COMP 1168 Final Project:

ABC Library Database

CRN-46705-201702

# Group 13:

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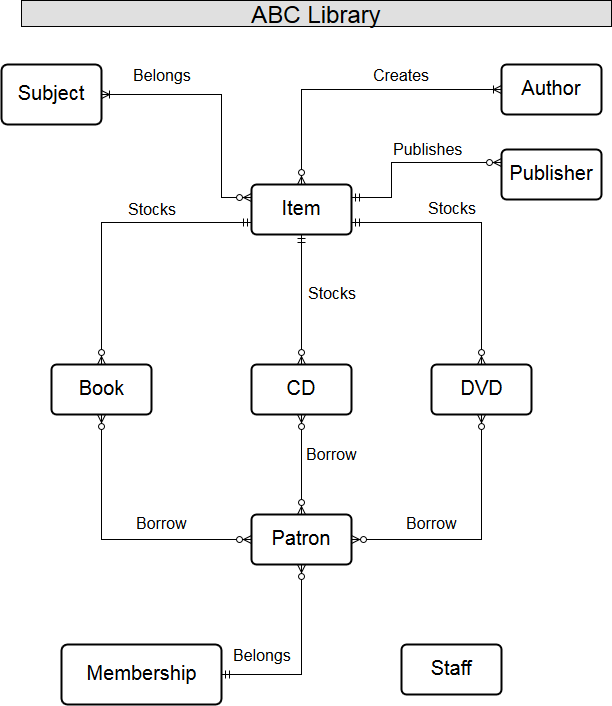
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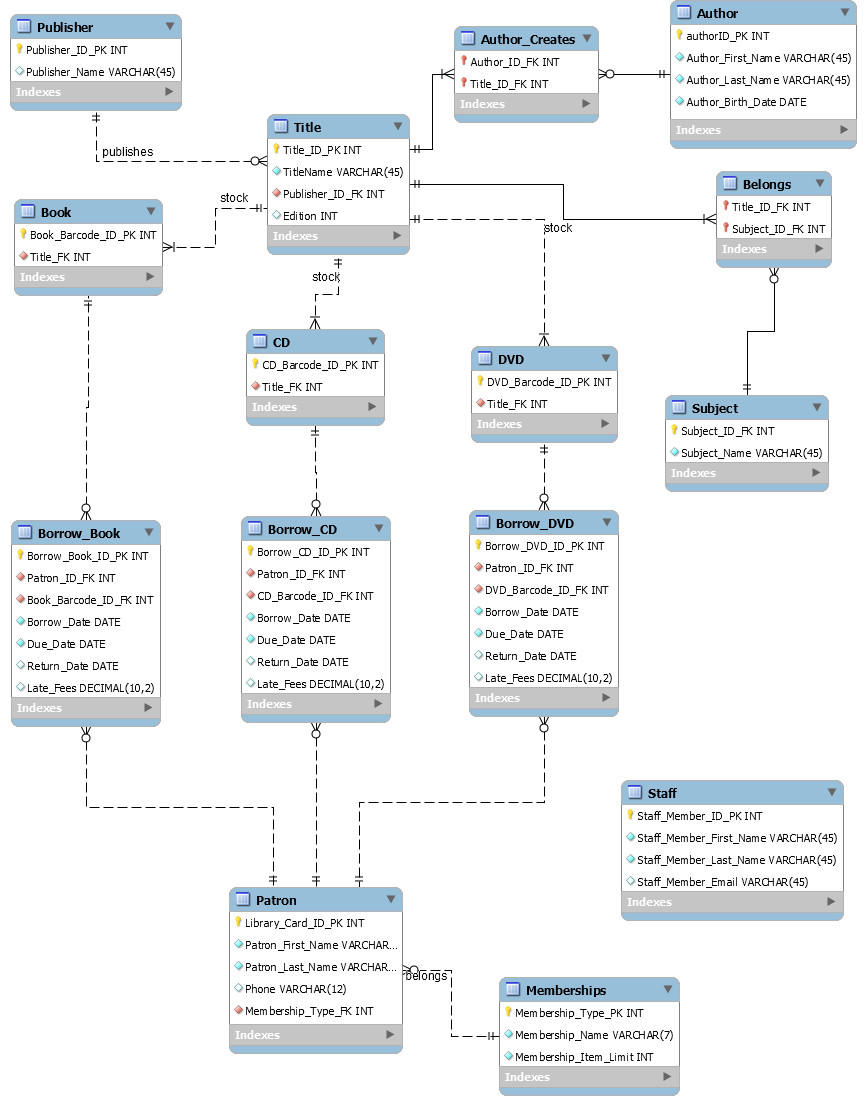
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Conceptual Model:



Physical Model:



Assumptions

There may be publishers and authors who have no titles in the database. This allows information on authors and publishers to be stored even if the library removed or has not yet acquired their title. It would also help users looking for common authors or publishers to confirm that there are no titles associated with them in the Database.

