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Sunsational Vacation Database Design

1. E-R Diagram Showing the logical structure of the data
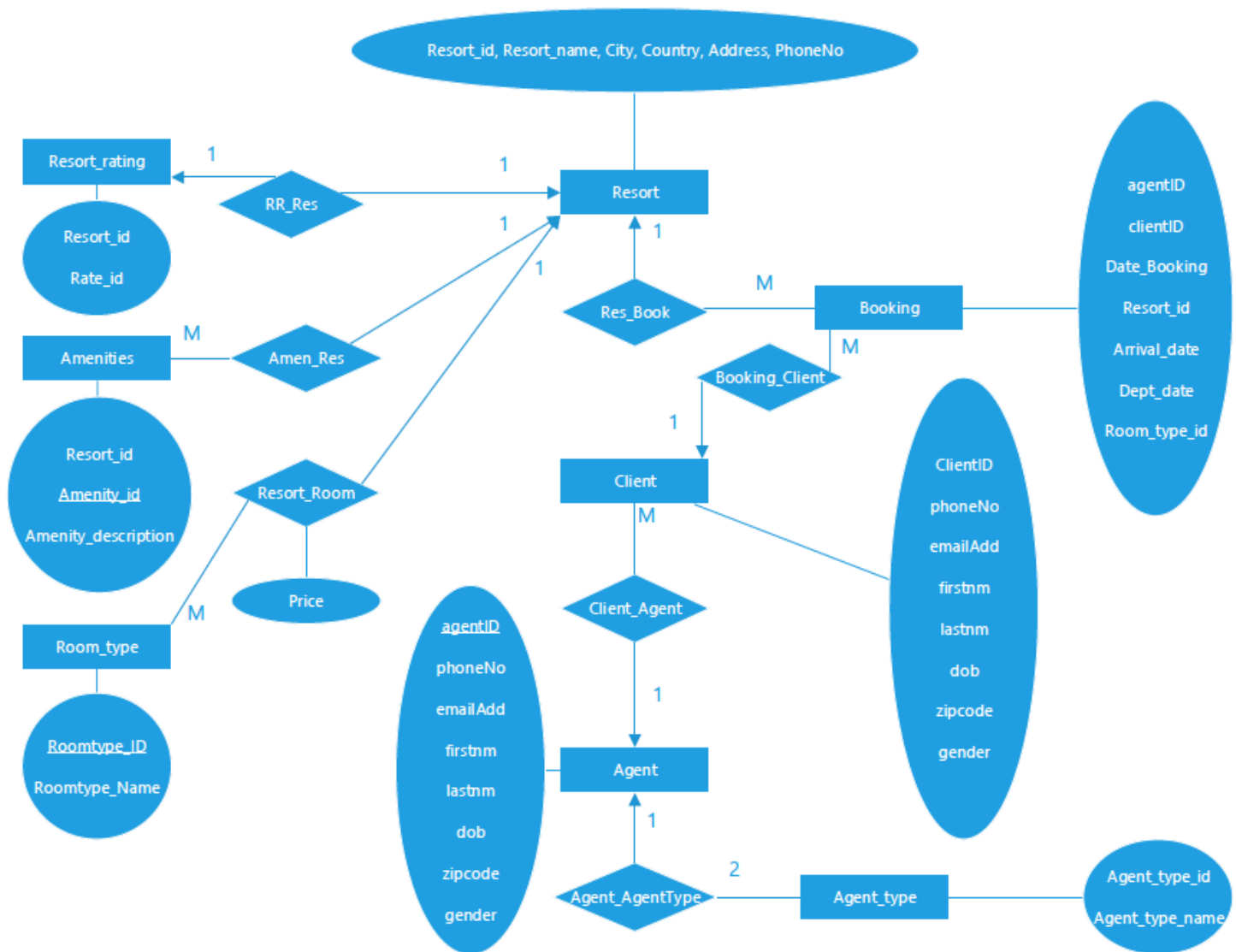
2. **Loss-Less 3rd Normal Form Design:**

