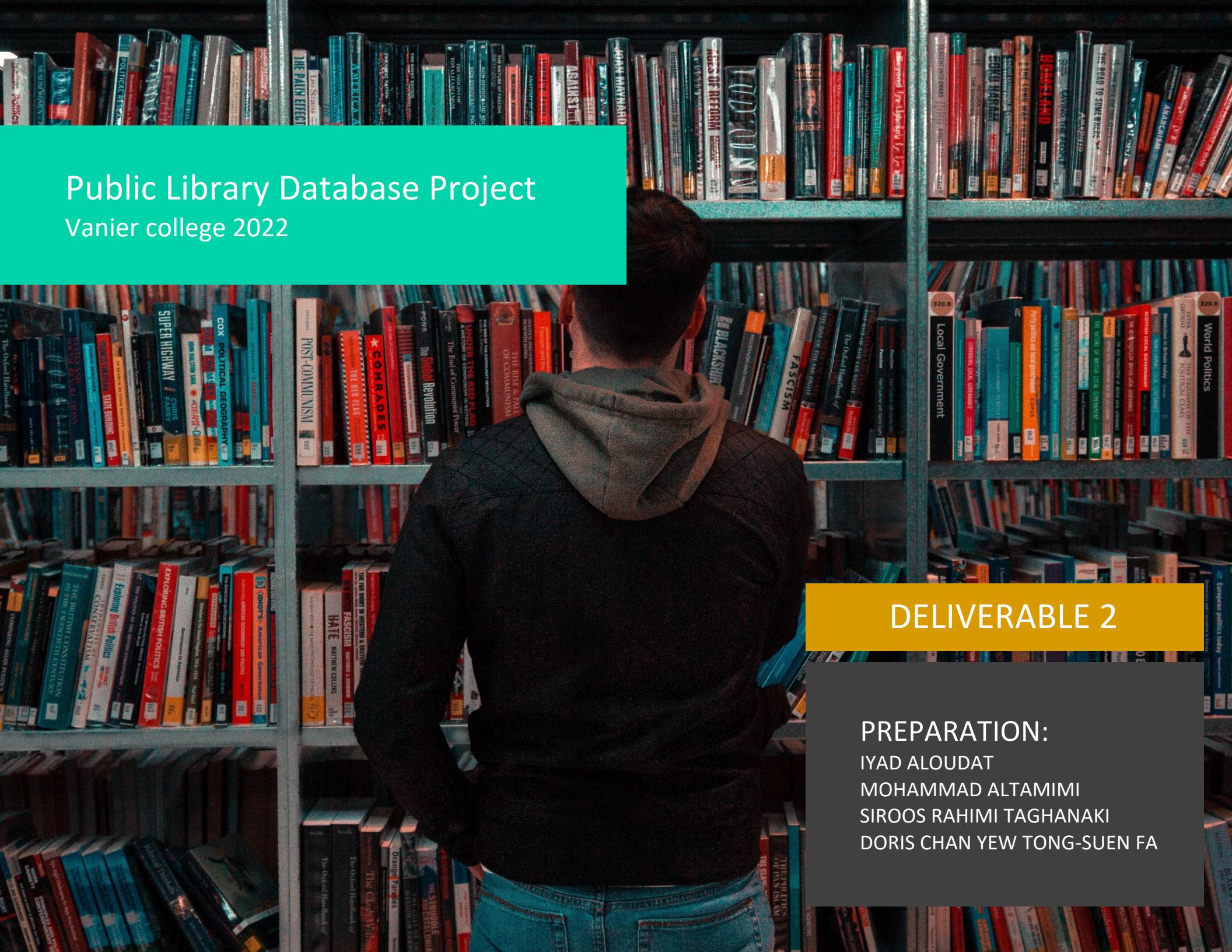


Public Library Database Project

Vanier college 2022



DELIVERABLE 2

PREPARATION:
IYAD ALOUDAT
MOHAMMAD ALTAMIMI
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DORIS CHAN YEW TONG-SUEN FA

Deliverable

| Done | Deliverable 1: | Page |
|------|--|--------|
| Done | The conceptual database design using the Entity Relationship (E/R) diagram, shows entity types, relationships, attributes, key attributes, cardinalities, and participation constraints. Also, normalize the entities and include the steps of normalization process (to 3NF); | 3 - 7 |
| Done | The development of the logical design of the database (resulting by the mapping of an E/R diagram to a Relational model). | 7 - 15 |
| Done | Deliverable 2: | 4 |
| Done | Students must describe any revisions made to Deliverable 1 (based on feedback); Answer in Blue | |
| Done | Create database schema using SQL DDL (Data Definition Language) statements, show how they enforced the constraints implied by their logical design, identify any constraints that are not captured by the ER diagram; | 16-33 |
| Done | Populate every relation with sufficient data using DML (Data Manipulation Language) statements. It should include the SQL scripts implemented and used for constructing the schema and loading the data in the database. | 16-33 |
| Done | Deliverable 3: | |
| | Develop a set of SQL queries to query the database (there should be at least 5 queries). Include the statements of the queries and transactions scripts expressed in SQL along with the results returned; | |
| | Apply advanced database concepts such as triggers to maintain data integrity, indexes, views, and procedures to improve system performance; | |
| | There will be a project demonstration in the last week of the semester where students explain their work. Each group will have 15 minutes to demonstrate their database design | |

Introduction

The Database Library System is intended to Automate the library activities such as creating a new borrower, giving books to the borrowers, maintaining the details of all the item that were available in the books . This also helps the librarians by providing information such as total copies available each book, list of books that belong to a particular category (Short, Long Loan, Reference items, etc.).

Description of tables and columns

| Customer Table | | |
|------------------|--------------------|--|
| Attribute | Attribute Name | Attributes Description |
| CardID [PK] | Card ID | The unique number for each customer |
| FirstName | First Name | First Name |
| LastName | Last Name | Last Name |
| Gender | Gender | Gender |
| DateOfBirth | Date of Birth | Date of Birth |
| Address | Full Address | Customer's full address |
| Phone | Phone Number | Phone or mobile Number |
| BranchID | Branch ID | The number of the branch in which the customer's account was created |
| NumBooksBorrowed | Num Books Borrowed | Number of books still borrowed by the customer |

| Borrow | | | |
|---------------|---------------|---------------------------------|--|
| BorrowID | [PK] | Borrow ID | A unique number for each loan in the library, This ID is important to keep track record of the book (Borrowing record) |
| CardID | [FK] | | The unique number for each customer |
| BookID | [FK] | Book ID | A unique number for each book in the library, even if it is a copy |
| BorrowDate | | Borrow Date (Start) | Book borrow date (borrow Date) |
| RenewedNum | | Renewed Number | The number of times the borrowing period has been extended |
| RenewDate | | Renew Date (Start renew) | Borrowing period extension date (Renew Date) |
| ReturnDueDate | | Return Due Date (End) | The due date for returning the borrowed book (Return Date) |

| LibraryBranch | | | |
|----------------------|---------------|----------------|--|
| BranchID | [PK] | Branch ID | The number of the branch in which the customer's account was created |
| BranchName | | Branch Name | The name of the branch |
| BranchAddress | | Branch Address | The address of the Branch |

| Book | | | |
|-------------|---------------|-------------|--|
| BookID | [PK] | Book ID | A unique number for each book in the library, even if it is a copy |
| BookISBN | [FK] | Book ISBN | A unique numeric commercial book identifier |
| BranchID | [FK] | Branch ID | The number of the branch in which the customer's account was created |
| BookStatus | | Book Status | Information about book Status: Borrowed, Available. |

| BookInfo | | | |
|----------------|--------|------------------|---|
| BookISBN | [PK] | Book ISBN | A unique numeric commercial book identifier |
| BookTitle | | Book Title | The title of the book |
| CategoryID | [FK] | Book Category | The category number of the book |
| PublisherID | [FK] | Publisher ID | The unique number of the publisher |
| NumberOfCopies | | Number Of Copies | The number of copies the library has in stock |
| RackNum | | Rack Number | The number of the rack |

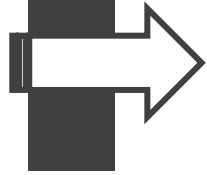
| Categories | | | |
|--------------|--------|---------------|---------------------------------|
| CategoryID. | [PK] | Category ID | The category number of the book |
| CategoryName | | Category Name | The category name of the book |

| Publisher | | | |
|------------------|--------|-------------------|------------------------------------|
| PublisherID. | [PK] | Publisher ID | The unique number of the publisher |
| PublisherName | | Publisher Name | The name of the publisher |
| PublisherAddress | | Publisher Address | The address of the publisher |
| PublisherPhone | | PublisherP hone | The phone number of the publisher |

| BookAuthors | | | |
|-------------|--------|------------|---|
| AuthorsID | [FK] | Authors ID | The number of the author |
| BookISBN | [FK] | Book ISBN | A unique numeric commercial book identifier |

