

My personal library, a labor of love!

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IST659 M400

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Summary

Being an avid reader, I have purchased, traded and otherwise amassed a respectable collection of books that I have lugged from residence to residence but also from country to country, across two continents for over 30 years. While the quantity of books is unknown, they number well into the hundreds and some cataloging device is needed to make sense of them. They range in format from graphic novels to dictionaries, paperbacks and hardcovers. I propose to create and implement a database to track the numerous works and allow the various stakeholders of the house to easily access, locate and consult their required reading. This task will take place in two phases: phase 1 will consist of entities and relations being established, regulated by business rules. The database will provide answers to important questions formulated around the significance of the data. Conceptual and logical models of the database provide an overview of the relationships between entities and serve as the overall database design. I will also include a glossary to help identify and explain the various entities and relations.

Business Rules

-  Each book has an ISBN.
-  Each book has one or more author.
-  Each book has a print date.
-  Each book has a original publication date that may be different from the print date.
-  Each book has a country of original print.
-  Each book has a publisher.
-  Each book has a number of pages.
-  Each book has one or more genre.
-  Each book has a print language.
-  Each book has an original language that may be different from the print language (translation).
-  Each book may be part of a collection.
-  Each author has a first name, last name.
-  Each author has a nationality.
-  Each author has a date of birth and, if applicable, a date of death.
-  Each author writes in a specific language.
-  Each author has a country of birth.
-  Each reader has a name.
-  Each reader has an age.
-  Each reader has a gender.

Stakeholders

The books are my personal property and can be found at my private residence, thus limiting the number of potential stakeholders. Among those I would include myself, Garen (44/M) and the other 3 members of my household (wife Ani (45/F) and 2 sons, Alec (12/M) and Greg(15/M), along with possible guests and visitors. All stakeholders would be able to access the database and based on their preference, select a book to read.




















Glossary

- 📖 A book is written/printed literary work.
- 📖 A publisher is a corporation whose business is publishing.
- 📖 An author is the writer of a literary work.
- 📖 A genre is a category of literary composition, characterized by a particular style, content or form.
- 📖 ISBN refers to International Standard Book Number, a unique identifier for each book.
- 📖 Print date refers to the date a book was physically printed.
- 📖 Original publication date refers to the date the book was first published.
- 📖 Print language refers to the language of the book.
- 📖 Original language refers to the language the book was originally written in which could defer from the print language (translated work).
- 📖 Nationality refers to the author's membership to a particular nation.
- 📖 Collection refers to a sub-group within the publisher's organization.

