Overview

This is the report for Team 1 for Project Delivery 2

Teammates:

> **Course: CS 631, Section: 1J1 - Data Management System Design**

member	email address
Susmita Biswas	sb78@njit.edu
Kranthi Gunuru	kg62@njit.edu
Shawn Cicoria	sc2443@njit.edu

Requirements

As provided in the assignment:

> Phase 2 Deliverable must contain the goal of this phase of the project, and a logical design of the database (resulting from the mapping of an EER schema to a Relational schema). Use the ER model provided as the solution of Phase 1 Deliverable to draw the Relational model in this phase. You must further describe the problems encountered in Phase 2 and justify the solutions.

Goals

For Deliverable 2 of the term project, the team started with the solution enhanced Entity Relationship (EER) diagram provided by the professor.

Steps and Approach

Leveraging the EER along with the ER-to-Relational mapping recipe provided:

ER-to-Relational mapping algorithm

- step 1: mapping of regular entity types
- step 2: napping of weak entity types
- step 3: mapping of binary 1:1 relation types
- step 4: mapping of binary 1:N relationship types

- step 5: mapping of binary M:N relationship types
- step 6: mapping of multi-valued attributes
- step 7: mapping of N-ary relationship types mapping EER model constructs to relations
- step 8: options for mapping specialization or generalization
- step 9: mapping of union types (categories)

Implementation

Step 1 - the following all become initial entities in the logical design.

```
Customer
Review
Breview
Sreview
Rreview
Hotel
CreditCard
Reservation
```

Step 2 - the following are linked and contain keys based upon the regular entity type plus its own identifier

```
Breakfast
Service
Room
Room_res
Offerroom
```

Step 5 - Breakfast to Room Reservation M:N

- We chose to create `"res_order"`` for connecting the two relations and using both of their keys
- Also chose to use `"invoiceNumber"`` for the key and relation from` Reservation `to` Room_Res `and` Reserves `--- potentially we could have used` HotelID + Rnumber + InDate` -- we avoided the composite key with a date.

Step 7 - Mapping n-ary relationship -

- We have created an entity for the ternary relation "Reserves" between- Credit Card, Customer, and Reservation.

Step 8

- For `Offerroom` we used 8A -- which is to create a single subclass of `Room`
- For `Review` we used 8B -- which is to create 3 generalizations of review, dropping review from Step 1-

based upon the type - this was most fitting given each had their own references to distinct Weak entities - `Breakfast, Service, and Room` respectively - of which each are their own entities in the logical design from above.

Challenges and difficulties

- continued to use draw.io tool for the logical diagram: **https://github.com/jgraph/drawio**

Logical Diagram

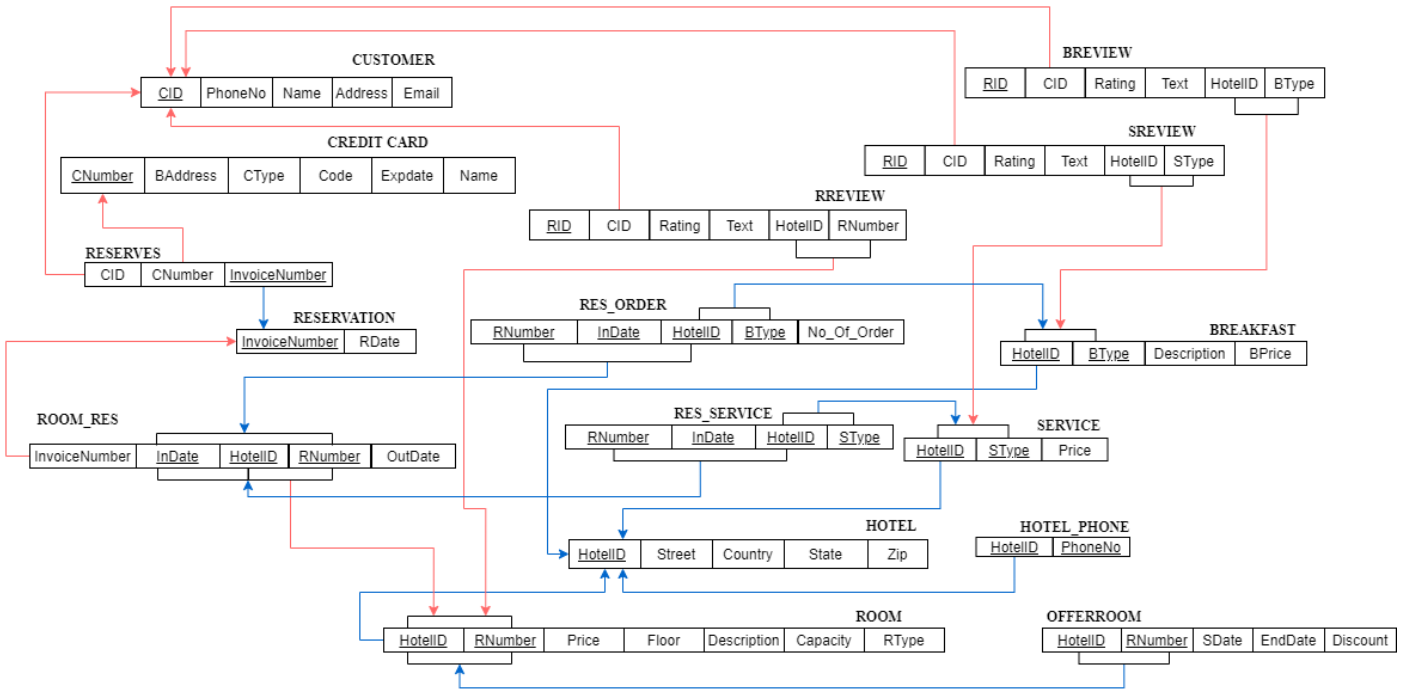

Table Listing

CUSTOMER

CID	PhoneNo	Name	Address	Email

CREDIT CARD

CNumber	BAddress	CType	Code	Expdate	Name

RESERVES

CID	CNumber	InvoiceNumber

BREVIEW

RID	CID	Rating	Text	HotelID	BType

SREVIEW

RID	CID	Rating	Text	HotelID	SType

RREVIEW

RID	CID	Rating	Text	HotelID	RNumber

RESERVATION

InvoiceNumber	RDate

RES_ORDER

RNumber	InDate	HotelID	BType	No_Of_Order

BREAKFAST

HotelID	BType	Description	BPrice

ROOM_RES

InvoiceNumber	InDate	HotelID	RNumber	OutDate

RES_SERVICE

RNumber	InDate	HotelID	SType

SERVICE

HotelID	SType	Price

HOTEL

HotelID	Street	Country	State	Zip

ROOM

HotelID	RNumber	Price	Floor	Description	Capacity	RType

HOTEL_PHONE

HotelID	PhoneNo

OFFERROOM

HotelID	RNumber	SDate	EndDate	Discount