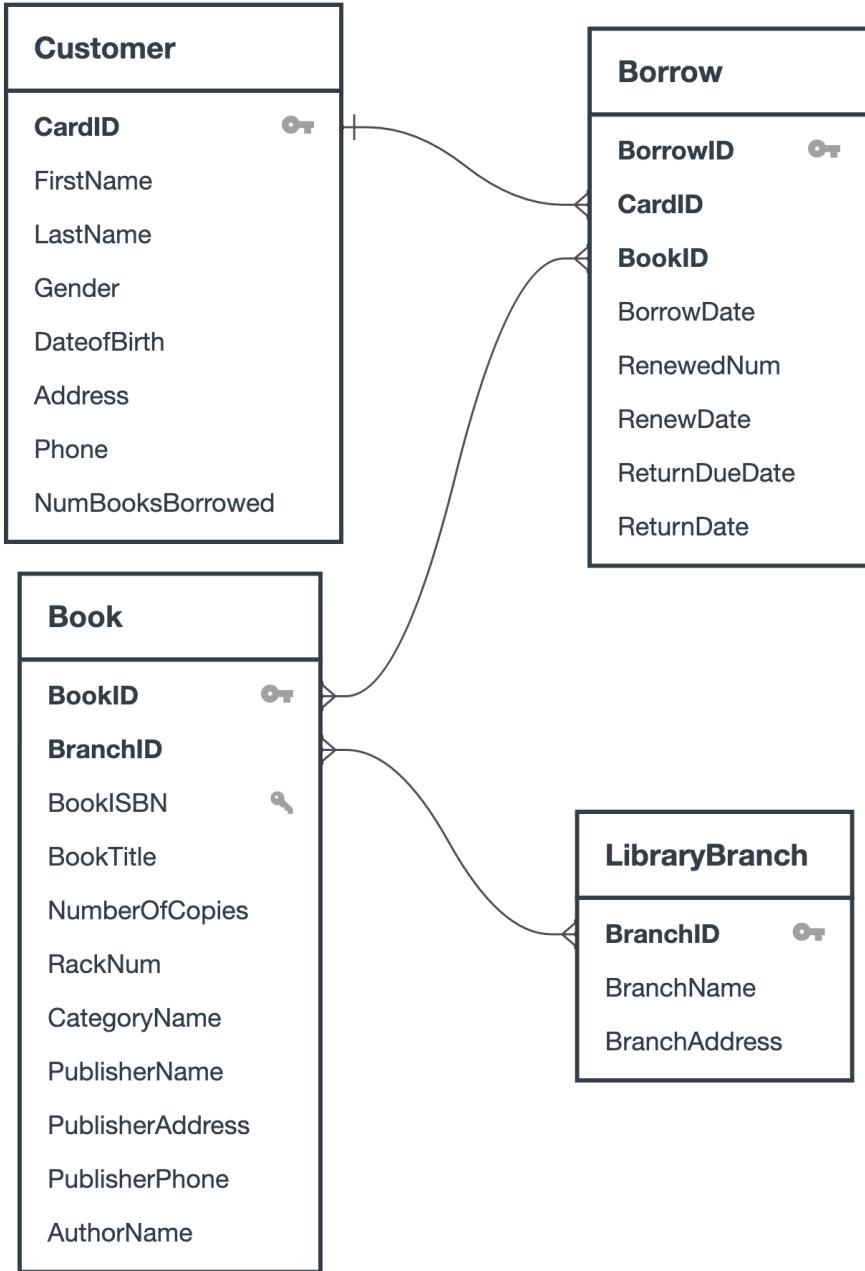
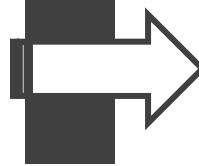
| Authors | | | |
|------------|--------|-------------|--------------------------|
| AuthorID | [PK] | Author ID | The number of the author |
| AuthorName | | Author Name | The name of the author |

Normalization - 1NF

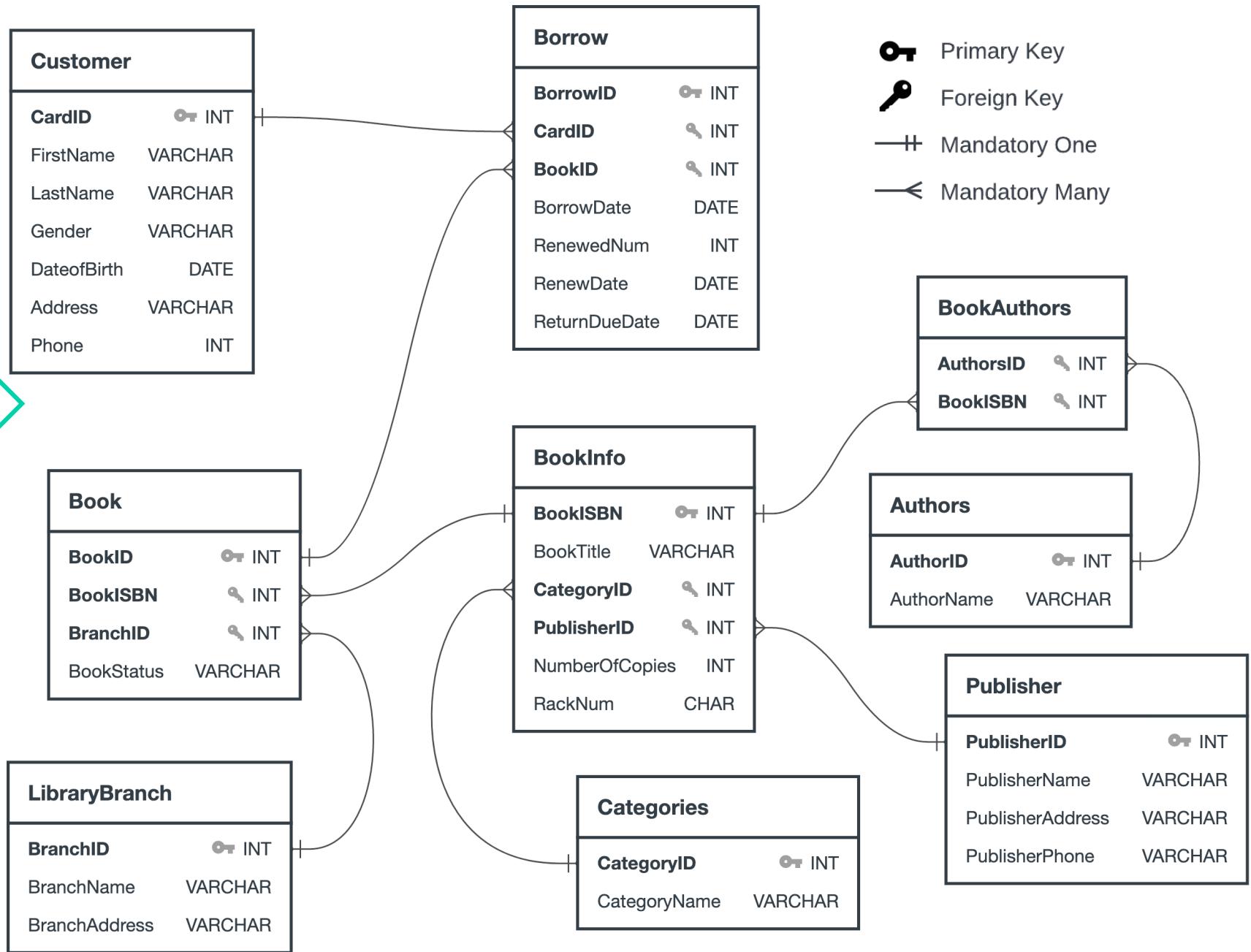


| PublicLibrary | |
|------------------|-----|
| CardID | key |
| FirstName | |
| LastName | |
| Gender | |
| DateOfBirth | |
| Address | |
| Phone | |
| NumBooksBorrowed | |
| BorrowDate | |
| RenewedNum | |
| RenewDate | |
| ReturnDueDate | |
| ReturnDate | |
| BranchName | |
| BranchAddress | |
| BookID | key |
| BookISBN | key |
| BookTitle | |
| NumberOfCopies | |
| RackNum | |
| CategoryName | |
| PublisherName | |
| PublisherAddress | |
| PublisherPhone | |
| AuthorName | |

Normalization- 2NF



Normalization - 3NF

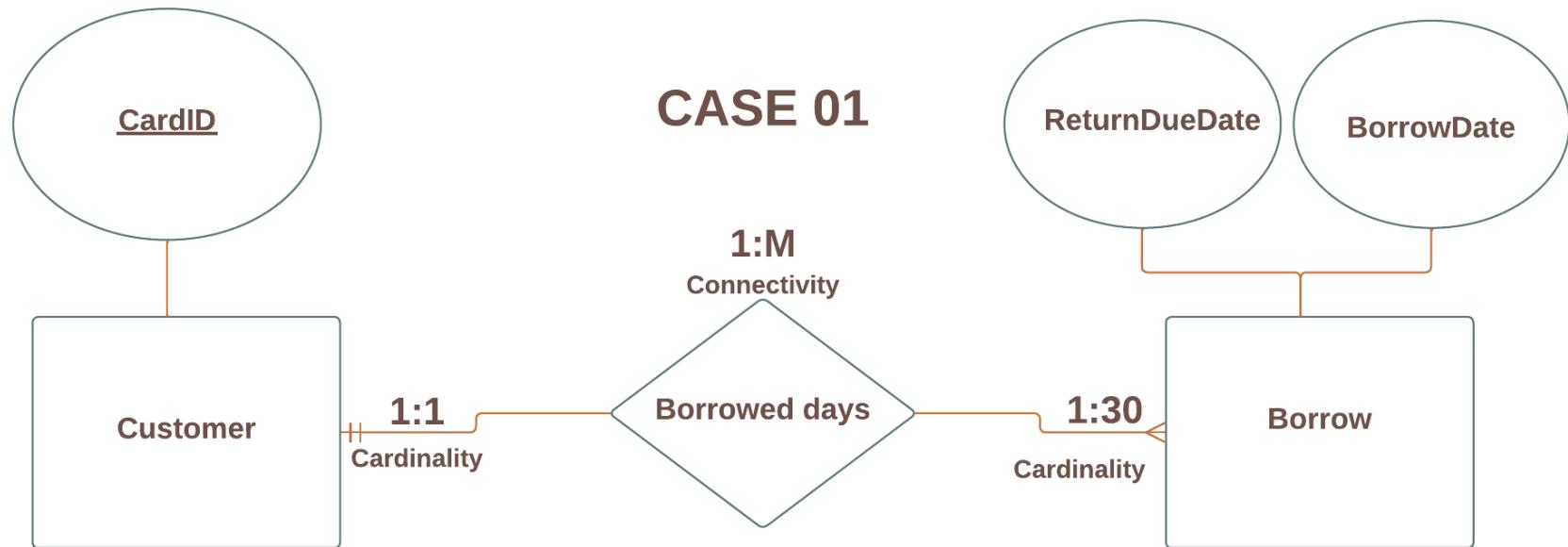


Case 01

The Maximum number of days allowed to borrow a book.