There may be memberships that do not have any Patron’s, this allows for the addition of new membership types to be created without the need to first sign someone up for them.

Each title cannot have multiple publishers. A Title can have multiple authors.

Membership was created as its on table as opposed to a column in Patron’s tables for 3rd level normalisation. Data applied to due dates, etc. was reliant on the membership type.

For all Title’s that can be borrowed, we implemented a zero to many relationship as there may be new Title’s that have not yet been borrowed.

For Patron’s, we implemented a zero to many relationship as there may be new Patron’s that have not yet borrowed.

A Title may have multiple subjects but must have at least one to facilitate searches. There may be new subject added to the data base without being associated to a Title, or the library may stop stocking Title’s in a subject but subject will still exist in database.

All Title’s may have multiple editions, not just books, therefore an edition column was added to Title table.

Publisher and Authors may change with different editions of a Title.

Barcodes are integers and not alpha numeric for clarities sake.

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Staff are unrelated to anything in this model, if a library staff member was to also be a patron they would be treated as a separate entity, and we do not need to record data on which staff facilitated each transaction.

Appendix

# SQL Queries

USE projschema;

-- Query 1

SELECT \* FROM projschema.title WHERE edition = 2;

-- \*/

-- Query 2

SELECT CONCAT(P.Patron\_First\_Name," ", P.Patron\_Last\_Name) AS Patron\_Name , M.Membership\_Name

FROM Patron P NATURAL JOIN Memberships M;

-- \*/

-- Query 3

SELECT \* FROM projschema.publisher p, projschema.title t, projschema.book b, projschema.borrow\_book bb

WHERE p.Publisher\_ID\_PK = t.Publisher\_ID\_FK

AND t.Title\_ID\_PK = b.Title\_FK

AND b.Book\_Barcode\_ID\_PK = bb.Book\_Barcode\_ID\_FK;

-- \*/

-- Query 4

SELECT count(\*) FROM borrow\_dvd

where (

return\_date>due\_date

);

-- \*/

-- Query 5

SELECT \* FROM title ORDER BY Publisher\_ID\_FK;

-- \*/

-- Query 6

SELECT Borrow\_DVD\_ID\_PK, Patron\_ID\_FK, DVD\_Barcode\_ID\_FK, Borrow\_Date

FROM borrow\_dvd

WHERE (datediff(Return\_Date,Borrow\_Date))>4

GROUP BY Patron\_ID\_FK

HAVING Borrow\_date > "2018-02-05"

ORDER BY Borrow\_DVD\_ID\_PK;

-- \*/

-- Query 7

CREATE VIEW Authors\_and\_Titles AS SELECT

t.TitleName, ac.Title\_ID\_FK, ac.Author\_ID\_FK, a.Author\_First\_Name, a.Author\_Last\_Name

FROM projschema.title t, projschema.author a, projschema.author\_creates ac

WHERE t.Title\_ID\_PK = ac.Title\_ID\_FK

AND ac.Author\_ID\_FK = a.authorID\_PK;

-- \*/

-- Query 8

SELECT Patron\_ID\_FK, Borrow\_Book\_ID\_PK, Late\_Fees

FROM Borrow\_Book B LEFT OUTER Join Patron P

ON B.Patron\_ID\_FK = P.Library\_Card\_ID\_PK

ORDER BY Patron\_ID\_FK;

-- \*/

-- Query 9

SELECT Patron\_First\_Name, Patron\_Last\_Name FROM patron

WHERE Library\_Card\_ID\_PK IN

(SELECT Patron\_ID\_FK FROM borrow\_book

WHERE Late\_Fees > 0);

-- \*/

-- Query 10

SELECT DISTINCT B1.Patron\_ID\_FK, B1.Borrow\_CD\_ID\_PK, B1.CD\_Barcode\_ID\_FK

FROM Borrow\_CD B1 JOIN Borrow\_CD B2

ON B1.Patron\_ID\_FK = B2.Patron\_ID\_FK AND

B1.Borrow\_CD\_ID\_PK = B2.Borrow\_CD\_ID\_PK AND

B1.CD\_Barcode\_ID\_FK = B2.CD\_Barcode\_ID\_FK

ORDER BY B1.Patron\_ID\_FK

-- \*/