- ❖ Client(<u>clientID</u>, phoneNo,emailAdd,firstnm,lastnm,dob,zipcode,gender)
  Candidate key: emailAdd
  <u>Constraints:</u>
  1. Gender is either 'Male' or 'female'
  2. Email has to be valid.
  3. Zip Code has to be valid.
- ❖ Agent(<u>agentID</u>, phoneNo,emailAdd,firstnm,lastnm,dob, zipcode, gender, Agent_type_name)
  Candidate key: emailAdd
  <u>Constraints:</u>
  1. Gender is either 'Male' or 'female'
  2. Email has to be valid.
  3. Zip Code has to be valid.
- ❖ Resort(<u>Resort_id</u>,Resort_name,City,Country, Address, phoneNo)
  Candidate keys: Resort_name, City, Country, Address,phoneNo
- ❖ Amenities(<u>Resort_id,Amenity_id</u>, Amenity_description)
  Candidate key: Amenity_description
  Foreign key: Resort_id references Resort_id in Resort
- ❖ Resort_Rating(Resort_id,Rate_id)
  Foreign key: Resort_id references Resort_id in Resort
  Constraint: Rate_id has to be between 1 and 3
- ❖ Booking(Book_id,agentID,clientID,Date_Booking, Resort_ID, Arrival_date, Dept_date)
  Primary Key: Book_id
  Foreign keys: agentID references agentID in Agent
  clientID references clientID in Client
  Resort_id references Resort_id in Resort
  Room_type_id references Room_type_id in Room_type
- ❖ Room(<u>Room_type_id</u>, Room_type_name)
  Candidate key: Room_type_name
- ❖ Room_type(Resort_id,Room_type_id,Price)
  Foreign key: Resort_id references Resort_id in Resort
  Room_type_id references Room_type_id in Room_type
  Candidate Key : (Resort_id, Room_type_id)
  Constraint: Price has to be a positive value

3. **Proof of Lossless decomposition:**

1. Booking_Agent_Client(agentID,clientID, Resort_id ,Date_Booking, emailAdd)
First decompose it in three sections:
Booking=(agentID,clientID, Resort_id ,Date_Booking)
Client=(clientID , emailAdd)
 Agent=(agentID , emailAdd)
So, Booking ∩ Agent=agentID
And agentID-> emailAdd.
satisfying the lossless decomposition rule.
 Booking ∩ Client=clientID
And clientID-> emailAdd.
Satisfying the lossless decomposition rule.

2. Room_type(Resort_id,Room_type_id,Room_type_name,Price)
First decompose it in two sections:
Resort(Resort_id, Room_type_id, Price)
Room_type(Room_type_id, Room_type_name)
So, Resort ∩ Room_type=Room_type_id
And Room_type_id->Room_type_name
satisfying the lossless decomposition rule.

3. Res_Book(agentID,clientID, Resort_id , Resort_name, Date_Booking)
First decompose it in two sections:
Booking(agentID, clientID, Resort_id ,Date_Booking)
Resort(Resort_id,Resort_name)
So, Booking ∩ Resort=Resort_ID
And Resort_ID-> Resort_name.
satisfying the lossless decomposition rule.

4. Amen_Res=(Resort_id, Amenity_id, Resort_name, Amenity_description)
First decompose it in two sections:
Resort(Resort_id, Amenity_id, Resort_name)
Amenities(Resort_id,Amenity_id, Amenity_description)
So, Resort ∩ Amenities= (Resort_id,Amenity_id)
And (Resort_id,Amenity_id)-> Amenity_description,
satisfying the lossless decomposition rule.

5. RR_Res=(Resort_id, Rating_id, Resort_name)
First decompose it in two sections:
Resort(Resort_id,Resort_name)
Resort_Rating(Resort_id , Rating_id)
So, Resort ∩ Rating= Resort_id
And Resort_id-> Rating_id
satisfying the lossless decomposition rule.