Hotel Management System

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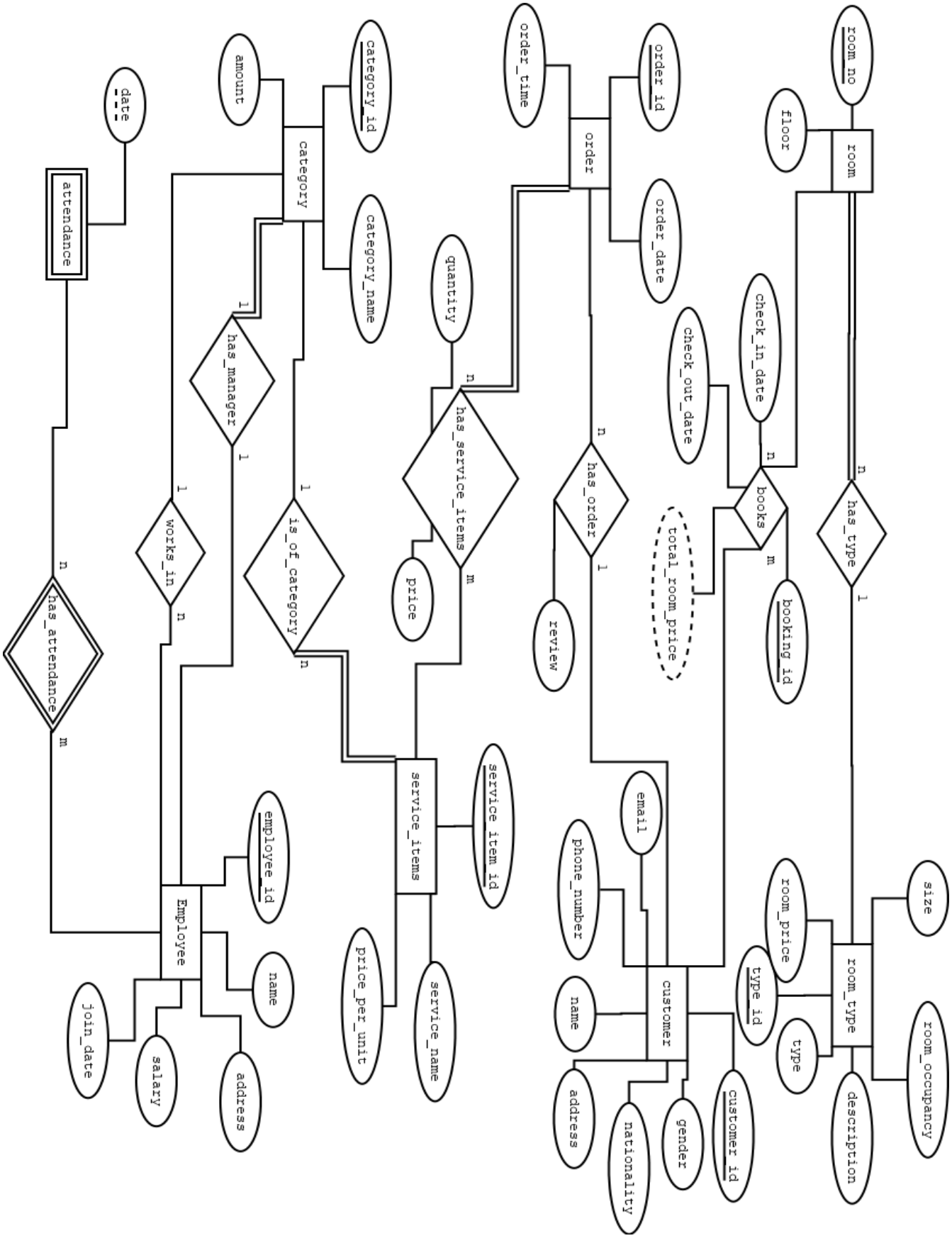
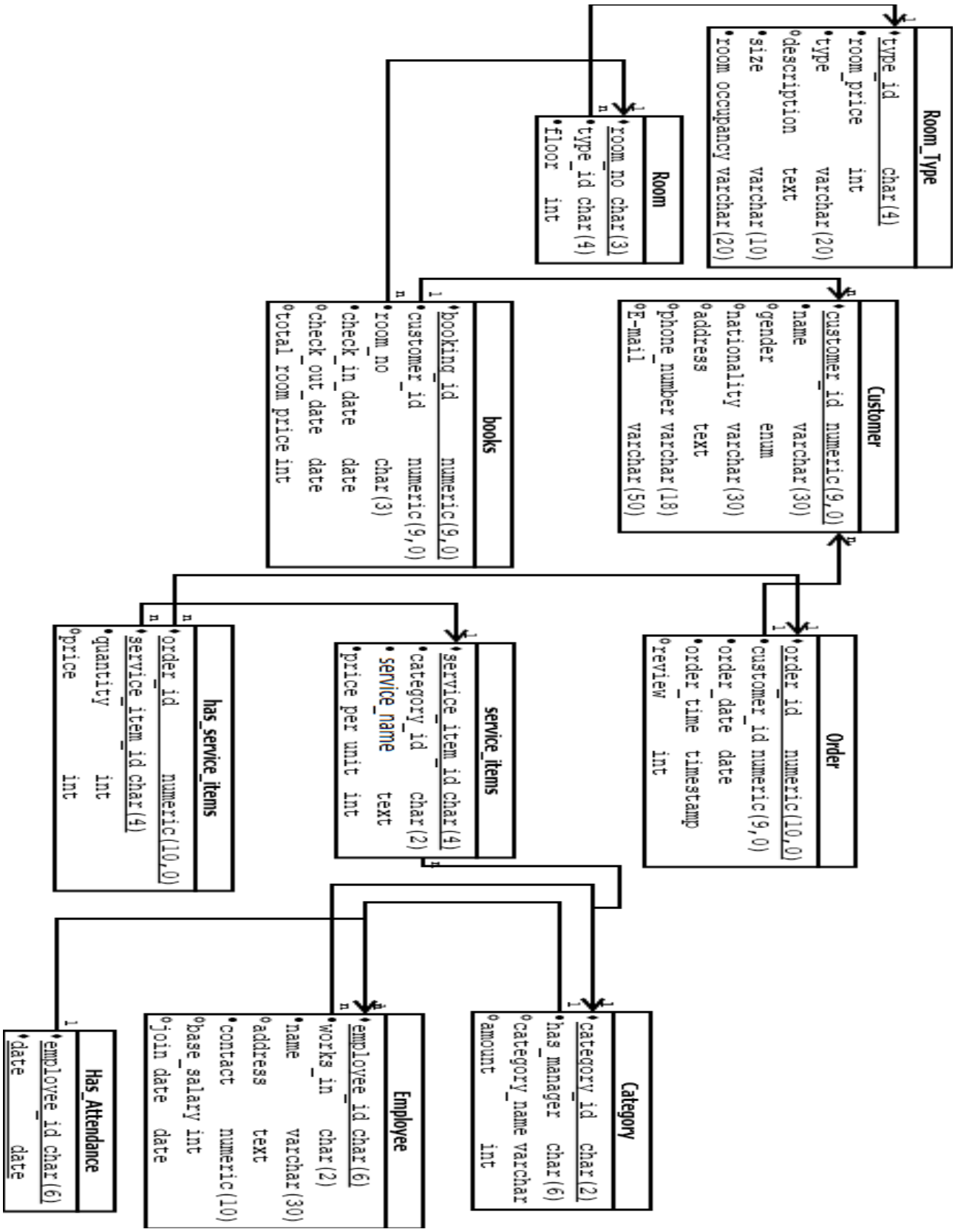
Entity Relationship Diagram