Business Rule

30 Days is the Maximum number of days allowed to borrow a book



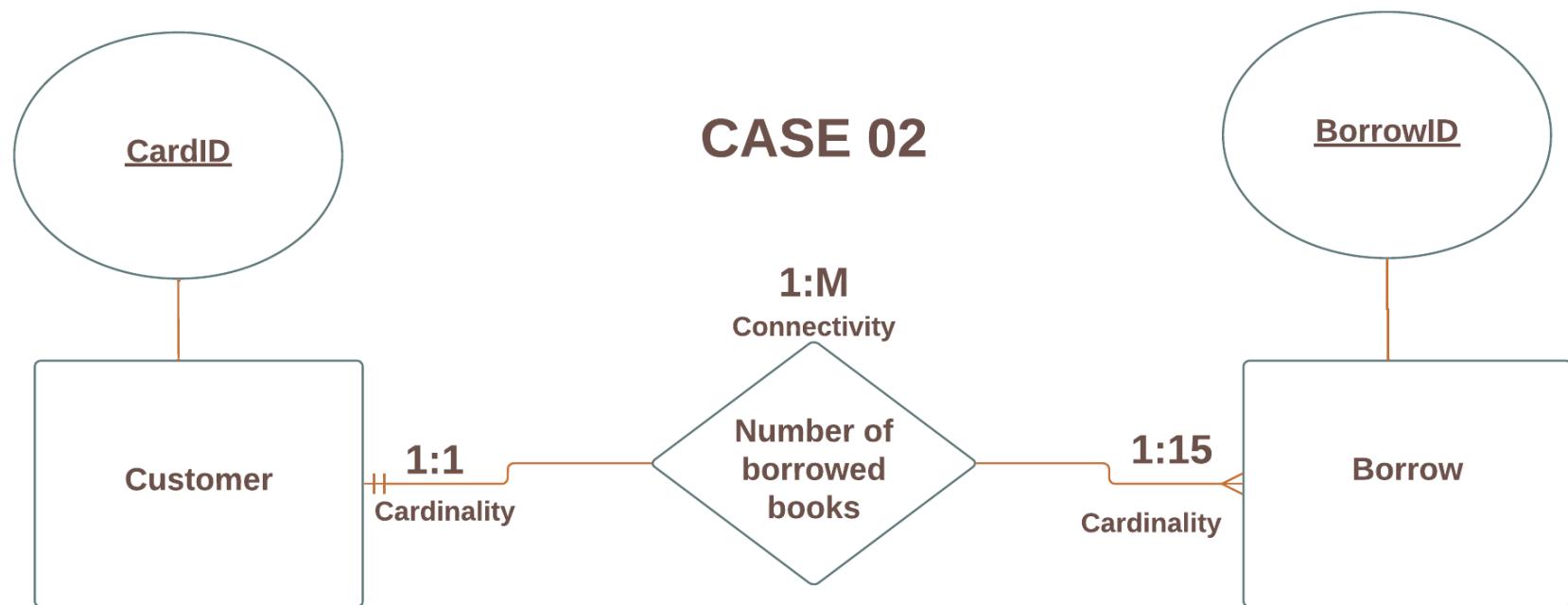
30 Days is the Maximum number of days allowed to borrow a book

Case 02

The maximum number of borrowed books.

Business Rule

15 books is The maximum number of borrowed books.



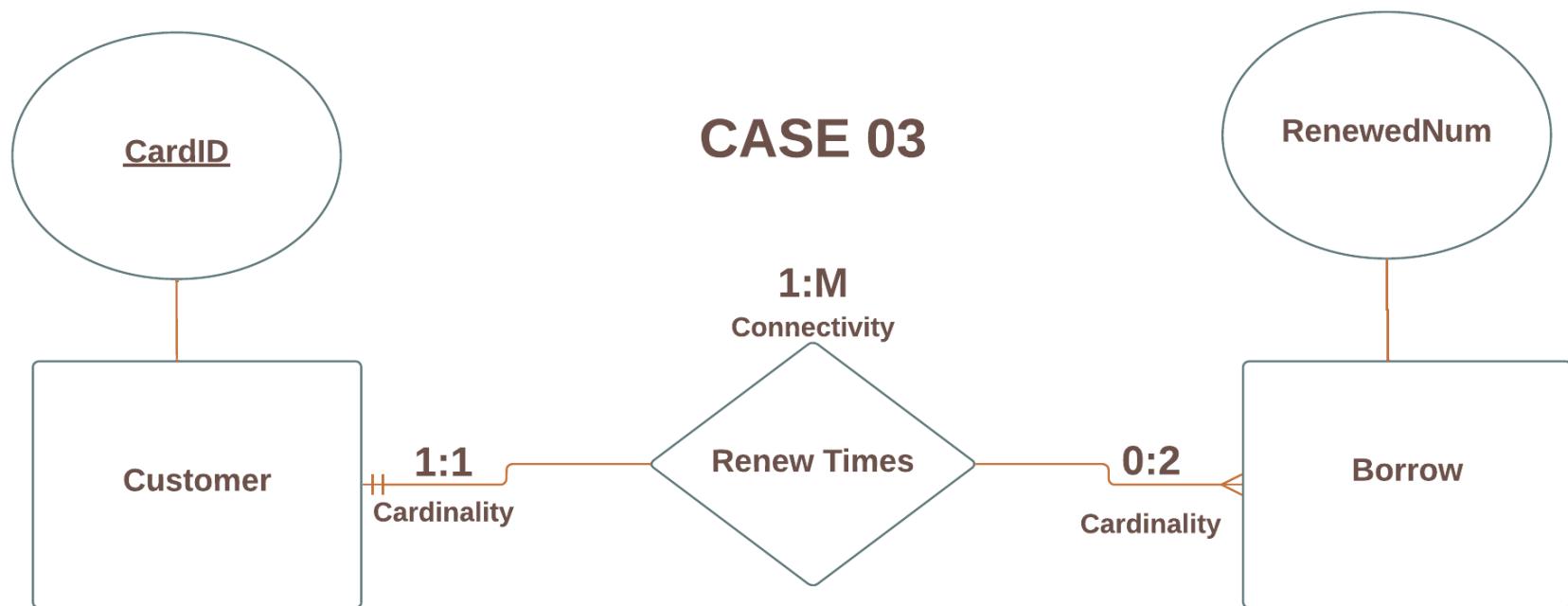
15 books is The maximum number of borrowed books.

Case 03

Renew the book return due date

Business Rule

Customers can renew the book return due date twice only



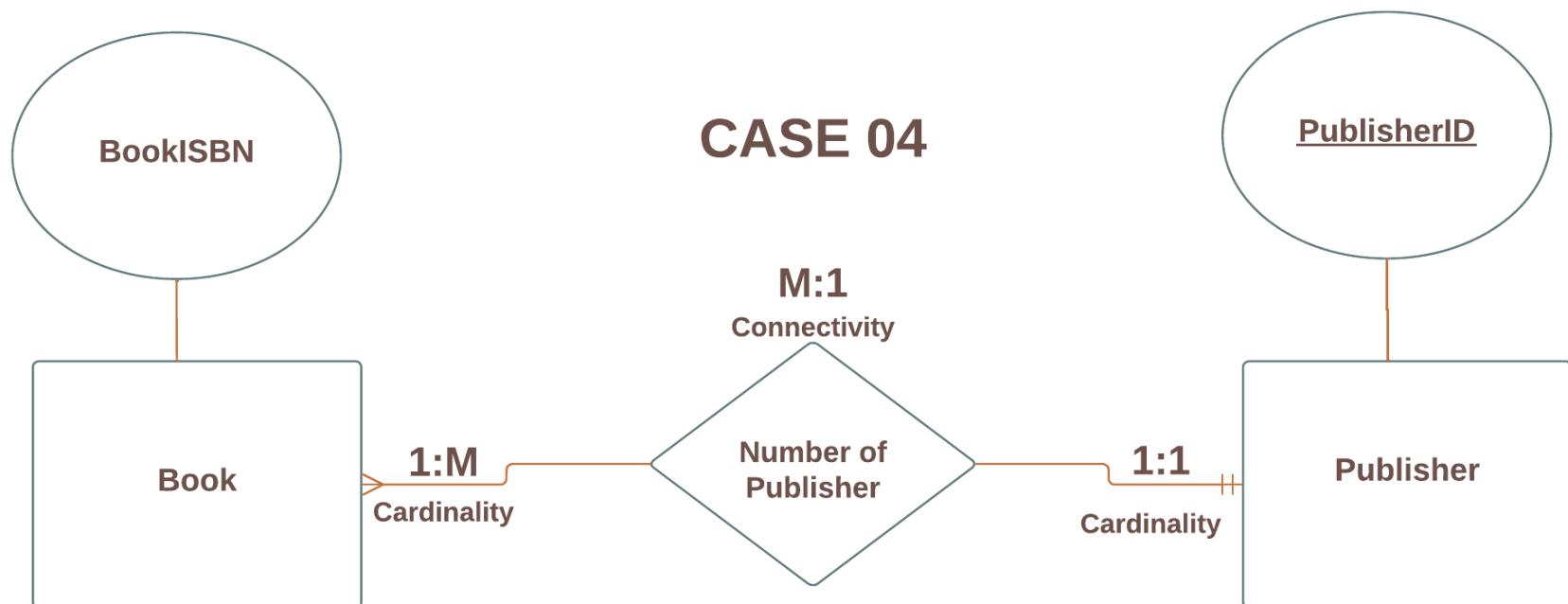
Customers can renew the book return due date twice only