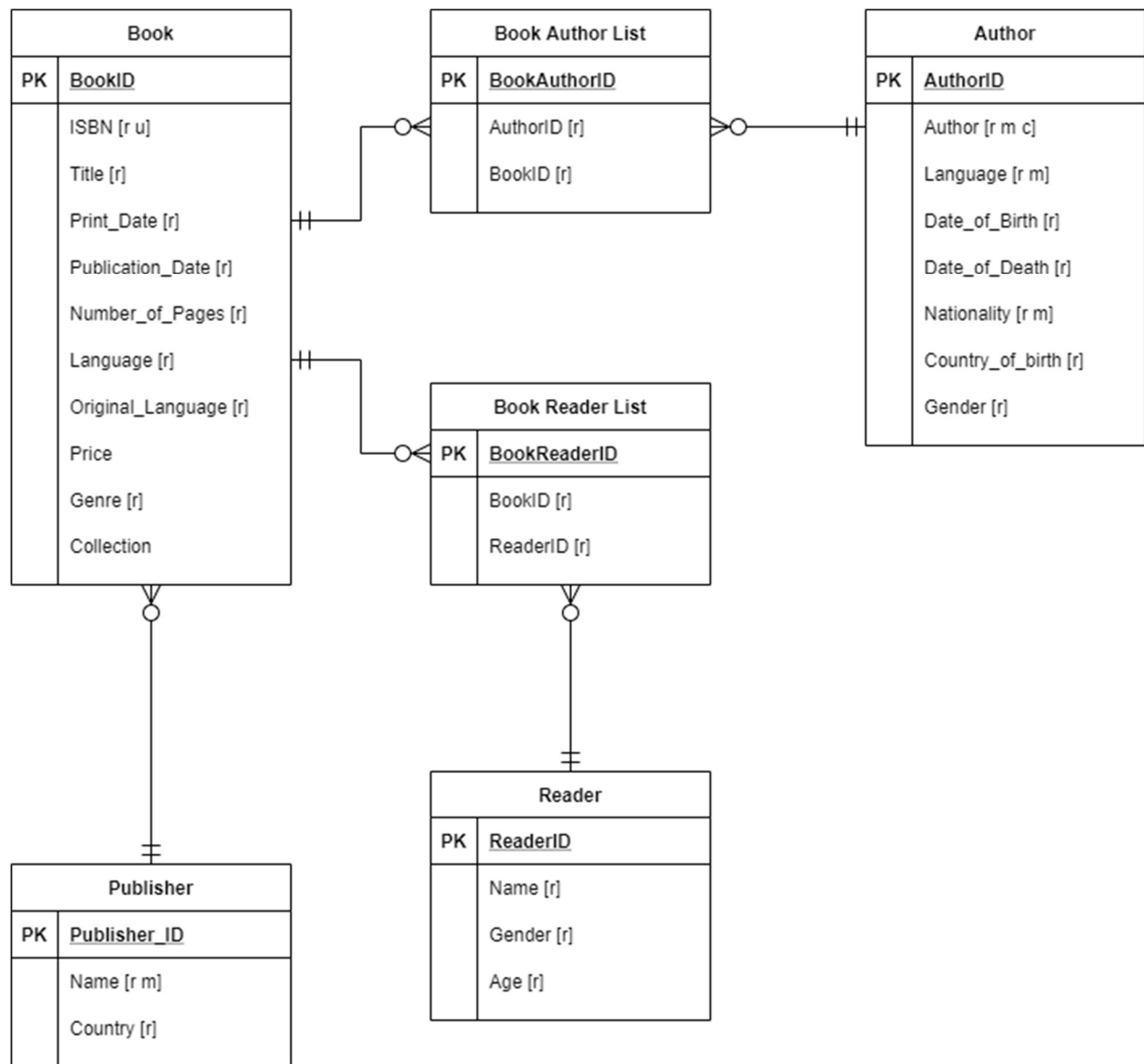
Assumptions

- 📖 For this project, I am interested in my current book collection but given the time constraints, I will only insert a small subset of data (books). I will add to the database as time allows in the future.

