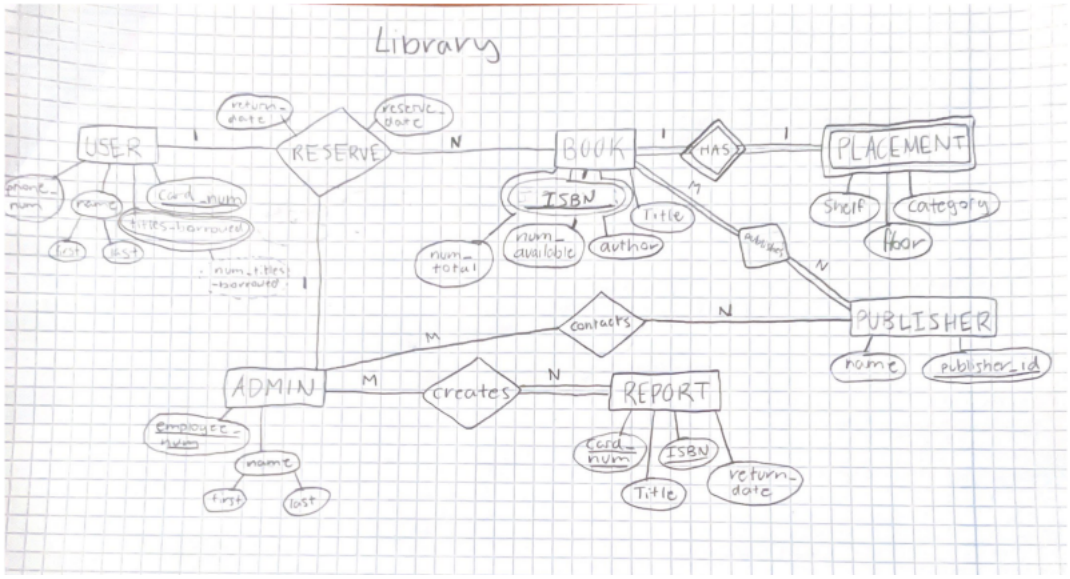
Phase 1: Conceptual database design (50 points, 10% of the grade)

1. *Problem statement:* This database will be a library system, composed of users, admin, books, placements of the books, and reports created by the admin to keep track of checkouts. This database will be beneficial in order to streamline the library's ability to keep track of its users, books, and what is leaving and coming into the library.

2. *Conceptual database design:*
    a. Assumptions: card_num, employee_num, ISBN, and publisher_ID are all keys. Num_titles_borrowed is a derived attribute from the multivalued attribute titles_borrowed, because the number can be derived from the listed titles. PLACEMENT is a weak entity type defined by its relationship to book. The RESERVE relationship type is a terciary relationship including USER, ADMIN, and BOOK, as the user checks out the book, and the admin is the one performing the action then writing the report.



3. *Functional requirements:*
    a. Reserve a book- the process of a user checking out a title, includes USER, ADMIN, and BOOK
    b. Create a report- a report of the title being checked out, who checked it out, and the required return date. Includes REPORT and ADMIN
    c. Add book to library- publishers can contact admin in order to get a new title added to the library, includes ADMIN and PUBLISHER