Case 04

Number of Publisher for every Book

Business Rule

Every Book Should have only one Publisher



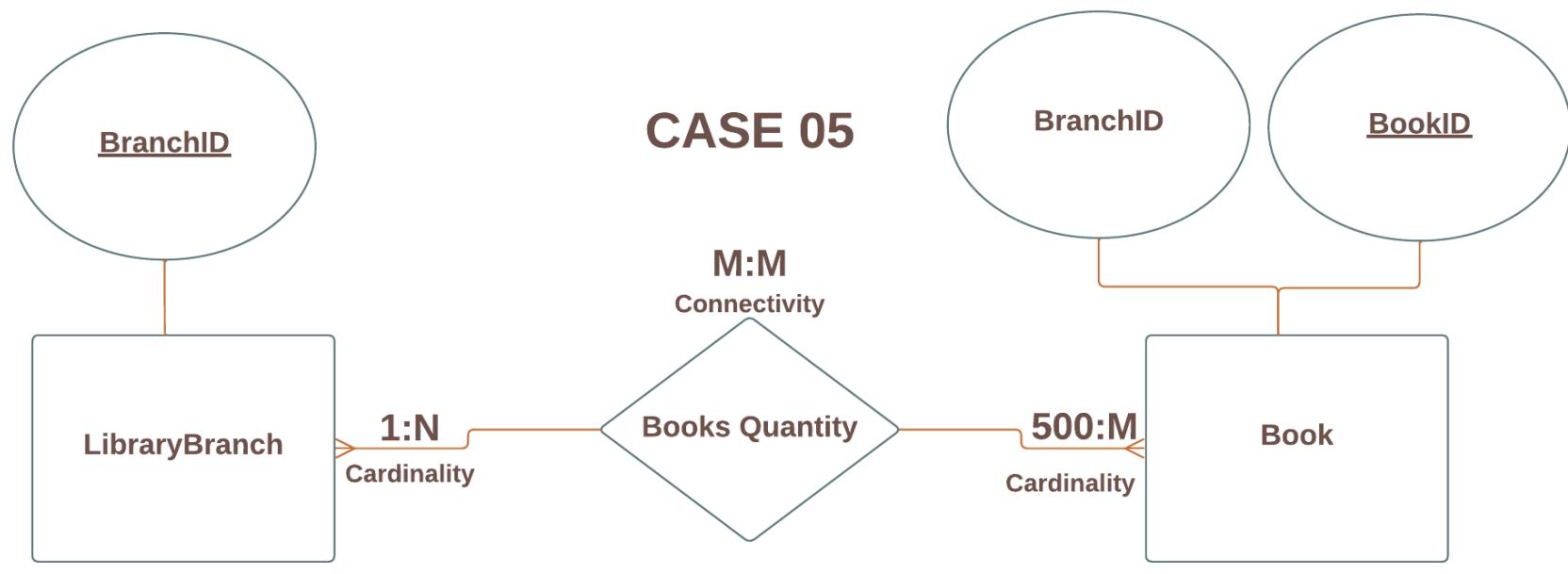
Every Book Should have only one Publisher

Case 05

Each branch must have enough books to borrow

Business Rule

Each Branch should have at least 500 Books



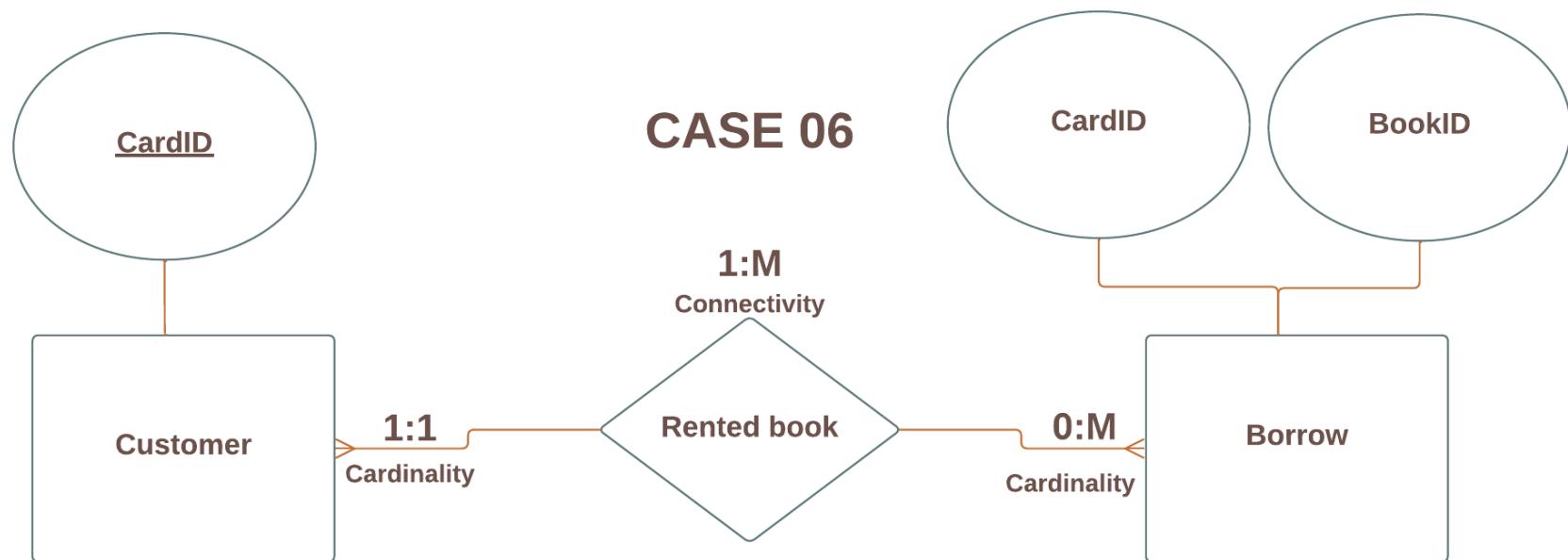
Each Branch should have at least 500 Books

Case 06

Book borrowing is available to all members

Business Rule

A book can be borrowed if available only.



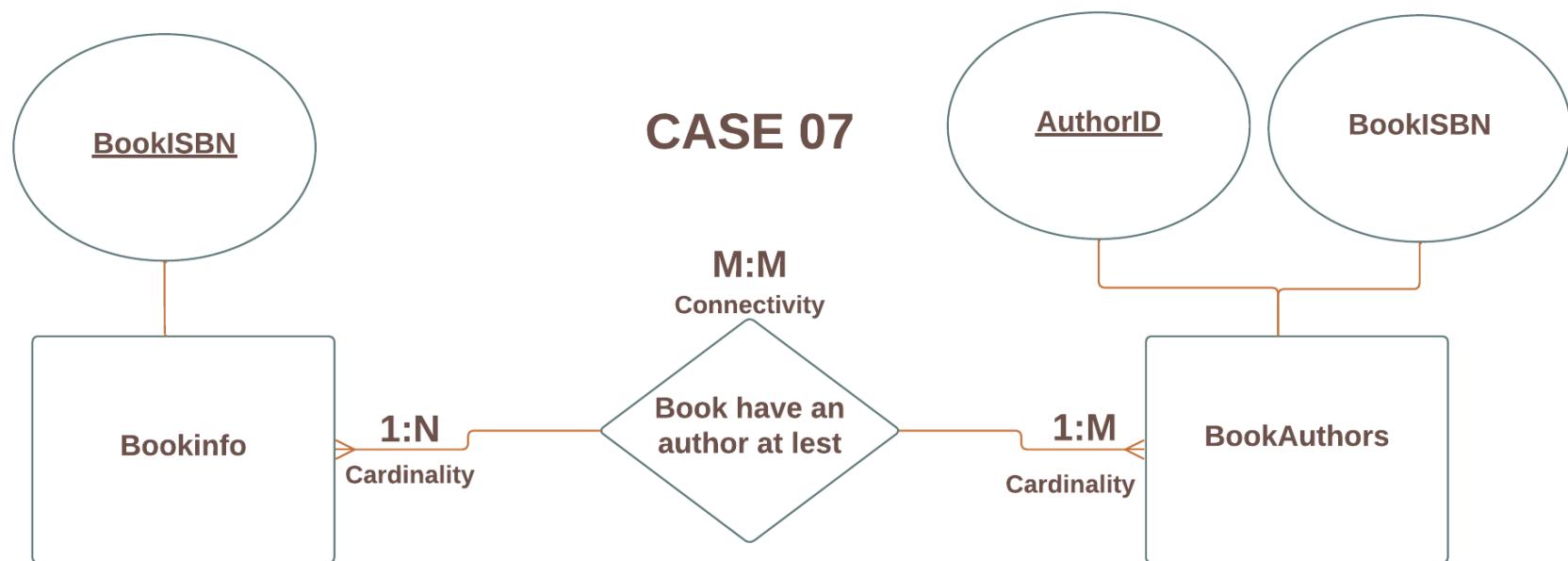
A bookID can be rented to one customer only.