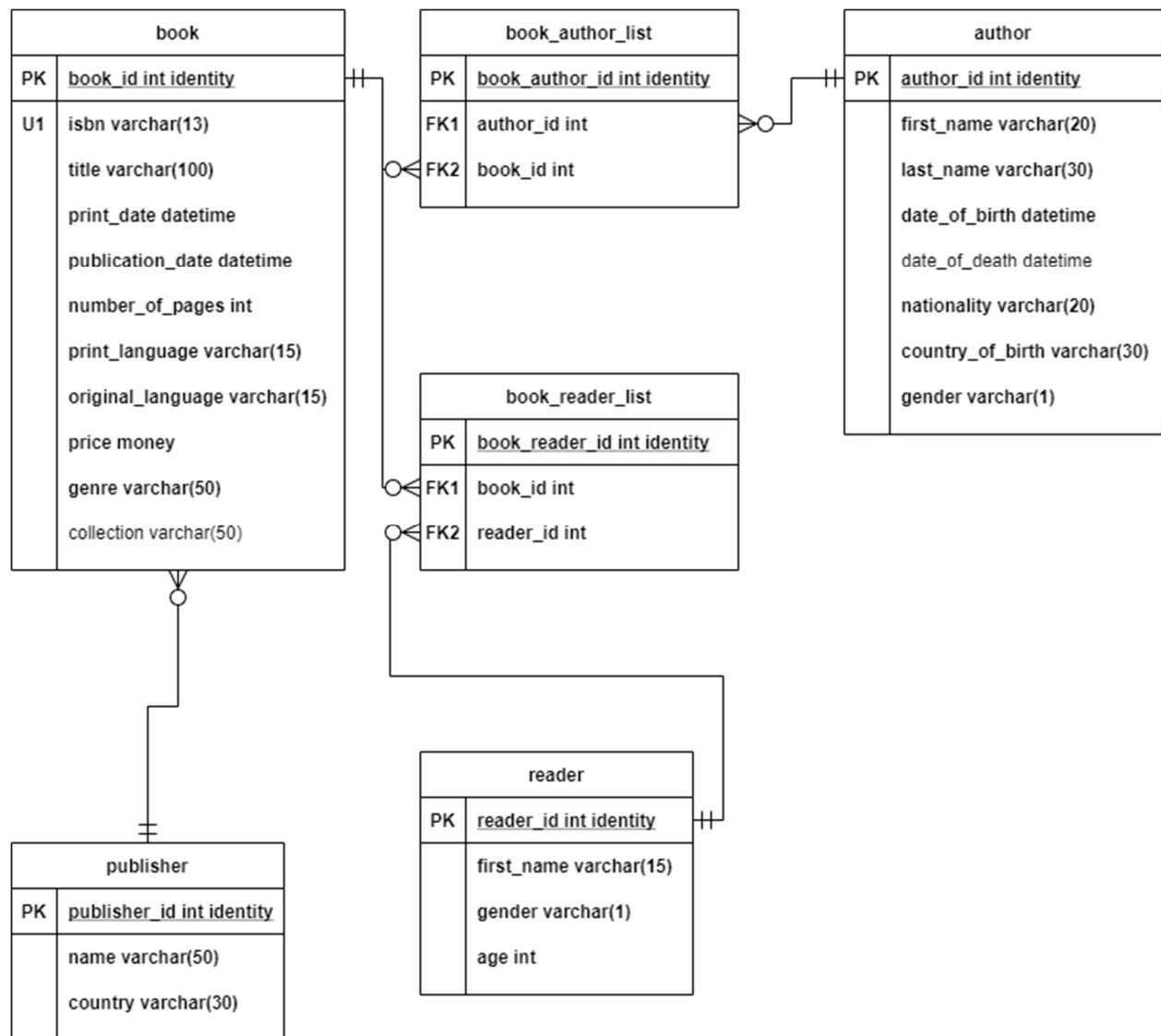
Data questions

-  Which is my oldest published book?
-  Which book has the fewest pages?
-  How many books do I own?
-  How many books do I own in a particular language?
-  How many graphic novels do I own?
-  Do I own the same book in multiple languages?
-  Which language is most represented among my books?
-  What is the most expensive book I own?
-  How many books are in their original language?
-  How many books were printed in a particular country?
-  How many books of a specific genre do I own?
-  How many books belong to a particular collection?
-  How many books were authored in a specific century?
-  How many books have authors born at a specific time?
-  What books were authored by people born in a specific country?
-  What books were written by female authors?
-  How many books are published in a specific country?
-  Who publishes most of my books?
-  Which reader reads the most graphic novels?

Conceptual Model:



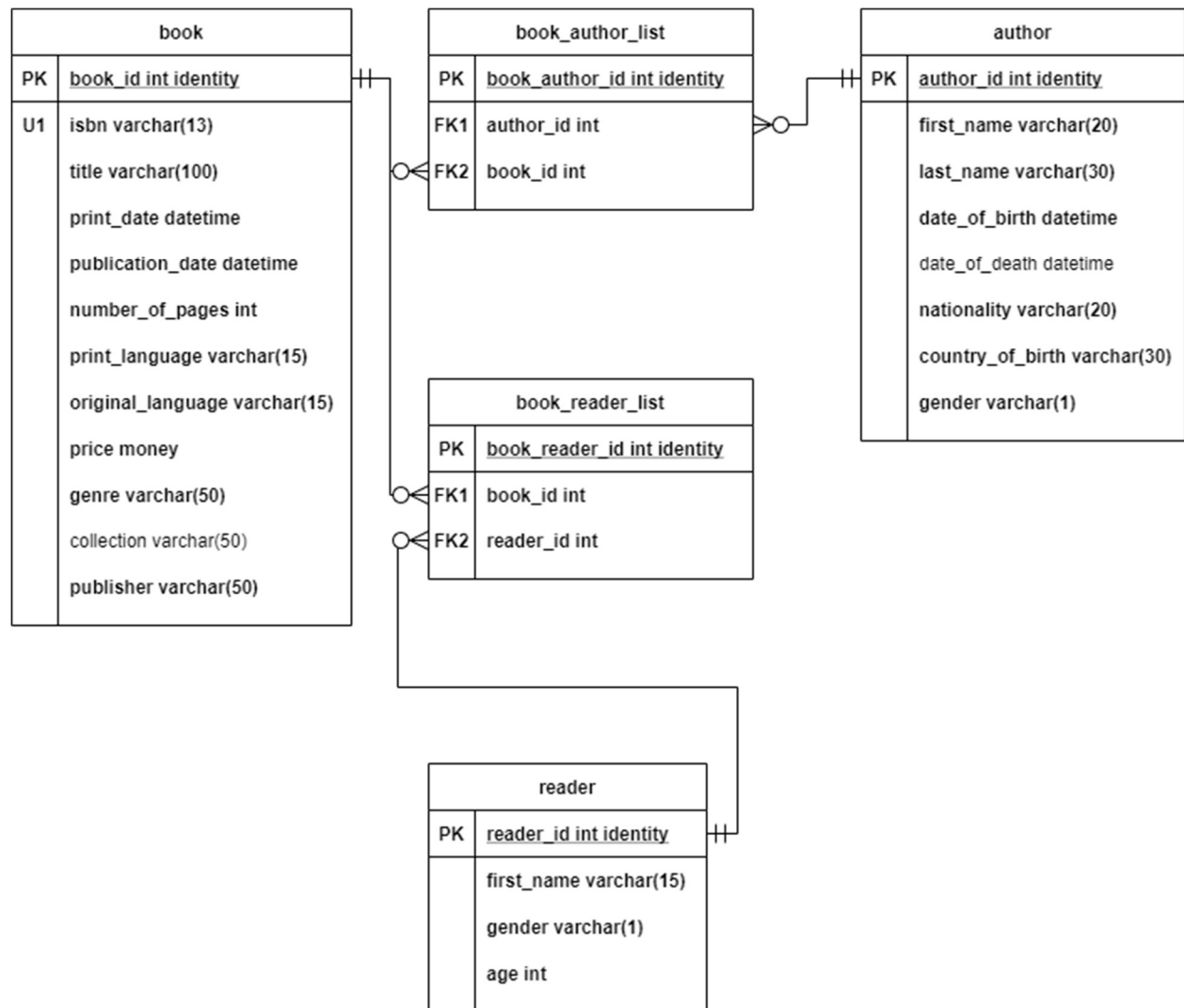
Logical Model:



Logical Model Updated:

I realized that each book had one publisher and decided to simply incorporate a 'publisher' column in my 'book' table. I dropped the idea of listing the publisher's country and therefore did not have the need for a 'publisher' table.

Here is the resulting logical model:



Code:

```
/*
    Author: Garen Moghoyan
    Course IST659 M400
    Term: Winter 2021
    Final Project: My Personal Library, A Labor of Love
*/

-- Drop Tables, Functions, Views, and Procedures --

-- Drop functions --

DROP FUNCTION IF EXISTS dbo.author_ID_lookup
DROP FUNCTION IF EXISTS dbo.what_was_their_first_name
DROP FUNCTION IF EXISTS dbo.what_was_their_last_name
DROP FUNCTION IF EXISTS dbo.reader_ID_lookup
DROP FUNCTION IF EXISTS dbo.book_lookup

-- Drop views --
DROP VIEW IF EXISTS dbo.book_and_author
DROP VIEW IF EXISTS dbo.book_and_reader
DROP VIEW IF EXISTS dbo.total_books_in_original_language

-- Drop procedures --
DROP PROCEDURE IF EXISTS dbo.add_new_author
DROP PROCEDURE IF EXISTS dbo.add_new_book
DROP PROCEDURE IF EXISTS dbo.link_book_author
DROP PROCEDURE IF EXISTS dbo.link_book_reader

-- Drop tables --
DROP TABLE IF EXISTS dbo.book_reader_list
DROP TABLE IF EXISTS dbo.book_author_list
DROP TABLE IF EXISTS dbo.author
DROP TABLE IF EXISTS dbo.reader
DROP TABLE IF EXISTS dbo.book

-- Create Tables --

-- Creating the Book table --
CREATE TABLE dbo.book (
    book_id int identity,
    isbn varchar(13) not null,
    title varchar (100) not null,
    print_date int not null,
    publication_date int not null,
    number_of_pages int not null,
    print_language varchar(15) not null,
    original_language varchar(15) not null,
    price money not null,
    genre varchar(50) not null,
    collection varchar(50),
    publisher varchar(50) not null,
    CONSTRAINT PK_book PRIMARY KEY (book_id),
```

```

        CONSTRAINT U1_book UNIQUE (isbn),
    )
-- End creating the Book table--

-- Creating the Reader table --
CREATE TABLE dbo.reader (
    reader_id int identity not null,
    first_name varchar(15) not null,
    gender varchar(1) not null,
    age int not null
    CONSTRAINT PK_reader PRIMARY KEY (reader_id)
)
-- End creating the Reader table --

-- Creating the Author table --
CREATE TABLE dbo.author (
    author_id int identity not null,
    first_name varchar(20) not null,
    last_name varchar(30) not null,
    date_of_birth int not null,
    date_of_death int not null,
    nationality varchar(20) not null,
    country_of_birth varchar(30) not null,
    gender varchar(10)
    CONSTRAINT PK_author PRIMARY KEY (author_id)
)
-- End creating the Author table --

-- Creating the Book_Author_List table --
CREATE TABLE dbo.book_author_list (
    book_author_id int identity not null,
    author_id int not null,
    book_id int not null
    CONSTRAINT PK_book_author_list PRIMARY KEY (book_author_id)
    CONSTRAINT FK1_book_author_list FOREIGN KEY (author_id) REFERENCES
author(author_id),
    CONSTRAINT FK2_book_author_list FOREIGN KEY (book_id) REFERENCES book(book_id)
)
-- End creating the Book_Author_List table --

-- Creating the Book_Reader_List table --
CREATE TABLE dbo.book_reader_list (
    book_reader_id int identity not null,
    book_id int not null,
    reader_id int not null
    CONSTRAINT PK_book_reader_list PRIMARY KEY (book_reader_id)
    CONSTRAINT FK1_book_reader_list FOREIGN KEY (book_id) REFERENCES book(book_id),
    CONSTRAINT FK2_book_reader_list FOREIGN KEY (reader_id) REFERENCES
reader(reader_id)
)
GO
-- End creating the Book_Reader_List table --

-- Functions --

-- Gets an author ID when the author's first and/or last names are known