Relational Schema



Normalisation Proofs

1. Room_Type

Key :- type_id

type_id —> room_price
type_id —> type
type_id —> description
type_id —> size
type_id —> room_occupancy

Thus, relation is in BCNF.

2. Room

Key :- room_no

room_no —> type_id
room_no —> floor

Thus, relation is in BCNF.

3. Customer

Key :- customer_id

customer_id —> name
customer_id —> gender
customer_id —> nationality
customer_id —> address
customer_id —> phone_number
customer_id —> Email

Thus, relation is in BCNF.

4. Books

Key :- booking_id

booking_id —> customer_id
booking_id —> room_no
booking_id —> check_in_date
booking_id —> check_out_date
booking_id —> total_room_price

Thus, relation is in BCNF.

5. Order

Key :- order_id

order_id —> customer_id
order_id —> order_date
order_id —> order_time
order_id —> review

Thus, relation is in BCNF.

Service_items(service_item_id, category_id, description, price_per_unit, has_manager, category_name, amount)
Minimal FD Set :-
service_item_id —> category_id
service_item_id —> description
service_item_id —> price_per_unit
category_id —> has_manager
category_id —> category_name
category_id —> amount
service_item_id —> has_manager
service_item_id —> category_name
service_item_id —> amount

This relation is not in BCNF, hence on decomposing the relation, we get two relations which are in BCNF :-
a. Service_Items(service_item_id, category_id, description, price_per_unit)
b. Category(category_id, has_manager, category_name, amount)

6. Service_items

Key :- service_item_id

service_item_id —> category_id
service_item_id —> description
service_item_id —> price_per_unit

Thus, relation is in BCNF.

7. Category

Key :- category_id

category_id —> has_manager
category_id —> category_name
category_id —> amount

Thus, relation is in BCNF.

8. has_service_items

Key :- {order_id, service_item_id}

{order_id, service_item_id} —> quantity
{order_id, service_item_id} —> price

Thus, relation is in BCNF.

9. Employee

Key :- employee_id

employee_id —> works_in
employee_id —> name
employee_id —> address
employee_id —> contact
employee_id —> base_salary
employee_id —> join_date

Thus, relation is in BCNF.

10. Has_Attendance

Key :- {employee_id, date}

Has trivial MVD.

Thus, relation is in BCNF.