Case 07

Every BookISBN should have one author at least in Book Authors Table

Business Rule

At Book Authors Table, AuthorsID and BookISB Should not be Null



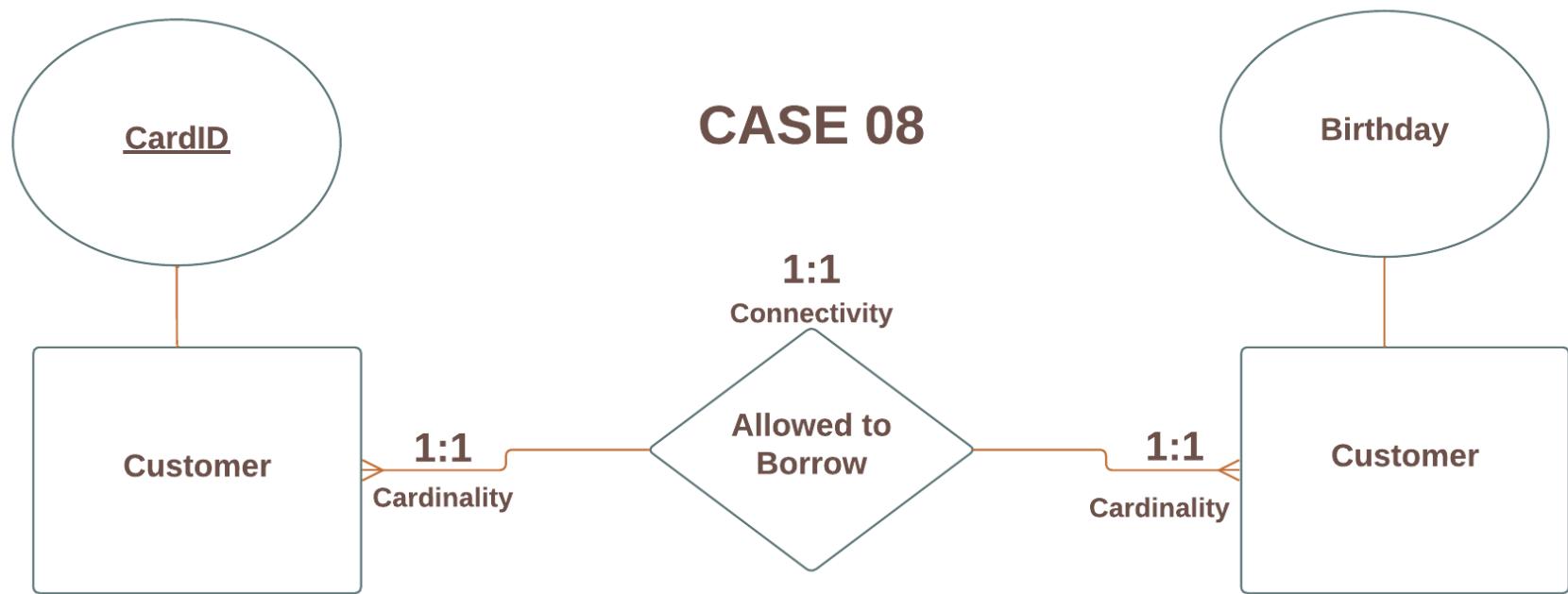
At Book Authors Table, Attributes for AuthorsID and BookISB Should not be Null

Case 08

Each one can be a customer

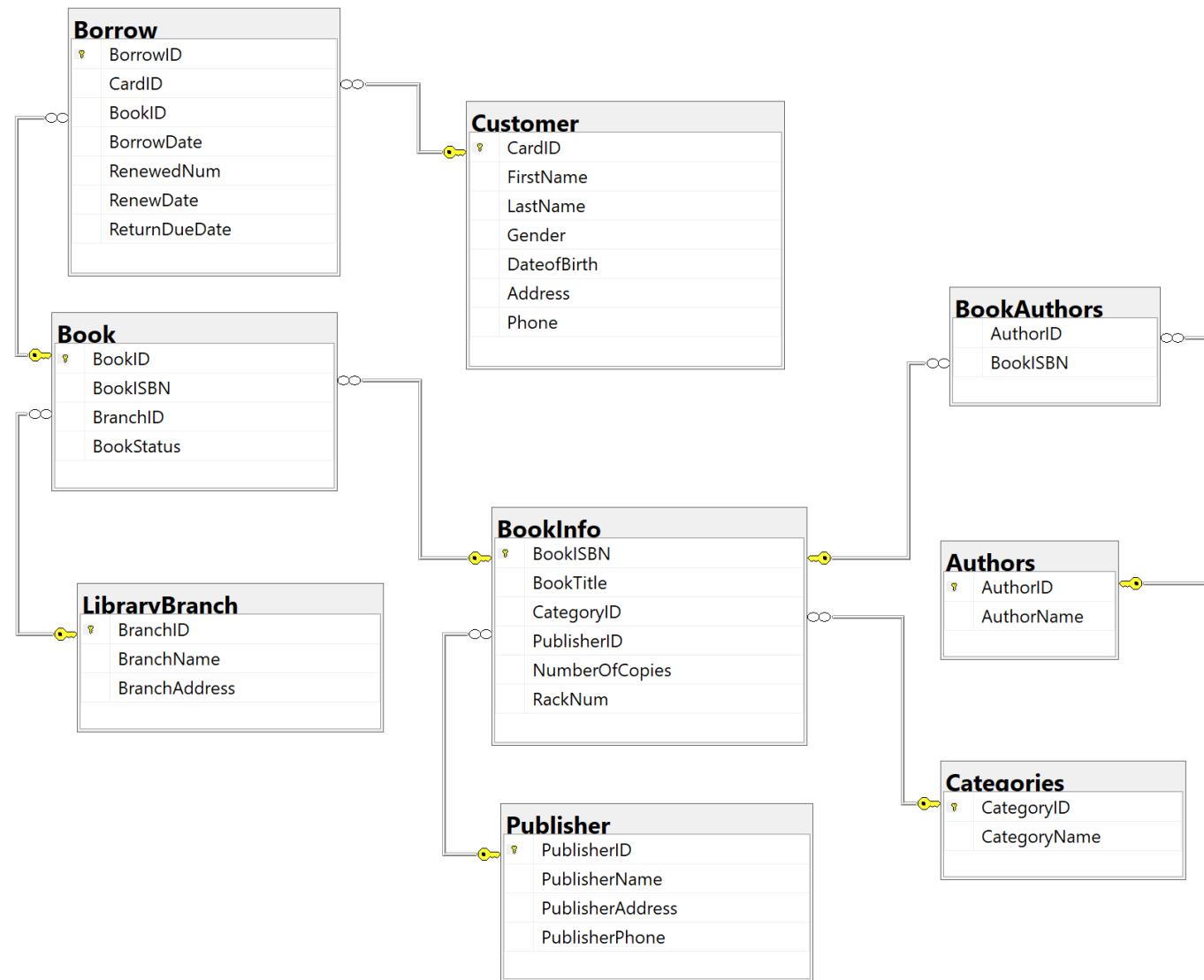
Business Rule

Each customer should be born before 2020 to be able to borrow a book.



Each customer should be born before 2020 to be able to borrow a book.

Deliverable 2:



SQLQuery1.sql - IYAD\lyad (59)*

1 | SELECT * from Customer;

2 |

110 %

Results Messages

| | CardID | FirstName | LastName | Gender | DateofBirth | Address | Phone |
|----|------------|------------|------------|------------|-------------|-------------------------|------------|
| 1 | 1000000000 | Danna | Luke | Female | 1985-04-15 | 341 Derek Lane | 2217294229 |
| 2 | 1000000001 | Liv | Geffcock | Female | 1999-10-13 | 64 Buell Lane | 7745809382 |
| 3 | 1000000002 | Sly | Marfe | Male | 1972-05-28 | 05281 Stang Way | 4104761045 |
| 4 | 1000000003 | Allina | Palfreyman | Female | 1979-08-16 | 56767 Artisan Center | 9333497962 |
| 5 | 1000000004 | Madonna | Gagie | Female | 1979-06-16 | 173 Londonderry Avenue | 8488846075 |
| 6 | 1000000005 | Alyssa | Jenik | Female | 1993-06-02 | 1 Anderson Plaza | 2413295921 |
| 7 | 1000000006 | Dorian | Klisch | Polygender | 1970-02-26 | 090 Hauk Avenue | 9386232035 |
| 8 | 1000000007 | Martainn | De Blase | Male | 1995-09-11 | 9538 Dahle Street | 4922577375 |
| 9 | 1000000008 | Orson | Tolcharde | Male | 1986-02-15 | 17868 Blackbird Parkway | 5434161715 |
| 10 | 1000000009 | Jenna | Elsmere | Polygender | 2009-08-25 | 41 Orin Point | 6542360142 |
| 11 | 1000000010 | Valerye | Parradine | Bigender | 1985-02-05 | 1 Straubel Center | 5638914664 |
| 12 | 1000000011 | Ram | Simanek | Male | 2001-08-09 | 1185 5th Parkway | 5274913003 |
| 13 | 1000000012 | Farlee | Beadles | Male | 1982-01-21 | 9 Stephen Trail | 1277032774 |
| 14 | 1000000013 | Sibilla | Grichukhin | Female | 1980-12-28 | 5536 Granby Court | 1728681752 |
| 15 | 1000000014 | Nicholas | Rolance | Male | 1997-04-03 | 6 Oriole Way | 1933453963 |
| 16 | 1000000015 | Lynn | Widmore | Male | 1980-03-08 | 7 Lunder Court | 5887115678 |
| 17 | 1000000016 | Phelia | Berthe | Female | 1973-07-28 | 34568 Lindbergh Trail | 7541070384 |
| 18 | 1000000017 | Alexandros | Lattie | Male | 1981-07-04 | 770 Pawling Street | 9512714534 |
| 19 | 1000000018 | Blakelee | Dankersley | Female | 1984-08-13 | 652 Becker Pass | 3465903191 |
| 20 | 1000000019 | Cassandre | Gilkison | Female | 1978-10-25 | 2 Ridgeway Street | 5405875934 |
| 21 | 1000000020 | Fidelio | Physic | Male | 1978-03-27 | 4134 Mockingbird Circle | 7696819784 |
| 22 | 1000000021 | Darby | Gooke | Female | 1983-07-03 | 229 Thompson Avenue | 6549860299 |
| 23 | 1000000022 | Rodolfo | Cicculini | Male | 1977-04-11 | 73367 Stone Corner Hill | 1408893320 |
| 24 | 1000000023 | Terrence | Chinnery | Male | 1974-02-01 | 870 McBride Crossing | 3038466284 |
| 25 | 1000000024 | Sawyere | Heber | Male | 1979-07-01 | 88903 Express Street | 5615716403 |