```

```

CREATE OR ALTER FUNCTION dbo.author_ID_lookup (@first_name varchar(20), @last_name
varchar(30))
RETURNS int AS
BEGIN
DECLARE @returnValue int
SELECT @returnValue = author_id FROM author
WHERE author.first_name=@first_name
OR author.last_name=@last_name
RETURN @returnValue
END
GO

```

```

-- Gets a first name when the last name is known
CREATE OR ALTER FUNCTION dbo.what_was_their_first_name (@last_name varchar(30))
RETURNS varchar(30) AS
BEGIN
DECLARE @returnValue varchar (30)
SELECT @returnValue = first_name from author
WHERE author.last_name=@last_name
RETURN @returnValue
END
GO

```

```

-- Gets a last name when first name is known
CREATE OR ALTER FUNCTION dbo.what_was_their_last_name (@first_name varchar(30))
RETURNS varchar(30) AS
BEGIN
DECLARE @returnValue varchar (30)
SELECT @returnValue = last_name from author
WHERE author.first_name=@first_name
RETURN @returnValue
END
GO

```

```

-- Gets a reader ID when the reader's first name is known
CREATE OR ALTER FUNCTION dbo.reader_ID_lookup (@first_name varchar(15))
RETURNS int AS
BEGIN
DECLARE @returnValue int
SELECT @returnValue = reader_id FROM reader
WHERE reader.first_name=@first_name
RETURN @returnValue
END
GO

```

```

-- Gets a book ID when the book's title is known
CREATE OR ALTER FUNCTION dbo.book_lookup (@title varchar(100))
RETURNS int AS
BEGIN
DECLARE @returnValue int
SELECT @returnValue = book_id FROM book

```

```

WHERE book.title = @title
RETURN @returnValue
END
GO

```

-- Stored Procedures --

```

/*
-- Create a procedure to add a new author to the database --
Inputs:
    @first_name:      the author's first name
    @last_name:       the author's last name
    @date_of_birth:   the author's date of birth
    @date_of_death:   the author's date of death
    @nationality:     the author's nationality
    @country_of_birth: the author's country of birth
    @gender:          the author's gender

Returns:
    @@ identity with the value inserted
*/

CREATE OR ALTER PROCEDURE dbo.add_new_author (@first_name varchar(20), @last_name
varchar(30), @date_of_birth int, @date_of_death int, @country_of_birth varchar(30),
@nationality varchar (20), @gender varchar (1))
AS
BEGIN
INSERT INTO author (
    first_name,
    last_name,
    date_of_birth,
    date_of_death,
    nationality,
    country_of_birth,
    gender)
VALUES
    (@first_name,
    @last_name,
    @date_of_birth,
    @date_of_death,
    @nationality,
    @country_of_birth,
    @gender)

RETURN @@identity
END
GO

```

```

/*
-- Create a procedure to add a new book to the database --
Inputs:
    @isbn:              the book's isbn
    @title:             the book's title
    @print_date:        the book's print date
    @publication_date:  the book's publication date
    @number_of_pages:   the book's number of pages
    @print_language:    the book's print language

