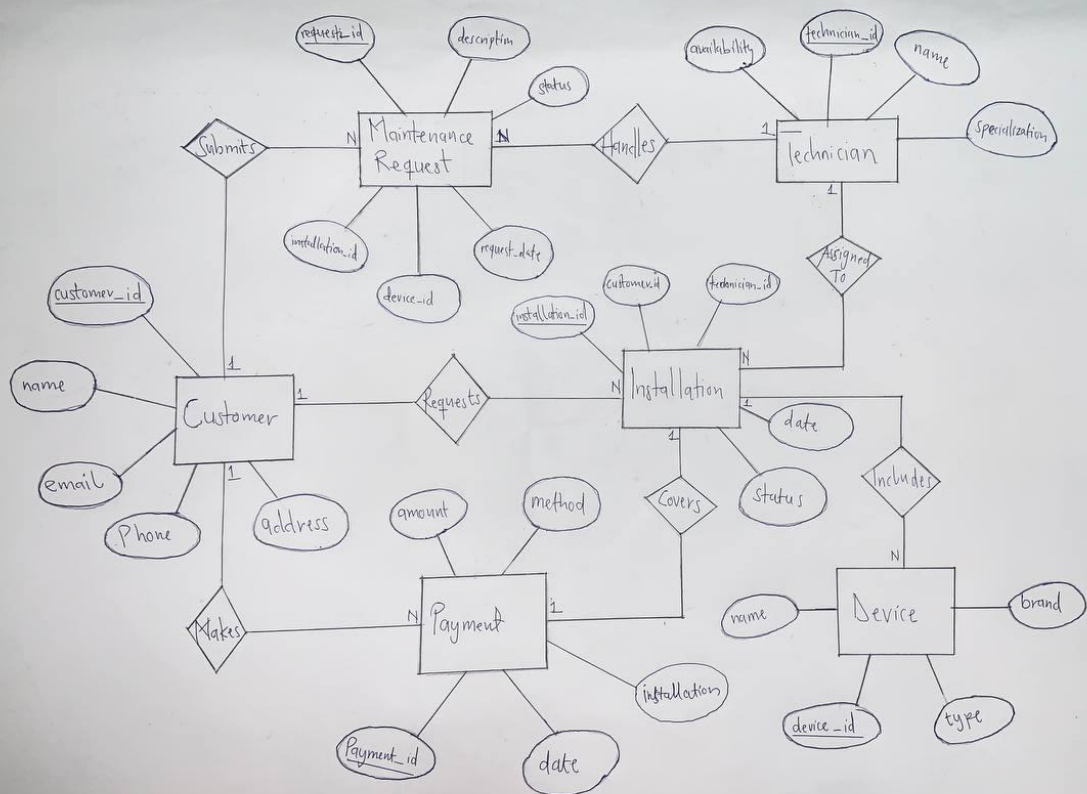
MaintenanceRequest

- request_id (PK)
- request_date
- installation_id
- device_id
- description
- status

RELATIONSHIPS

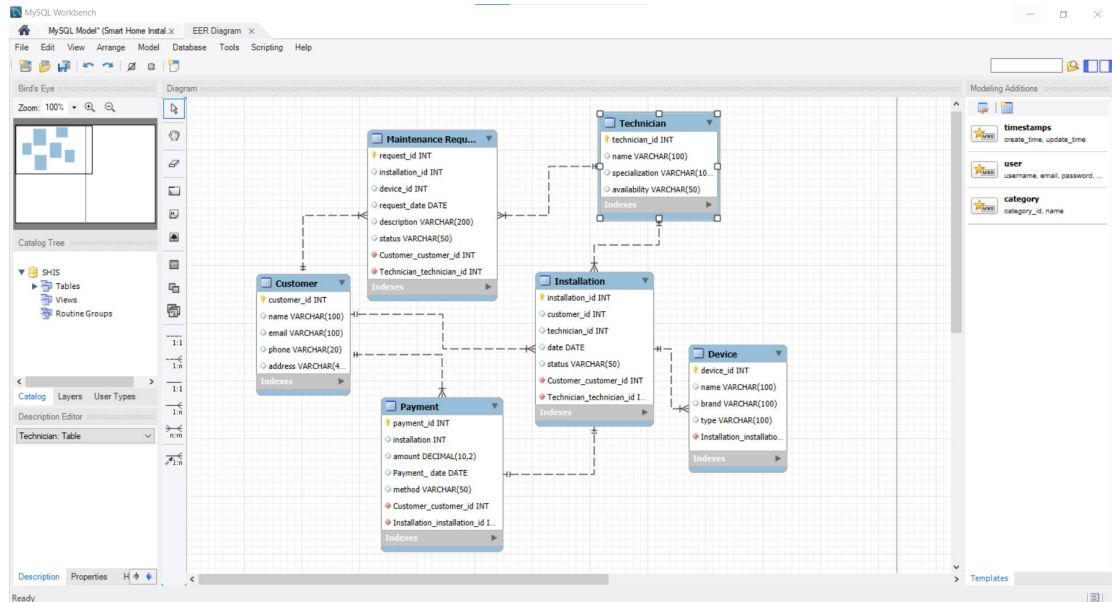
- Customer — Requests → Installation (1:N)
- Technician — Assigned_To → Installation (1:N)
- Installation — Includes → Device (1:N)
- Customer — Makes → Payment (1:N)
- Payment — Covers → Installation (1:1)
- Customer — Submits → MaintenanceRequest (1:N)
- Maintenance Request — Handles → Technician (1:N)

Chen ER Diagram



SMART HOME INSTALLATION SERVICE

UML ER Diagram (MySQL Workbench)



DATABASE IMPLEMENTATION

The database was implemented in MySQL Workbench. • All tables were created based on the UML diagram. • Foreign key relationships were defined. • Sample data was inserted for testing.

SQL SCRIPTS

- CREATE TABLE statements for all entities.
- INSERT INTO statements with sample data.
- The exported .sql file is included in the submission.

PROJECT CHALLENGES

- Deciding which attributes were most relevant for the mini-world.
- Translating Chen ER notation to UML in MySQL Workbench.
- Ensuring foreign keys matched relationships correctly.

CONCLUSION

The project successfully designed and implemented a relational database for a Smart Home Installation Service. The system provides a structured way to manage customers, installations, devices, payments, and maintenance requests. With this system, business operations can become more efficient, and customer service can improve through better record-keeping.