110 % ◀

Results Messages

| | BookISBN | BookTitle | CategoryID | PublisherID | NumberOfCopies | RackNum |
|----|------------|--|------------|-------------|----------------|---------|
| 1 | 2783161484 | Introduction to Algorithms | 8 | 21 | 1 | 81 |
| 2 | 2921571537 | The C Programming Language | 8 | 16 | 1 | 5 |
| 3 | 3059981591 | Big Data Big Challenges | 8 | 16 | 1 | 52 |
| 4 | 3198391644 | Designing Data | 8 | 22 | 1 | 75 |
| 5 | 3336801698 | Here Comes Peter Cottontail | 10 | 8 | 1 | 29 |
| 6 | 3475211752 | Thomas Crown Affair, The | 4 | 19 | 1 | 47 |
| 7 | 3613621805 | At Sword's Point | 2 | 9 | 1 | 4 |
| 8 | 3752031859 | Weary River | 6 | 16 | 1 | 5 |
| 9 | 3890441912 | Fatty Drives the Bus | 9 | 4 | 1 | 7 |
| 10 | 4028851966 | Young & Beautiful | 10 | 9 | 1 | 26 |
| 11 | 4167262020 | Bag of Hammers, A | 8 | 11 | 1 | 8 |
| 12 | 4305672073 | Animals United | 2 | 14 | 1 | 32 |
| 13 | 4444082127 | There Will Be Blood | 10 | 10 | 1 | 42 |
| 14 | 4582492180 | Ski Patrol | 7 | 4 | 1 | 29 |
| 15 | 4720902234 | Thousand Words, A | 5 | 17 | 1 | 49 |
| 16 | 4859312288 | Ragamuffin | 7 | 20 | 1 | 37 |
| 17 | 4997722341 | Hyde Park on Hudson | 3 | 7 | 1 | 15 |
| 18 | 5136132395 | Good Job: Stories of the FDNY, A | 6 | 22 | 1 | 2 |
| 19 | 5274542448 | Ishaqzaade | 1 | 18 | 1 | 15 |
| 20 | 5412952502 | Blind (Beul-la-in-deu) | 4 | 10 | 1 | 6 |
| 21 | 5551362556 | Taxi Blues | 4 | 17 | 1 | 29 |
| 22 | 5689772609 | Dead Silence | 10 | 2 | 1 | 27 |
| 23 | 5828182663 | Bat, The | 6 | 11 | 1 | 48 |
| 24 | 5966592716 | Choices | 7 | 16 | 1 | 14 |
| 25 | 6105002770 | Babysitter, The | 2 | 6 | 1 | 9 |
| 26 | 6243412824 | Alife | 6 | 12 | 1 | 24 |
| 27 | 6381822877 | Ordinary Decent Criminal | 2 | 4 | 1 | 17 |
| 28 | 6520232931 | Honeymoon | 3 | 24 | 1 | 6 |
| 29 | 6658642984 | 388 Arletta Avenue | 8 | 4 | 1 | 19 |
| 30 | 6797053038 | Taira Clan Saga, The (Shin heike monogatari) | 5 | 6 | 1 | 44 |
| 31 | 6935463092 | Restraint | 1 | 22 | 1 | 25 |
| 32 | 7073873145 | Pajama Party | 9 | 3 | 1 | 6 |
| 33 | 7212283199 | Sport, Sport, Sport | 7 | 24 | 1 | 2 |
| 34 | 7350693252 | Beethoven's 5th | 1 | 8 | 1 | 4 |
| 35 | 7489103306 | Trial by Jury | 2 | 5 | 1 | 33 |
| 36 | 7627513360 | Stolen Seas | 9 | 19 | 1 | 50 |
| 37 | 7765923413 | Marathon Family, The (Maratonci Trce Poca... | 4 | 9 | 1 | 30 |

```
/* ===== Introduction=====
```

```
Team:
```

```
IYAD ALOUDAT
```

```
MOHAMMAD ALTAMIMI
```

```
SIROOS RAHIMI TAGHANAKI
```

```
DORIS CHAN YEW TONG-SUEN FA
```

```
This File will Create DataBase, Table, Rules, and Data Records by Following the step below
```

- Create DataBase Name PublicLibrary
 - Create Tables
 - Create FOREIGN KEY
 - Add Data Records
 - Create Rules
- */

```
/* ===== Database Library System Setup ===== */
```

```
CREATE DATABASE PublicLibrary;
```

```
GO
```

```
use PublicLibrary
```

```
GO
```

```
/* ===== TABLES ===== */
```

```
CREATE TABLE Customer (
```

| | | | | |
|-------------|----------------|-----------|-------------------------|--------------|
| CardID | Numeric(10, 0) | NOT NULL | IDENTITY(1000000000, 1) | PRIMARY KEY, |
| FirstName | VARCHAR(50) | NOT NULL, | | |
| LastName | VARCHAR(50) | NOT NULL, | | |
| Gender | VARCHAR(10) | NOT NULL, | | |
| DateofBirth | DATE | NOT NULL, | | |
| Address | VARCHAR(100) | NOT NULL, | | |
| Phone | Numeric(10, 0) | NOT NULL | | |

```
);
```

```
GO
```

```
CREATE TABLE LibraryBranch (
```

```
BranchID      INT          NOT NULL  IDENTITY(1,1) PRIMARY KEY,  
BranchName    VARCHAR(50)  NOT NULL,  
BranchAddress VARCHAR(50)  NOT NULL  
);  
GO  
  
CREATE TABLE Categories (  
    CategoryID   INT          NOT NULL  IDENTITY(1,1) PRIMARY KEY,  
    CategoryName VARCHAR(50)  NOT NULL  
);  
GO  
  
CREATE TABLE Publisher (  
    PublisherID  INT          NOT NULL  IDENTITY(1,1) PRIMARY KEY,  
    PublisherName VARCHAR(50) NOT NULL,  
    PublisherAddress VARCHAR(100) NOT NULL,  
    PublisherPhone Numeric(10,0) NOT NULL  
);  
GO  
  
CREATE TABLE BookInfo (  
    BookISBN     Numeric(10,0) NOT NULL PRIMARY KEY,  
    BookTitle    VARCHAR(50)  NOT NULL,  
    CategoryID   INT          NOT NULL,  
    PublisherID  INT          NOT NULL,  
    NumberOfCopies INT        NOT NULL,  
    RackNum      INT          NOT NULL  
);  
GO  
  
CREATE TABLE Book (  
    BookID       INT          NOT NULL  IDENTITY(1,1) PRIMARY KEY,  
    BookISBN     Numeric(10,0) NOT NULL,  
    BranchID     INT          NOT NULL,
```

```

        BookStatus  VARCHAR(12)      NOT NULL
);
GO

CREATE TABLE Borrow (
    BorrowID      INT            NOT NULL IDENTITY(1,1) PRIMARY KEY,
    CardID        Numeric(10,0)   NOT NULL,
    BookID        INT            NOT NULL,
    BorrowDate    DATE           NOT NULL,
    RenewedNum    INT            NULL,
    RenewDate     DATE           NULL,
    ReturnDueDate DATE           NULL
);
GO

CREATE TABLE Authors (
    AuthorID      INT            NOT NULL IDENTITY(1,1) PRIMARY KEY,
    AuthorName    VARCHAR(50)    NOT NULL
);
GO

CREATE TABLE BookAuthors (
    AuthorID      INT  NOT NULL,
    BookISBN      Numeric(10,0) NOT NULL
);
GO

/* ===== FOREIGN KEY : FK ===== */

ALTER TABLE BookInfo
ADD CONSTRAINT FK_CategoryID_BookInfo
FOREIGN KEY(CategoryID)
REFERENCES Categories(CategoryID);