```

```

        @original_language: the book's original language
        @price:             the book's price
        @genre:             the book's genre
        @collection:        the book's collection
        @publisher:         the book's publisher
Returns:
        @@ identity with the value inserted
*/

CREATE OR ALTER PROCEDURE dbo.add_new_book (@isbn varchar (13), @title varchar(100),
@print_date int, @publication_date int, @number_of_pages int, @print_language varchar
(15),
                                @original_language varchar (15), @price
money, @genre varchar (50), @collection varchar(50), @publisher varchar (50))
AS
BEGIN
INSERT INTO book (
        isbn,
        title,
        print_date,
        publication_date,
        number_of_pages,
        print_language,
        original_language,
        price,
        genre,
        collection,
        publisher)
VALUES      (@isbn,
        @title,
        @print_date,
        @publication_date,
        @number_of_pages,
        @print_language,
        @original_language,
        @price,
        @genre,
        @collection,
        @publisher)

RETURN @@identity
END
GO

/*
-- Create a procedure to link a book with its author --
Inputs:
        @title:             the book's title
        @first_name:        the author's first name
        @last_name:         the author's last name
Returns:
        @@ identity with the value inserted

*/

CREATE OR ALTER PROCEDURE dbo.link_book_author (@book_id int, @author_id int)
AS

```

```

BEGIN
INSERT INTO book_author_list (
        book_id,
        author_id)
VALUES      (@book_id,
            @author_id)

RETURN @@identity
END
GO

/*
-- Create a procedure to link a reader to a book --
Inputs:
        @title:           the book's title
        @first_name:      the reader's first name
Returns:
        @@ identity with the value inserted
*/

CREATE OR ALTER PROCEDURE dbo.link_book_reader (@book_id int, @reader_id int)
AS
BEGIN
INSERT INTO book_reader_list (
        book_id,
        reader_id)
VALUES      (@book_id,
            @reader_id)

RETURN @@identity
END
GO

-- Views --

-- Create view to see who wrote what --
CREATE OR ALTER VIEW dbo.book_and_author AS
SELECT
        book.title,
        author.first_name,
        author.last_name
FROM book_author_list
JOIN book ON book_author_list.book_id = book.book_id
JOIN author ON book_author_list.author_id=author.author_id
ORDER BY title ASC OFFSET 0 ROWS
GO

-- Create view to see who read what --
CREATE OR ALTER VIEW dbo.book_and_reader AS
SELECT
        book.title,
        reader.first_name

```

```

FROM book_reader_list
JOIN book ON book_reader_list.book_id = book.book_id
JOIN reader ON book_reader_list.reader_id=reader.reader_id
ORDER BY title ASC OFFSET 0 ROWS
GO

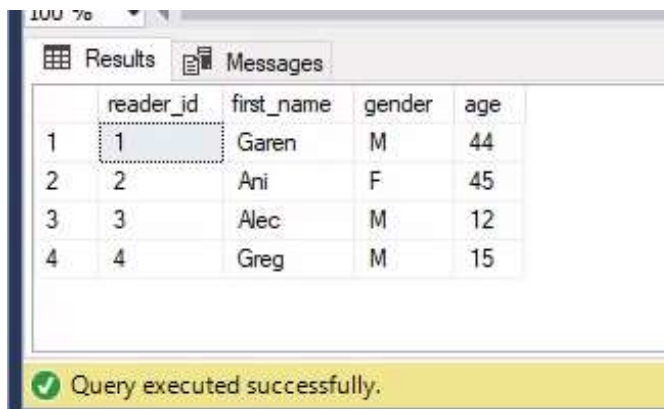
-- Create view to see how many books are in their original language --
CREATE OR ALTER VIEW dbo.total_books_in_original_language AS
SELECT
COUNT (original_language) AS total_original_language
FROM book
WHERE original_language=print_language
GO

-- Insert data --

-- Add all the readers of the family --
INSERT INTO reader (first_name,gender,age)
VALUES ('Garen', 'M', '44'), ('Ani', 'F', '45'),('Alec', 'M', '12'),('Greg', 'M', '15')
GO

-- Check to see if readers were correctly added --
SELECT * FROM reader

```



	reader_id	first_name	gender	age
1	1	Garen	M	44
2	2	Ani	F	45
3	3	Alec	M	12
4	4	Greg	M	15

Query executed successfully.

```

-- Add the authors --
INSERT INTO author (first_name, last_name, date_of_birth, date_of_death, nationality,
country_of_birth, gender)
VALUES ('Kareem', 'Abdul-Jabbar', '1947', '', 'American', 'USA', 'M'),
('James', 'Fenimore Cooper', '1789', '1851', 'American', 'USA', 'M'),
('E.M.', 'Forster', '1879', '1970', 'English', 'England', 'M'),
('Jonathan', 'Swift', '1667', '1745', 'Irish', 'Ireland', 'M'),
('Charles', 'Dickens', '1812', '1870', 'English', 'England', 'M'),
('Walter', 'Scott', '1771', '1832', 'Scottish', 'Scotland', 'M'),

