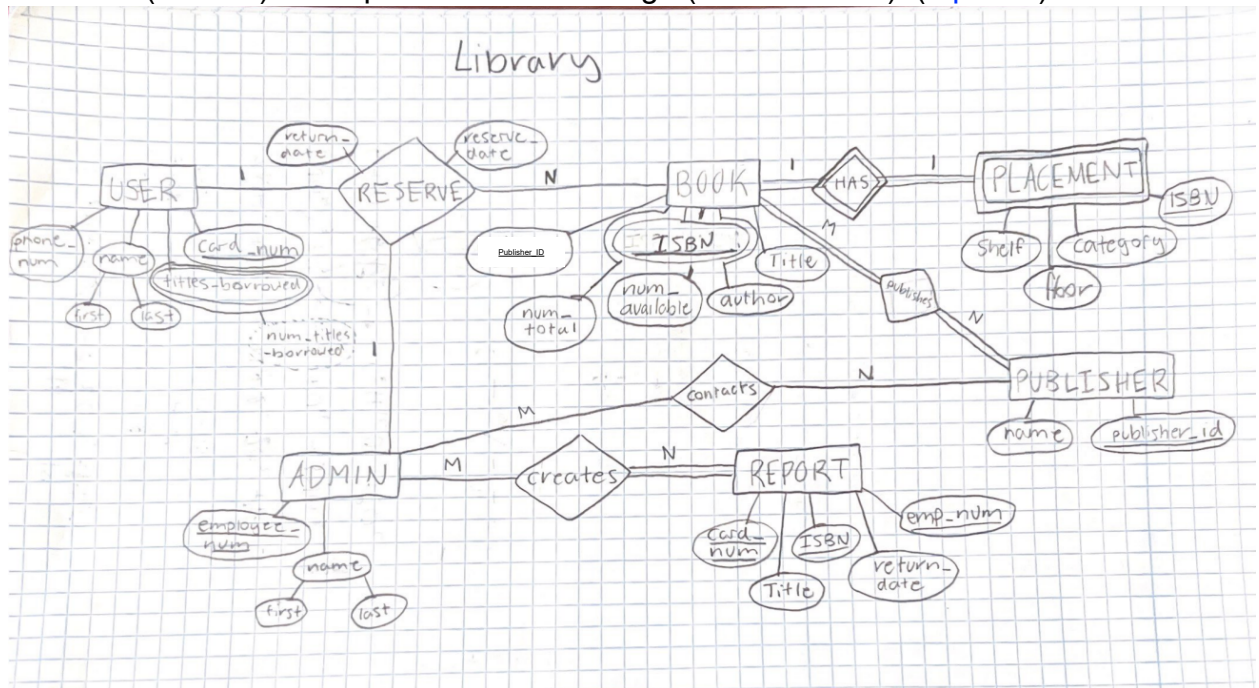


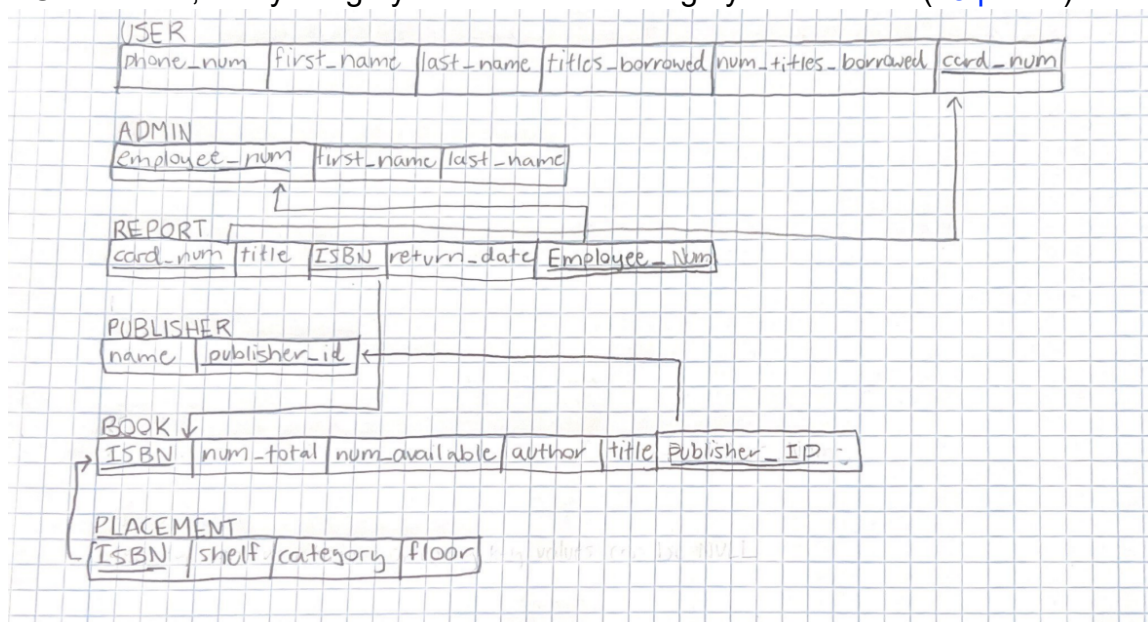
Phase 2: Logical database design (50 points, 10% of the grade)

Due date: March 31, 2024 (11:59 PM)

1. Draw the (revised) conceptual database design (from Phase 1). (5 points)



2. **Logical database design:** Convert the ER model into the relational database schema based on the **seven-step** approach discussed in class. Clearly indicate the primary and foreign keys. Clearly specify the domain constraints, constraints on NULL values, entity integrity and referential integrity constraints. (25 points)



-5.5 did not specify the domain constraints, co

3. *Application program design*: Based on the (revised) functional requirements from Phase 1, provide a high-level description (e.g., pseudo code) of main steps in the functions. (20 points)

Function 1: Reserve_Book

//this function lets the user check out a title. It accesses USER, ADMIN, and BOOK tables

Input: ISBN number, card number, employee number, current date

Steps:

1. Check availability of the title in the BOOK table
2. Access the library card number in the USER table
3. Check out the book, subtract one from number available
4. Display title of book, first and last name of the user, and return date
5. Call Create_Report in order to document that a book has been checked out

Function 2: Create_Report

//this function creates a report of the title being checked out and includes who checked it out and the required return date. It accesses REPORT and ADMIN tables

Input: Employee number, ISBN number, card number, current date

Steps:

1. Access the title of the book and required return date (calculated by adding 30 days to current date)
2. Compile card number, ISBN number, title and required return date
3. Insert the report into the report table
4. Display title and "successful report"

Function 3: Add_Book_To_Library

//This function adds a book to a library if a publisher contacts admin in order to get their title added. It accesses ADMIN and PUBLISHER tables

Input: Title, ISBN number, author, publisher ID

Steps:

1. Check if book is already in library. If it is, add one to num_total
2. If it is not, compile title, ISBN number, author, and publisher id. Set num_total to 1 and num_borrowed to 0.
3. Add book to BOOK table
4. Display title, user first name and last name, publisher name, and return date