```

```
GO
```

```
ALTER TABLE BookInfo
ADD CONSTRAINT FK_PublisherID_BookInfo
FOREIGN KEY(PublisherID)
REFERENCES Publisher(PublisherID);
GO
```

```
ALTER TABLE Book
ADD CONSTRAINT FK_BookISBN_Book
FOREIGN KEY(BookISBN)
REFERENCES BookInfo(BookISBN);
GO
```

```
ALTER TABLE Book
ADD CONSTRAINT FK_BranchID_Book
FOREIGN KEY(BranchID)
REFERENCES LibraryBranch(BranchID);
GO
```

```
ALTER TABLE Borrow
ADD CONSTRAINT FK_CardID_Borrow
FOREIGN KEY(CardID)
REFERENCES Customer(CardID);
GO
```

```
ALTER TABLE Borrow
ADD CONSTRAINT FK_BookID_Borrow
FOREIGN KEY(BookID)
REFERENCES Book(BookID);
GO
```

```
ALTER TABLE BookAuthors
```

```
ADD CONSTRAINT FK_BookISBN_BookAuthors
FOREIGN KEY(BookISBN)
REFERENCES BookInfo(BookISBN);
GO
```

```
ALTER TABLE BookAuthors
ADD CONSTRAINT FK_AuthorID_BookAuthors
FOREIGN KEY(AuthorID)
REFERENCES Authors(AuthorID);
GO
```

```
/* ===== Data Records ===== */
/* ## Customer Table ### */
insert into Customer (FirstName, LastName, gender, DateofBirth, Address, Phone)
values
('Danna', 'Luke', 'Female', '1985-04-15', '341 Derek Lane', '2217294229'),
('Liv', 'Geffcock', 'Female', '1999-10-13', '64 Buell Lane', '7745809382'),
('Sly', 'Marfe', 'Male', '1972-05-28', '05281 Stang Way', '4104761045'),
('Allina', 'Palfreyman', 'Female', '1979-08-16', '56767 Artisan Center', '9333497962'),
('Madonna', 'Gagie', 'Female', '1979-06-16', '173 Londonderry Avenue', '8488846075'),
('Alyssa', 'Jenik', 'Female', '1993-06-02', '1 Anderson Plaza', '2413295921'),
('Dorian', 'Klisch', 'Polygender', '1970-02-26', '090 Hauk Avenue', '9386232035'),
('Martainn', 'De Blase', 'Male', '1995-09-11', '9538 Dahle Street', '4922577375'),
('Orson', 'Tolcharde', 'Male', '1986-02-15', '17868 Blackbird Parkway', '5434161715'),
('Jenna', 'Elsmere', 'Polygender', '2009-08-25', '41 Orin Point', '6542360142'),
('Valerye', 'Parradine', 'Bigender', '1985-02-05', '1 Straubel Center', '5638914664'),
('Ram', 'Simanek', 'Male', '2001-08-09', '1185 5th Parkway', '5274913003'),
('Farlee', 'Beadles', 'Male', '1982-01-21', '9 Stephen Trail', '1277032774'),
('Sibilla', 'Grichukhin', 'Female', '1980-12-28', '5536 Granby Court', '1728681752'),
('Nicholas', 'Rolance', 'Male', '1997-04-03', '6 Oriole Way', '1933453963'),
('Lynn', 'Widmore', 'Male', '1980-03-08', '7 Lunder Court', '5887115678'),
('Phelia', 'Berthe', 'Female', '1973-07-28', '34568 Lindbergh Trail', '7541070384'),
```

```
('Alexandros', 'Lattie', 'Male', '1981-07-04', '770 Pawling Street', '9512714534'),  
('Blakelee', 'Dankersley', 'Female', '1984-08-13', '652 Becker Pass', '3465903191'),  
('Cassandre', 'Gilkison', 'Female', '1978-10-25', '2 Ridgeway Street', '5405875934'),  
('Fidelio', 'Physic', 'Male', '1978-03-27', '4134 Mockingbird Circle', '7696819784'),  
('Darby', 'Gooke', 'Female', '1983-07-03', '229 Thompson Avenue', '6549860299'),  
('Rodolfo', 'Cicculini', 'Male', '1977-04-11', '73367 Stone Corner Hill', '1408893320'),  
('Terrence', 'Chinnery', 'Male', '1974-02-01', '870 McBride Crossing', '3038466284'),  
('Sawyere', 'Heber', 'Male', '1979-07-01', '88903 Express Street', '5615716403');
```

GO

```
/* ## LibraryBranch ### */  
insert into LibraryBranch (BranchName, BranchAddress)  
values  
('Fixflex', '171 New Castle Crossing'),  
('Sonair', '9 Barby Road'),  
('Mat Lam Tam', '04095 Holy Cross Center'),  
('Asoka', '6 Welch Crossing'),  
('Fixflex', '347 Menomonie Crossing'),  
('Daltfresh', '8 Donald Hill'),  
('Y-find', '5 Declaration Junction'),  
('Toughjoyfax', '2 Tony Parkway'),  
('Flowdesk', '76 Prairie Rose Park'),  
('Prodder', '34 Basil Parkway');
```

GO

```
/* ## Categories ### */  
insert into Categories (CategoryName)  
values  
('Action and Adventure'),  
('Classics'),  
('Detective and Mystery'),  
('Fantasy');
```

```
('History'),
('Horror'),
('Romance'),
('Science Fiction'),
('Short Stories'),
('Suspense and Thrillers');
```

GO

```
/* ## Publisher ### */
insert into Publisher (PublisherName, PublisherAddress, PublisherPhone)
values
('Hahn LLC', '9 Mariners Cove Road', '6645971159'),
('Metz, Hilll and Goldner', '133 Di Loreto Center', '3799469540'),
('Gleichner-Prosapco', '89497 Mayer Road', '7841788872'),
('Cruickshank-Windler', '75 High Crossing Road', '6715799599'),
('Predovic Inc', '79 Oneill Parkway', '2139437592'),
('Nolan, Cole and Schumm', '654 Paget Circle', '8259116693'),
('Von, Hegmann and Christiansen', '7825 Arizona Crossing', '2643801942'),
('Bartell-Tremblay', '93050 Towne Street', '8203939792'),
('Leannon, Bashirian and Murazik', '0503 Sugar Parkway', '9244176506'),
('Wunsch-Denesik', '7 Hallows Court', '6806396237'),
('Robel, Simonis and Friesen', '846 Drewry Pass', '2054176769'),
('Grant Inc', '200 Katie Hill', '2413807427'),
('West, Greenholt and Simonis', '51 Little Fleur Terrace', '5467642247'),
('Lemke-Predovic', '105 American Ash Avenue', '3905409744'),
('Thiel, Hintz and Kulas', '42107 Weeping Birch Way', '2027579172'),
('Gleichner, Cronin and Heaney', '36 Meadow Valley Plaza', '8246181254'),
('Ratke and Sons', '45713 Buhler Hill', '3328772359'),
('Little, Doyle and Roberts', '193 Lakewood Gardens Crossing', '6997922933'),
('Howe-Ortiz', '90 Cherokee Drive', '7081463715'),
('Ernser Group', '36 Maple Wood Circle', '4893183966'),
('Bashirian, Carroll and Cormier', '7014 Starling Terrace', '7569295354'),
('Rodriguez Inc', '40413 Anthes Avenue', '1196334374'),
```

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('Wintheiser LLC', '5263 Bluestem Trail', '6818485152'),
('Walker-Powlowski', '9088 American Street', '1029363403'),
('Aufderhar Group', '3 Hayes Court', '2582924077');
```

GO

```
/* ## BookInfo ### */
insert into BookInfo (BookISBN, BookTitle, CategoryID, PublisherID, NumberOfCopies,
RackNum)
values
(2783161484, 'Introduction to Algorithms', 8, 21, 1, 81),
(2921571537, 'The C Programming Language', 8, 16, 1, 5),
(3059981591, 'Big Data Big Challenges', 8, 16, 1, 52),
(3198391644, 'Designing Data', 8, 22, 1, 75),
(3336801698, 'Here Comes Peter Cottontail', 10, 8, 1, 29),
(3475211752, 'Thomas Crown Affair, The', 4, 19, 1, 47),
(3613621805, 'At Sword''s Point', 2, 9, 1, 4),
(3752031859, 'Weary River', 6, 16, 1, 5),
(3890441912, 'Fatty Drives the Bus', 9, 4, 1, 7),
(4028851966, 'Young & Beautiful', 10, 9, 1, 26),
(4167262020, 'Bag of Hammers, A', 8, 11, 1, 8),
(4305672073, 'Animals United', 2, 14, 1, 32),
(4444082127, 'There Will Be Blood', 10, 10, 1, 42),
(4582492180, 'Ski Patrol', 7, 4, 1, 29),
(4720902234, 'Thousand Words, A', 5, 17, 1, 49),
(4859312288, 'Ragamuffin', 7, 20, 1, 37),
(4997722341, 'Hyde Park on Hudson', 3, 7, 1, 15),
(5136132395, 'Good Job: Stories of the FDNY, A', 6, 22, 1, 2),
(5274542448, 'Ishaqzaade', 1, 18, 1, 15),
(5412952502, 'Blind (Beul-la-in-deu)', 4, 10, 1, 6),
(5551362556, 'Taxi Blues', 4, 17, 1, 29),
(5689772609, 'Dead Silence', 10, 2, 1, 27),
(5828182663, 'Bat, The', 6, 11, 1, 48),
(5966592716, 'Choices', 7, 16, 1, 14),
```

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(6105002770, 'Babysitter, The', 2, 6, 1, 9),
(6243412824, 'Alfie', 6, 12, 1, 24),
(6381822877, 'Ordinary Decent Criminal', 2, 4, 1, 17),
(6520232931, 'Honeymoon', 3, 24, 1, 6),
(6658642984, '388 Arletta Avenue', 8, 4, 1, 19),
(6797053038, 'Taira Clan Saga, The (Shin heike monogatari)', 5, 6, 1, 44),
(6935463092, 'Restraint', 1, 22, 1, 25),
(7073873145, 'Pajama Party', 9, 3, 1, 6),
(7212283199, 'Sport, Sport, Sport', 7, 24, 1, 2),
(7350693252, 'Beethoven''s 5th', 1, 8, 1, 4),
(7489103306, 'Trial by Jury', 2, 5, 1, 33),
(7627513360, 'Stolen Seas', 9, 19, 1, 50),
(7765923413, 'Marathon Family, The (Maratonci Trce Pocasni Krug)', 4, 9, 1, 30),
(7904333467, 'Burn, Witch, Burn (Night of the Eagle)', 3, 11, 1, 17),
(8042743520, 'The Hire: Star, The', 7, 6, 1, 8),
(8181153574, 'Judith of Bethulia', 1, 18, 1, 9),
(8319563628, 'Bolero', 10, 10, 1, 15),
(8457973681, 'Dead Man''s Walk', 4, 25, 1, 20),
(8596383735, 'Secret Agent, The', 3, 12, 1, 29),
(8734793788, 'Iron Island (Jazireh Ahani)', 7, 12, 1, 11),
(8873203842, 'Teen Spirit', 9, 18, 1, 40),
(9011613896, 'Most Wanted Man, A', 2, 22, 1, 9),
(9150023949, 'Snowriders', 9, 25, 1, 32),
(9288434003, 'War on Democracy, The', 5, 10, 1, 15),
(9426844056, 'Road to Zanzibar', 1, 5, 1, 8),
(9565254110, 'Inconvenient Tax, An', 2, 13, 1, 33);
```