```

```
( 'Robert Louis', 'Stevenson', '1850', '1894', 'Scottish', 'Scotland', 'M' ),
( 'Rudyard', 'Kipling', '1865', '1936', 'English', 'India', 'M' ),
( 'Nathaniel', 'Hawthorne', '1804', '1864', 'American', 'USA', 'M' ),
( 'Jean', 'de la Fontaine', '1621', '1695', 'French', 'France', 'M' ),
( 'Guy', 'de Maupassant', '1850', '1893', 'French', 'France', 'M' ),
( 'Miguel', 'de Cervantes', '1547', '1616', 'Spanish', 'Spain', 'M' ),
( 'Roald', 'Dahl', '1916', '1990', 'English', 'England', 'M' ),
( 'H.G.', 'Wells', '1866', '1946', 'English', 'England', 'M' ),
( 'Barack', 'Obama', '1961', '', 'American', 'USA', 'M' ),
( 'Agatha', 'Christie', '1890', '1976', 'English', 'England', 'F' ),
( 'Immanuel', 'Kant', '1724', '1804', 'German', 'East Prussia', 'M' ),
( 'John', 'Locke', '1632', '1704', 'English', 'England', 'M' ),
( 'Sheryl', 'Sandberg', '1969', '', 'American', 'USA', 'F' ),
( 'Jean-Jacques', 'Rousseau', '1712', '1778', 'French', 'Switzerland', 'M' ),
( 'Arthur', 'Miller', '1915', '2005', 'American', 'USA', 'M' ),
( 'Daniel', 'Defoe', '1660', '1731', 'English', 'England', 'M' ),
( 'George', 'Orwell', '1903', '1950', 'English', 'India', 'M' ),
( 'Isaac', 'Asimov', '1920', '1992', 'American', 'Russia', 'M' ),
( 'Gary', 'Larson', '1950', '', 'American', 'USA', 'M' ),
( 'Alain', 'Ducasse', '1956', '', 'French', 'France', 'M' ),
( 'E.P.', 'Jacobs', '1904', '1987', 'Belgian', 'Belgium', 'M' )
```

