DATA AND APPLICATIONS
PROJECT PHASE - 3

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CHANGES MADE:

1. Phone numbers and email ids have been changed from multi-valued attributes to simple attributes in all the entities.

ER TO RELATIONAL DATABASE:

1. We made a relation for each entity and added foreign keys wherever deemed necessary.

2. For the ‘dependent’ entity, the primary key is made up of the foreign key (employee ID) and the partial key (name).

3. For the ‘payment’ primary key is made up of the defining attribute which is the ‘booking ID’ in this case.

4. Subclasses of ‘services’ i.e recreational service, cab service and restaurant service are given the foreign key as ‘serviceID’ which is also its primary key, and the link was shown respectively. To handle specialization we have given the attribute ‘servicePrice’ to the service entity and removed the price columns from the entity of the subclasses.

5. For all the composite key attributes, we have listed only the attributes composing it. For example, ‘address’ was a composite key attribute. Address → HouseNo., StreetAddress, City, State, Country, Pincode; So, we have listed each component of address as a separate attribute.

FIRST NORMAL FORM:

1. All the attributes in our relational database take atomic values, there are no multivalued attributes and hence the database is already in the first normal form.

SECOND NORMAL FORM:

In our model there are two entities that have primary keys containing more than one attribute.

1. In the customer entity all the non-prime attributes are fully functionally dependent on every primary key attribute (AdhaarID and customerID). Hence it is already in the second normal form.

2. In the Dependent entity, there exists no partial dependency in the weak relations as the two attributes alone cannot determine the other.

Thus, our model is in second normal form.

THIRD NORMAL FORM:

1. For all the entities that have the DOB and age attributes where age is derived from the DOB, we have made a separate relation AGECONVERSION between DOB and age with DOB as primary key.

