

**CALIFORNIA STATE UNIVERSITY, SAN BERNARDINO
SCHOOL OF COMPUTER SCIENCE & ENGINEERING**

**CSE572-F2013 : PART 2A PROJECT SPECIFICATIONS – RELATIONAL MODEL:
Due: October 21 (Monday, by 6:00 PM)**

Part 2 of the project aims to implement the Logical Design phase of the database design cycle and consists of two phases: 2A - Logical Design Using the Relational Model and 2B - Normalization of the Relational Model.

Data modeling is an iterative process. Knowledge gained in one step or phase may alter decisions made in a previous step or phase.

This document explains what needs to be done for Phase 2A – Logical Design: Relational Model.

WHAT TO DO

You will need to use the corrected Conceptual Model from Part 1 of the Project.

1. Using your revised Conceptual Model (ERD/EERD), choose
 - a. one strong entity that has a composite attribute
 - b. one strong entity that has a multi-valued attribute
 - c. one strong entity with a derived attribute
 - d. one weak entity
 - e. one specialization/generalization/aggregation (if any)
 - f. one 1-M relationship
 - g. one 1-1 relationship
 - h. one M-N relationship
 - i. one ternary relationship or n-ary relationship (if any)

For items 1a – 1e

Use one page per item and on each page

- o Put a title header for example: 1a. Strong Entity with a Composite Attribute
- o include the ER/EER construct from the Conceptual Model that pertains to the item you have chosen, followed by the equivalent relational diagram and explain how each construct in the ERD/EERD is converted or translated from the conceptual model into the relational model.
- o If you do not have any item listed in 1a to 1e in your Conceptual Model, indicate in the page Not Applicable.

For items 1f-1h,

Use one page per item and on each page

- o Put a title header for example: 1f. 1-M Relationship – Name of Relationship
- o include the ER/EER construct from the Conceptual Model that pertains to the item you have chosen and followed by the equivalent relational diagram and explain how to convert the relationship
- o **list the entities that participate in the relationship**
- o **list the attributes of the relationship, if any**
- o **express in English what the cardinality means using the business rules that pertain to the entities that participate in the relationship (i.e. semantics)**

EXAMPLE: Item 1f. 1-M Relationship: WORKS-FOR

An employee works for only one department and the department has at least four employees.

- **identify which entity in the relationship has a total or partial participation in the relationship**
- **explain how the relationship in the ERD/EERD is converted or translated into the relational model.**

In particular,

- For a 1-N relationship, indicate which entity is the 1 part of the relationship and which entity is the many part of the relationship.
- For a 1-1 relationship -- name all options considered (if any) in the conversion; and indicate what option was chosen and why this option is chosen.

For Specialization/Generalization - name all options considered (if any) in the conversion; and indicate what option was chosen and why this option is chosen.

Example: WORKS-FOR is a 1-N relationship between EMPLOYEE and DEPARTMENT. DEPARTMENT and EMPLOYEE is the many part. Since the DEPARTMENT is in the one-part of the relationship, we need to add the primary key of DEPARTMENT as a new attribute (foreign key) of EMPLOYEE. DNUMBER of DEPARTMENT is referred to as DNO in EMPLOYEE.

Fname	Minit	Lname	Sex	Address	Salary	SSN	Bdate	+
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Dno

3. Submit in your 3-ring binder the sheets in the following order (immediately after PART 1 Revised Divider)
 - a. DIVIDER PAGE with a **PART IIA:Logical Model – Relational Model** tab label
 - b. COVER PAGE see page 4 for format. This cover page must not have a footer!
 - c. Revised ERD/EERD: PART I - A2 (Entities with PK and Relationships Only – Structural Constraint) If no revisions were made, provide a copy of the ERD/EERD: PART A2 you submitted for PART 1.
 - d. Revised ERD/EERD: PART I - B (Entities with Attributes Only) [If necessary] If no revisions were made, provide a copy of the ERD/EERD: PART B you submitted for PART 1.
 - e. Relational Model Schema
Present only the relations and attributes. PK must be underlined. **Attributes added because of relationships must be indicated by dashed boxes.** Foreign key constraint arrows must be included in the relational model schema.
 - f. Description of Converting the Conceptual Model Schema into the Relational Model Schema
(See Step 2 above, pages 1-2 of this document.)
 - g. **Comments on Project – Relational Model Phase**
 - A. Difficulties you faced in doing this implementation phase and how they were resolved (to be summarized by the Leader based on each member's comments)
 - B. Likes and dislikes about this part of the project (to be done by each team member as well as by Team Leader; present this section arranged alphabetically by team member's name)
 - C. What was the most challenging aspect of this part of the design? (to be done by each team member as well as by Team Leader; present this section arranged alphabetically by team member's name)
 - D. Suggestions on how to improve this part of project (to be done by each team member as well as by Team Leader; present this section arranged alphabetically by team member's name)
 - E. Did you make changes to your communication methods? If yes, why?

PAGINATE EACH PAGE by including a footer in the document as follows
(BOLD, font size 8) Page numbering should start from 1 and
should also include the total number of pages for this part.

4. **Team Leader** will evaluate each member of the team based on the evaluation criteria developed in class. The team leader will submit via email his/her evaluation using the following format.

Format

SUBJECT:

CSE 572: TEAM <name>: RATING BY LEADER <name>

BODY:

MEMBER1: <name> -

Criteria item rating & **justification**

MEMBER2: <name> -

Criteria item rating & **justification**

MEMBER3: <name> - (if any)

Criteria item rating & **justification**

5. Each **TEAM MEMBER** will evaluate the team leader and other team members and must submit the rating to me via email using the format below. Note the team member submitting the evaluation must exclude himself/herself from the list of members below. So for a team of three members, there should be 1 other member that should be evaluated; for a team of four members, there should be two other members that need to be evaluated.

Format

SUBJECT: CSE 572: TEAM <name>: RATING BY MEMBER

<name>

BODY:

LEADER: <name>

Criteria item 1 rating & **justification**

....

MEMBER1: <name> -

Criteria item rating & **justification**

....

MEMBER3: <name> - (if any)

Criteria item rating & **justification**

This part of the project will be graded according to the following criteria:

Presentation 5 pts
(no spelling errors, no grammar errors, neatness, followed directions,
correct sequence of pages, legible and readable)

Content (Correct Conversion).....35 pts

Group/Individual Evaluation.....10 pts

Total Points.....50 pts

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CSE 572 F13: Database Design Project
PART 2 A – Relational Data Model

Title of Project Option
PROJECT OPTION

Name of the Team
TEAM NAME

Lastname, Firstname
TEAM LEADER

TEAM MEMBERS

Adams, Mark
Smith, Clark
Zeta, Pam