

CS 631 – 002 – Online Hotel Reservation System Project

Deliverable 2

GROUP 3
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1. Outline the goals for this phase and briefly mention any revisions made to the previous phase.

- **Goals**

In the phase, we need to design a relational database schema based on our conceptual schema design. We focus on the logical database design step of database design, which is also known as data model mapping. In a word, we create a relational model from the enhanced ER (EER) schema which is presented in our first phase.

- **Revisions**

- A. Deleting the HotelChain Entity from the EER schema.
- B. Deleting the subclass Regular_Room of the week entity Room.
- C. Changing the relation of the Review from the Reservation to Breakfast, Service and Room_Res.
- D. Changing the (Min, Max) relation of Hotel : Service from (3,N) to (1,N).

2. EER to Relational mapping:

- **Illustrate how you translated from the EER diagram to your Relational schema. It should follow the EER to Relational algorithm.**

Step 1: For each regular (non-weak) entity type E in the EER schema, create a relation R that includes all the simple (single-valued) attributes of E. Include only the simple components of composite attributes.

Step 2: For each weak entity type W in the ER schema with owner entity type E, create a relation R and include all simple (single-valued) attributes (or simple components of composite attributes) of W as attributes of R. In addition, include as foreign key attributes of R the primary key attribute(s) of the owner entity type(s).

Step 3: For each binary 1:1 relationship type R in the ER schema, identify the relations S and T that correspond to the entity types participating in R. Choose one of the relations – say S – and include as foreign key in S the primary key of T. Include all the simple (single-valued) attributes (or simple components of composite attributes) of the 1:1 relationship type as attributes of S.

Step 4: For each regular binary 1:N relationship type R, identify the relation S that represents the participating entity type at the N-side of the relationship type. Include as foreign key in S the primary key of the relation T that represents the other entity type participating in R. Include any simple (single-valued) attributes (or simple components of composite attributes) of the 1:N relationship type as attributes of S.

Step 5: For each binary M:N relationship type R, create a new relation S to represent R. Include as foreign key attributes in S the primary keys of the relations that

represent the participating entity types. Also include as attribute of S any simple (single-valued) attribute (or simple component of composite attribute) of the M:N relationship type.

Step6: For each multivalued attribute A create a new relation R. Relation R will include an attribute corresponding to A (or its simple component attributes if A is composite), plus the primary key attribute K -- as a foreign key in R-- of the relation corresponding to the entity type or relationship type that has A as an attribute.

Step7: For each regular n-ary relationship type R, where $n > 2$, create a new relation S to represent R. Include as foreign key attributes in S the primary keys of the relations that represent the participating entity types. Also include any simple (single-valued) attributes (or simple component attributes of a composite attribute) of the n-ary relationship type as attributes of S.

Step8: Do the superclass/ subclass part. For the OFFERROOM we choose option A. For the REVIEW part, we choose option B. Re-do step 4 for the REVIEW part.

- **Primary keys and foreign keys should be correctly identified on the relational database schema.**
- **Show (in words) other keys.**
- **Show constraints (in words) over and above referential integrity constraints for each table.**
 - Change the attribute Name of CUSTOMER to CName
 - Change the attribute Name of CREDIT CARD to Name_ON_CARD
 - Change the attribute Description of BREAKFAST to BDescription
 - Change the attribute Description of ROOM to HDescription
 - Create a table named INCLUDES_BRE which is the relation between ROOM_RES and BREAKFAST
 - Create a table named CONTAINS_SER which is the relation between ROOM_RES and SERVICE
 - Create a table named HOTEL_PHONE-NO which is contain the information of multiple phone numbers of each hotel
 - As the EER schema shows, we need to create a new table which is show the 3-ary relation of CUSTOMER, CREDIT CARD and RESERVATION, but in the schema only RESERVATION shows N, that means the primary key of the new table is only InvoiceNumber, so we add the attributes CID and Cnumber to the RESERVATION table.
 - Break REVIEW table into three tables which are BREVIEW, RREVIEW and SREVIEW.

3. Identify any difficulties you may have had with this phase of the project.

The slides from teacher of this chapter is very helpful for this phase. This phase is easier than the first phase, but using visio to draw this relation model is not that easy. The lines of the relations of the tables are easily to be intertwined, then makes the drawing so messy. It is so hard to organize the lines.

Table list

HOTEL

<u>HotelID</u>	street	county	state	zip
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RESERVATION

<u>InvoiceNumber</u>	RDate	Cnumber	CID
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CREDIT CARD

<u>CNumber</u>	Baddress	Ctype	Code	Expdate	Name_On_Card
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CUSTOMER

<u>CID</u>	Phone-No	CName	Address	Email
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BREVIEW

<u>RID</u>	Text	Rating	CID	HotelID	Btype
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SREVIEW

<u>RID</u>	Text	Rating	CID	HotelID	Stype
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RREVIEW

<u>RID</u>	Text	Rating	CID	HotelID	Rnumber
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BREAKFAST

<u>HotelID</u>	<u>Btype</u>	BDescription	BPrice
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SERVICE

<u>HotelID</u>	<u>Stype</u>	SPrice
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ROOM

<u>HotelID</u>	<u>Rnumber</u>	Floor	Price	Capacity	RDescription	Rtype
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ROOM_RES

<u>HotelID</u>	<u>Rnumber</u>	<u>InDate</u>	OutDate	HotelID	InvoiceNumber
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INCLUDES_BRE

<u>Rnumber</u>	<u>InDate</u>	<u>HotelID</u>	<u>Btype</u>	NoofOrders
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CONTAINS_SER

<u>Rnumber</u>	<u>InDate</u>	<u>HotelID</u>	<u>Stype</u>
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HOTEL_PHONE-NO

<u>HotelID</u>	<u>HPhoneNo</u>
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OFFERROOM

<u>HotelID</u>	<u>Rnumber</u>	SDate	EDate	Discount
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