
CS631-DATA MANAGEMENT SYSTEMS DESIGN

PROJECT: CITY LIBRARY DATABASE

Deliverable1:

Goal of this phase:

- Analyze and design the entity relationship (ER) model for the city library database using ER modeler.

Entity types:

Regular entity Types: Branch, Reader, Document, Publisher, and Chief Editor.

Weak Entity Types: Journal Issue

Superclass/Subclasses: Document / Books, Journal Volume, Conference proceedings.

Relationship types:

- Reader BORROWS Document from a Branch. (Ternary Relation).
- Reader RESERVES Document. (One-to-Many(10))
- Branch TRACKS Reader. (Many-to-Many)
- Publisher PUBLISHES Document.(One-to-many)
- Journal Volume is supervised (SUPERVISION) by Chief Editor.(One-to-Many)
- Journal Volume HAS Issues Numbers.
- Branch Holds copies of Documents.

Attributes:

Simple Attributes:

- **READER** [ReaderID, Phone number, type, Address, copies borrowed, RegisterID].
- **BRANCH** [LibID, LIBaddress, LName].
- **DOCUMENT**[DocumentId, title]
- **BOOK**[DocumentId, AuthorID, ISBN]
- **JOURNAL** [DocumentId, JournalNo]
- **CONF_PROCEED**[DocumentId, Proceed_chair, Date, Location]
- **CHIEF_EDITOR**[ChiefID]
- **PUBLISHER**[PublishID, Paddress, PName]
- **BORROWS**[BdateTime, RdateTime]
- **RESERVES**[PickTime, Status]
- **JOURNALISSUE**[{GuestEditor}, Scope]
- **HOLDS** [CopyPosition, CopyNo]

Composite Attributes:

- **READER** [{name} - Fname, Minit, Lname]
- **BOOK** [{author Name} - Fname, Minit, Lname]
- **CHIEF_EDITOR**[{Chief Name} - Fname, Minit, Lname]

Stored and Derived Attributes:

- In the BORROWS relationship type, BdateTime acts as a stored attribute and DuedateTime acts as a derived attribute which derives its value from BdateTime.
- In the READER entity 'FineDue' is a derived attribute which derives its value from BdateTime and RdateTime.

Multivalued Attributes:

- 'GuestEditor' in Journal_Issue entity is a multivalued attribute as one Journal Issue has more than one Guest Editors.

Assumptions:

The following assumptions are made while designing the database:

- Document may or may not be borrowed / reserved by a reader.