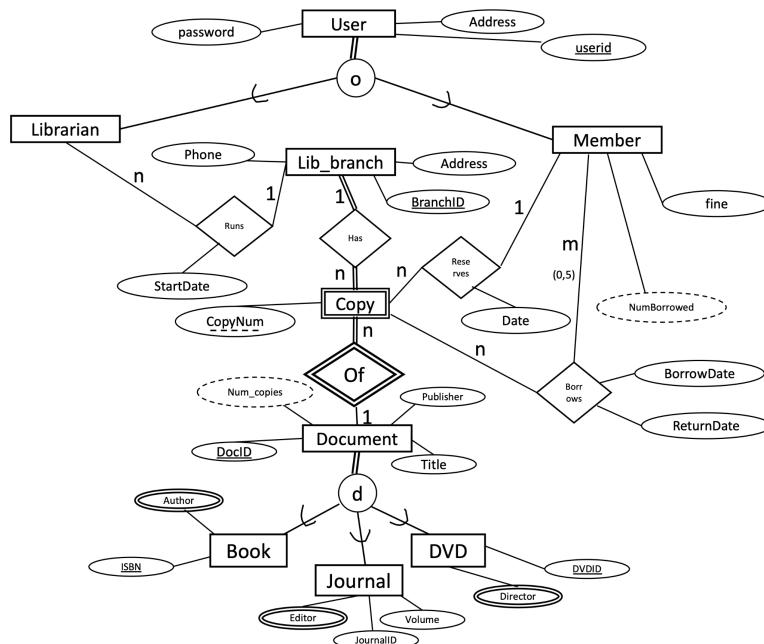


Project Deliverable 2
CSCI 327
Our Team: Lyudmyla Buhayenko, Ruslan Buhayenko, Iva Vukovic

1. Goals:

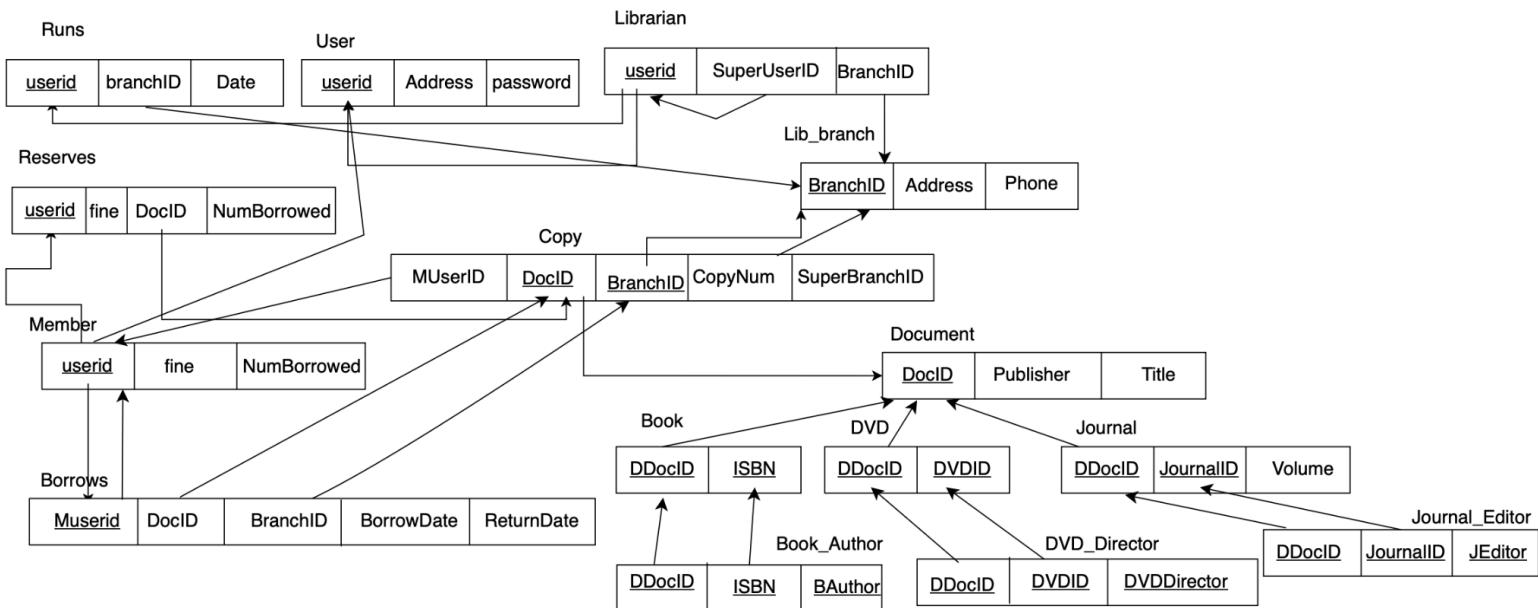
- Create a logical design for Library system by mapping the EER Diagram from Project Deliverable 1 into a relational schema
- Correctly identify primary and foreign keys
- Convert all entities, relationships and any specialization / generalization structures into relational tables
- Include integrity constraints for each table to ensure valid and consistent data
- Write SQL command files that will create and populate each table in Phase 3 of the project
- Describe difficulties faced during the Phase 2

Rewrites: To the previous phase (Project Deliverable 1) we can make revisions such as creating a weak entity called “Copy” instead of an attribute “Copy” like we did and disconnecting the unnecessary arrow that points from “Librarian” entity to “Borrows” entity, that we have accidentally connected. Here is a modified version:



2. EER to Relational Mapping:

We translated the EER diagram into our relational schema by carefully going through the steps of converting an EER diagram into a relational schema and applying the steps one by one to ensure an accurate conversion. First we went through and mapped all the regular entity types found in our EER diagram followed by all of their weak counterparts. Then we worked on mapping the binary relationships in our EER diagram, starting with 1:1 relationships, then 1:N relationships, and then finally M:N relationship types. After completing those steps, we mapped the multivalued attributes in our EER diagram, followed by mapping regular n-ary relationship types and then finally looked at mapping the superclass/subclass relationships.



Constraints:

- A member can't borrow more than 5 documents at the same time.
- Document has to be exactly one type (Either a Book or a Journal or a DVD).
- Each branch has to have at least one librarian.
- Late fees are calculated at \$0.25 per day after 30 days.
- Return date must be on or after the borrow date.
- Journals must have unique `JournalID`, Books must have unique `ISBN` and DVDs must have unique `DVDID`.
- A borrowed book must be returned to the same branch it was borrowed from.
- The number of copies for any document has to be zero or a positive number.
- A book must have at least one author. Journal must have at least one editor. DVD must have at least one director.

3. SQL for creating tables in PHPMyAdmin

Look at the attached SQL file, please.

4. Difficulties we had with this phase of the project

Drawing a relational diagram was complicated because we had the disjoint function to take into consideration which also had multi-valued attributes inside its entities (book, journal, dvd). Depending on the entity type the mapping would come out differently and so what might have worked for another entity could not necessarily work for them all. Although there were moments of confusion regarding how each entity should be represented in the relational diagram, we managed to sort everything out.