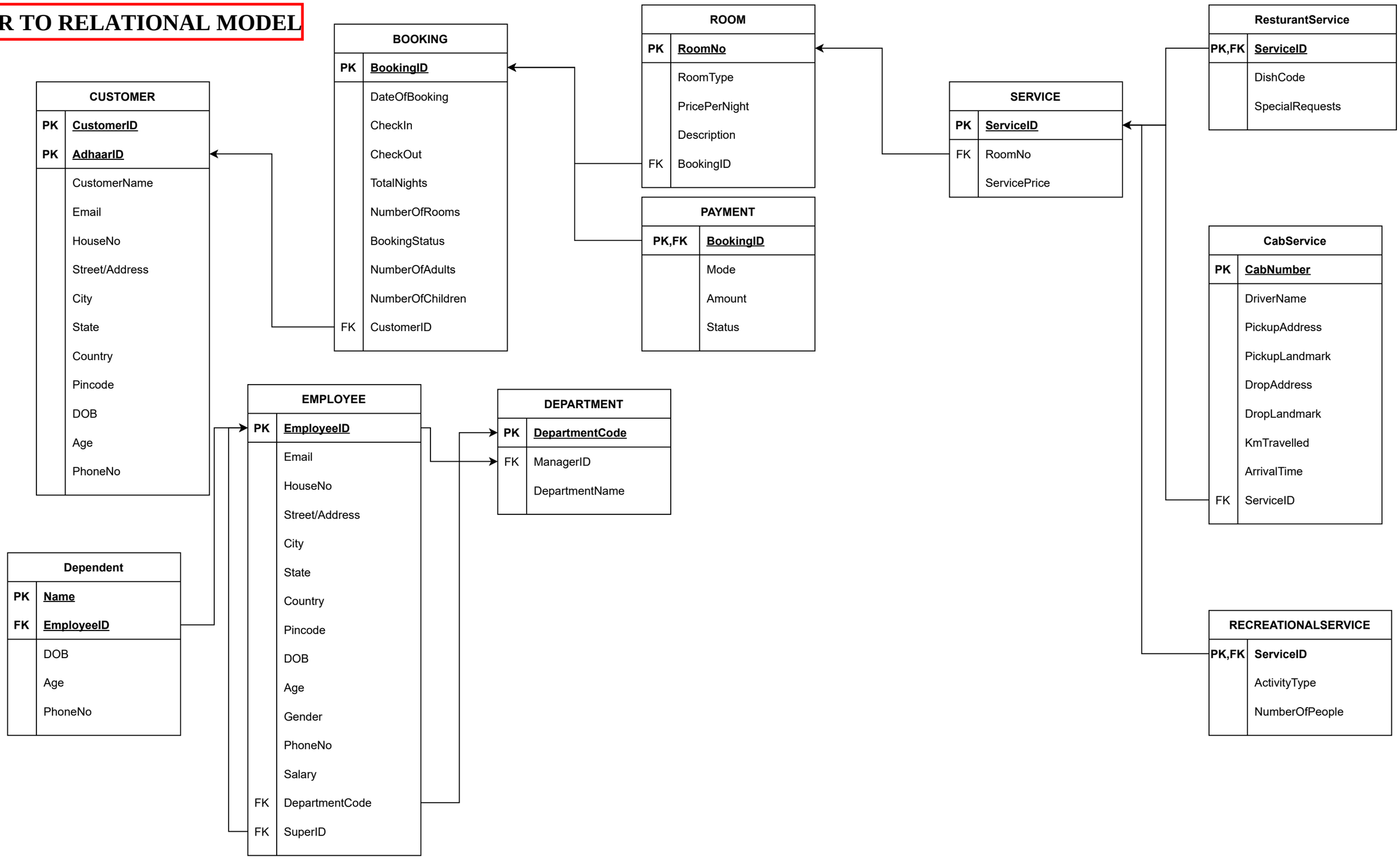
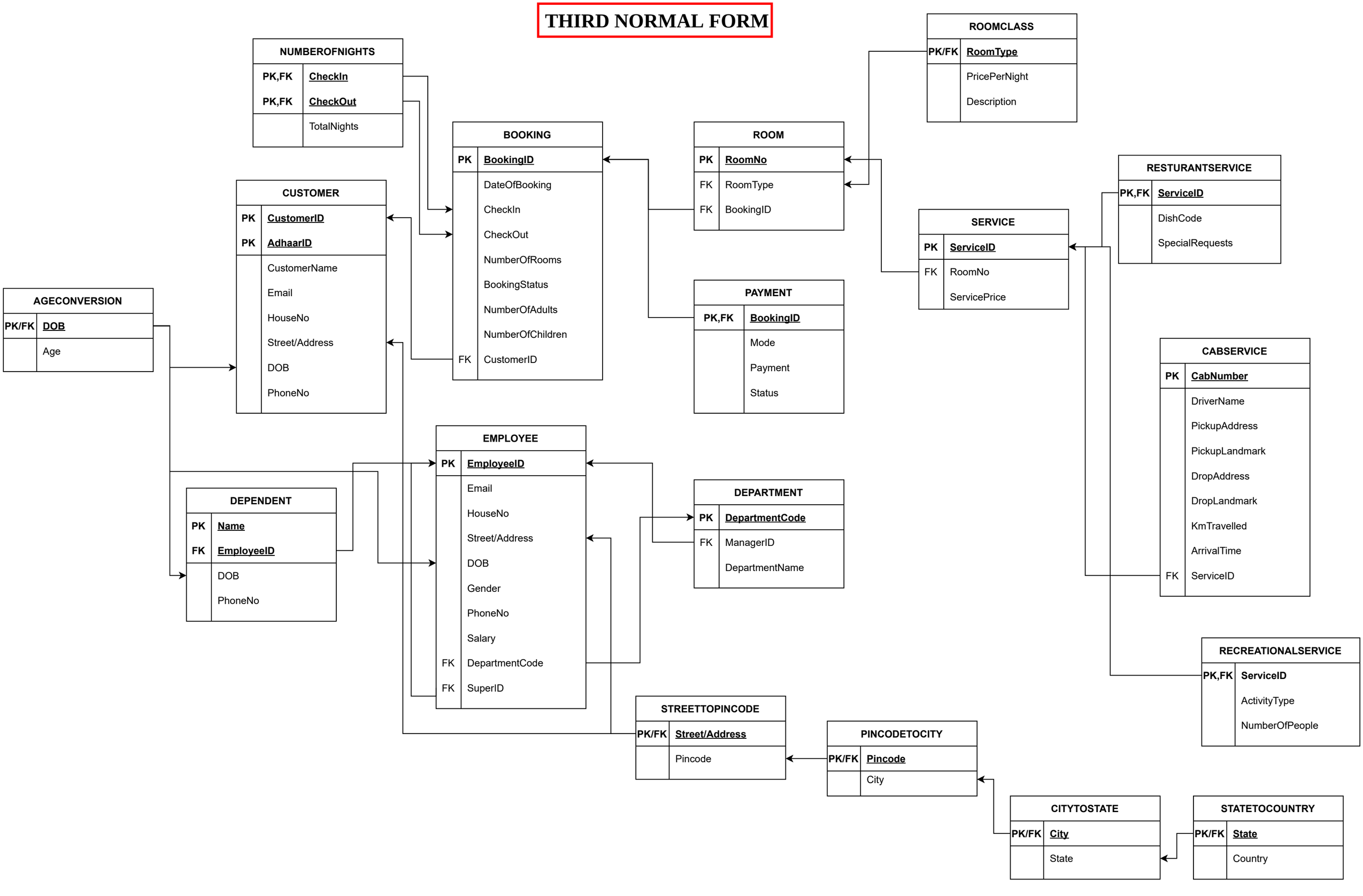
2. In the ROOM entity, the PricePerNight and Description attributes were dependent on the RoomType attribute. So we made a new relation ROOMCLASS with Roomtype as the primary key and foreign key.

3. In the BOOKING entity TotalNights is dependent on both checkin and checkout dates, so a new relation NUMBEROFNIGHTS is made between CheckIn, CheckOut and TotalNights with CheckIn, CheckOut as primary keys and foreign keys.

4. For all the address,
    a. pincode depends on **streetAddress**
    b. city depends on **pincode**
    c. State depends on **city**
    d. country depends on **state**

    For solving this we created relations STREETTOPINCODE, PINCODETOCITY, CITYTOSTATE, STATETOCOUNTRY with the respective attributes, which have the bold attributes as the primary keys and foreign keys.

ER TO RELATIONAL MODEL



THIRD NORMAL FORM