GO

```
/* ## Book ### */
insert into Book (BookISBN, BranchID, BookStatus)
values
(2783161484, 10, 'Available'),
(2921571537, 5, 'Borrowed'),
```

```
(3059981591, 10, 'Available'),  
(3198391644, 6, 'Borrowed'),  
(3336801698, 10, 'Borrowed'),  
(3475211752, 2, 'Borrowed'),  
(3613621805, 5, 'Available'),  
(3752031859, 2, 'Available'),  
(3890441912, 6, 'Available'),  
(4028851966, 1, 'Available'),  
(4167262020, 5, 'Available'),  
(4305672073, 7, 'Borrowed'),  
(4444082127, 10, 'Borrowed'),  
(4582492180, 6, 'Available'),  
(4720902234, 1, 'Borrowed'),  
(4859312288, 1, 'Available'),  
(4997722341, 5, 'Available'),  
(5136132395, 2, 'Available'),  
(5274542448, 5, 'Borrowed'),  
(5412952502, 9, 'Borrowed'),  
(5551362556, 6, 'Available'),  
(5689772609, 3, 'Borrowed'),  
(5828182663, 7, 'Available'),  
(5966592716, 3, 'Borrowed'),  
(6105002770, 4, 'Borrowed'),  
(6243412824, 4, 'Borrowed'),  
(6381822877, 6, 'Available'),  
(6520232931, 4, 'Available'),  
(6658642984, 2, 'Borrowed'),  
(6797053038, 1, 'Available'),  
(6935463092, 7, 'Available'),  
(7073873145, 2, 'Borrowed'),  
(7212283199, 8, 'Available'),  
(7350693252, 7, 'Available'),  
(7489103306, 6, 'Borrowed'),  
(7627513360, 6, 'Available'),
```

```
(7765923413, 8, 'Available'),  
(7904333467, 9, 'Available'),  
(8042743520, 7, 'Borrowed'),  
(8181153574, 2, 'Available'),  
(8319563628, 10, 'Available'),  
(8457973681, 1, 'Available'),  
(8596383735, 10, 'Available'),  
(8734793788, 9, 'Borrowed'),  
(8873203842, 8, 'Available'),  
(9011613896, 7, 'Available'),  
(9150023949, 1, 'Borrowed'),  
(9288434003, 7, 'Borrowed'),  
(9426844056, 10, 'Available'),  
(9565254110, 2, 'Available');
```

GO

```
/* ## Borrow Table ### */  
insert into Borrow (CardID, BookID, BorrowDate, ReturnDueDate, RenewedNum)  
values  
(1000000018, 1, '2022-05-12', '2022-06-10', 0),  
(1000000016, 13, '2022-03-22', '2022-04-20', 0),  
(1000000023, 15, '2022-05-28', '2022-06-26', 0),  
(1000000012, 9, '2021-11-01', '2021-11-30', 0),  
(1000000022, 10, '2022-08-20', '2022-09-18', 0),  
(1000000008, 7, '2021-10-22', '2021-11-20', 0),  
(1000000005, 12, '2021-12-18', '2022-01-16', 0),  
(1000000008, 3, '2022-09-09', '2022-10-07', 0),  
(1000000021, 8, '2022-07-26', '2022-08-24', 0),  
(1000000010, 7, '2022-07-14', '2022-08-12', 0),  
(1000000001, 18, '2022-06-05', '2022-07-03', 0),  
(1000000014, 4, '2022-08-19', '2022-09-17', 0),  
(1000000020, 9, '2022-09-10', '2022-10-08', 0),  
(1000000001, 3, '2022-08-16', '2022-09-14', 0),
```

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(1000000009, 8, '2021-09-29', '2021-10-27', 0),
(1000000021, 14, '2022-01-29', '2022-02-27', 0),
(1000000014, 10, '2022-05-12', '2022-06-10', 0),
(1000000024, 12, '2021-10-28', '2021-10-26', 0),
(1000000008, 13, '2022-04-08', '2022-05-08', 0),
(1000000002, 4, '2022-07-26', '2022-08-24', 0),
(1000000018, 5, '2021-12-09', '2022-01-07', 0),
(1000000006, 9, '2022-07-30', '2022-08-28', 0),
(1000000004, 12, '2022-07-03', '2022-08-01', 0),
(1000000014, 18, '2021-11-01', '2021-11-29', 0),
(1000000019, 8, '2022-08-16', '2022-09-14', 0);
```

```
GO
/* ## Authors ### */
insert into Authors (AuthorName)
values
('Roma Astlatt'),
('Doris Crossby'),
('Joscelin Heape'),
('Timi Laroux'),
('Allard Kadd'),
('Angelina Gillingham'),
('Mora Paulon'),
('Koral Pittway'),
('Jacobo Dauber'),
('Penelopa Dewire'),
('Aeriel Fentem'),
('Andrej Geeve'),
('Ambrosi Pirouet'),
('Elmo Forrest'),
('Willy Oleszczuk'),
('Marga Defond'),
('Victoir Spellacey'),
('Mallory Rutledge'),
```

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('Freemon Kightly'),
('Tracy Routledge'),
('Brantley Kinny'),
('Lyndsay Brimilcombe'),
('Ivie Straw'),
('Bobbie Bestar'),
('Sarette Andrioletti');

GO
/* ## BookAuthors ### */
insert into BookAuthors (AuthorID, BookISBN)
values
(24, 2783161484),
(21, 2921571537),
(21, 3059981591),
(14, 3198391644),
(7, 3336801698),
(8, 3475211752),
(17, 3613621805),
(5, 3752031859),
(17, 3890441912),
(6, 4028851966),
(12, 4167262020),
(16, 4305672073),
(19, 4444082127),
(12, 4582492180),
(22, 4720902234),
(7, 4859312288),
(22, 4997722341),
(13, 5136132395),
(14, 5274542448),
(20, 5412952502),
(10, 5551362556),
(24, 5689772609),
```

```
(12, 5828182663),
(23, 5966592716),
(21, 6105002770),
(18, 6243412824),
(16, 6381822877),
(12, 6520232931),
(24, 6658642984),
(6, 6797053038),
(2, 6935463092),
(11, 7073873145),
(15, 7212283199),
(7, 7350693252),
(14, 7489103306),
(22, 7627513360),
(15, 7765923413),
(19, 7904333467),
(14, 8042743520),
(14, 8181153574),
(9, 8319563628),
(3, 8457973681),
(17, 8596383735),
(21, 8734793788),
(6, 8873203842),
(12, 9011613896),
(7, 9150023949),
(22, 9288434003),
(15, 9426844056),
(24, 9565254110);

/* ====== Rules ===== */
-- Case 01: 30 Days is the Maximum number of days allowed to borrow a book
ALTER TABLE Borrow
ADD CHECK( (DATEDIFF(year,ReturnDueDate,BorrowDate))<31);
GO
```

```
-- Case 02 : 15 books is The maximum number of borrowed books.  
SELECT CardID, count(BookID) from Borrow group by CardID having count(BookID)<=15;  
GO  
  
-- Case 03: Customers can renew the book return due date twice only  
ALTER TABLE Borrow  
ADD CHECK ((RenewedNum)<3);  
GO  
  
-- Case 04: Every Book Should have only one Publisher  
-- ##### Added in FOREIGN KEY #####  
  
-- Case 05 : Each Branch should have at least 500 Books  
-- #### Note: We used 5 for the test because we don't have 500 record  
SELECT BranchName, count(BookID) FROM Book JOIN LibraryBranch ON Book.BranchID =  
LibraryBranch.BranchID  
group by BranchName having count(BookID)>=5;  
GO  
  
-- Case 06: A book can be borrowed if available only.  
SELECT BookStatus, BorrowID FROM Book JOIN Borrow ON Book.BookID = Borrow.BookID where  
BookStatus='Available';  
GO  
  
-- Case 07: At Book Authors Table, AuthorsID and BookISBN Should not be Null  
-- ##### Added in Table #####  
  
-- Case 08: Each customer should be born before 2020  
ALTER TABLE Customer  
ADD CHECK (DateofBirth<'2020-01-01');  
GO
```