GO

-- Check to see if authors were added correctly --

SELECT * FROM author

100 %								
Results Messages								
	author_id	first_name	last_name	date_of_birth	date_of_death	nationality	country_of_birth	gender
1	1	Kareem	Abdul-Jabbar	1947	0	American	USA	M
2	2	James	Fenimore Cooper	1789	1851	American	USA	M
3	3	E.M.	Forster	1879	1970	English	England	M
4	4	Jonathan	Swift	1667	1745	Irish	Ireland	M
5	5	Charles	Dickens	1812	1870	English	England	M
6	6	Walter	Scott	1771	1832	Scottish	Scotland	M
7	7	Robert ...	Stevenson	1850	1894	Scottish	Scotland	M
8	8	Rudyard	Kipling	1865	1936	English	India	M
9	9	Nathaniel	Hawthorne	1804	1864	American	USA	M
10	10	Jean	de la Fontaine	1621	1695	French	France	M
11	11	Guy	de Maupassant	1850	1893	French	France	M
12	12	Miguel	de Cervantes	1547	1616	Spanish	Spain	M
13	13	Roald	Dahl	1916	1990	English	England	M
14	14	H.G.	Wells	1866	1946	English	England	M
15	15	Barack	Obama	1961	0	American	USA	M
16	16	Agatha	Christie	1890	1976	English	England	F
17	17	Immanuel	Kant	1724	1804	German	East Prussia	M
18	18	John	Locke	1632	1704	English	England	M
19	19	Sheryl	Sandberg	1969	0	American	USA	F
20	20	Jean-Ja...	Rousseau	1712	1778	French	Switzerland	M
21	21	Arthur	Miller	1915	2005	American	USA	M
22	22	Daniel	Defoe	1660	1731	English	England	M
23	23	George	Orwell	1903	1950	English	India	M
24	24	Isaac	Asimov	1920	1992	American	Russia	M
25	25	Gary	Larson	1950	0	American	USA	M
26	26	Alain	Ducasse	1956	0	French	France	M
27	27	E.P.	Jacobs	1904	1987	Belgian	Belgium	M


```
-- Add the books --
INSERT INTO book (isbn, title, print_date, publication_date, number_of_pages,
print_language, original_language, price, genre, collection, publisher)
VALUES ('014062080X', 'The Scarlet Letter', '1994', '1850', '224', 'English', 'English',
'4.50', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140620923', 'Plain Tales from the Hills', '1994', '1888', '336', 'English', 'English',
'42.19', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140620834', 'Treasure Island', '1994', '1883', '224', 'English', 'English',
'64.59', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140620508', 'Ivanhoe', '1994', '1819', '519', 'English', 'English', '34.97', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140620168', 'Great Expectations', '1994', '1861', '443', 'English', 'English', '8.00', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140620842', 'Gulliver's Travels', '1994', '1726', '329', 'English', 'English', '32.95', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('2070365875', 'La machine à explorer le temps', '1988', '1895', '362', 'French', 'English', '16.08', 'Science-Fiction', 'Folio', 'Folio'),
('2070330494', 'Charlie et la chocolaterie', '1986', '1964', '154', 'French', 'English', '17.99', 'Fiction', 'Folio Junior', 'Folio'),
('2070379000', 'Don Quichotte', '1988', '1605', '614', 'French', 'Spanish', '6.06', 'Fiction', 'Folio Classique', 'Folio'),
('2070383466', 'Fables', '1991', '1668', '428', 'French', 'French', '15.00', 'Fiction', 'Folio Classique', 'Folio'),
('2253009636', 'Boule de Suif', '1984', '1880', '235', 'French', 'French', '26.66', 'Fiction', '', 'Le livre de poche'),
('9780385349949', 'LeanIn', '2013', '2013', '228', 'English', 'English', '24.95', 'Biography', '', 'Alfred A. Knopf'),
('0521357306', 'Two Treatises of Government', '1988', '1690', '428', 'English', 'English', '19.19', 'Political Philosophy', '', 'Cambridge University Press'),
('0521424461', 'The Social Contract and other later political writings', '1997', '1762', '285', 'English', 'French', '19.19', 'Political Philosophy', '', 'Cambridge University Press'),
('2253065145', 'Fondements de la métaphysique des moeurs', '1993', '1785', '202', 'French', 'German', '11.87', 'Political Philosophy', '', 'Cambridge University Press'),
('0000000000001', 'Peril at End House', '1977', '1932', '189', 'English', 'English', '0.99', 'Fiction', '', 'Fontana Books'),
('9781524763169', 'A Promised Land', '2020', '2020', '751', 'English', 'English', '45', 'Biography', '', 'Crown Publishing'),
('0140481389', 'The Crucible', '1981', '1952', '145', 'English', 'English', '5.95', 'Play', 'Penguin Plays', 'Penguin Books'),
('9781455542260', 'Coach Wooden and me', '2018', '2017', '291', 'English', 'English', '17.99', 'Biography', 'NYT Bestseller', 'Grand Central Publishing'),
('0140620451', 'The Last of the Mohicans', '1994', '1826', '415', 'English', 'English', '6.99', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0156711427', 'A Passage to India', '1984', '1924', '362', 'English', 'English', '3.99', 'Fiction', '', 'Harcourt Brace & Company'),
('014062015X', 'Robinson Crusoe', '1994', '1719', '298', 'English', 'English', '6.99', 'Fiction', 'Penguin Popular Classics', 'Penguin Books'),
('0140311890', 'Boy', '1986', '1984', '176', 'English', 'English', '4.99', 'Biography', 'Puffin Books', 'Penguin Books'),
```

```
( '287097017X', 'Les 3 formules du Professeur Satô, Tome
2', '1990', '1990', '48', 'French', 'French', '22.07', 'Graphic Novel', 'Les aventures de Blake
et Mortimer', 'Dargaud'),
( '2848440120', 'Grand livre de
cuisine', '2003', '2003', '735', 'French', 'French', '100.00', 'Cookbook', '', 'Les Editions
d'Alain Ducasse'),
( '0863217241', 'The Far Side Gallery
4', '1993', '1993', '167', 'English', 'English', '12.95', 'Comic', '', 'Andrews and McMeel'),
( '2277223883', 'Le robot qui
rêvait', '1986', '1986', '511', 'French', 'English', '13.88', 'Science-Fiction', '', 'J'ai lu'),
( '207036822X', '1984', '1989', '1950', '417', 'French', 'English', '35.42', 'Fiction', 'Folio', 'Fo
lio')
```

GO

```
-- Check to see if books were added correctly --
```

```
SELECT * FROM book
```

	book_id	isbn	title	print_date	publication_date	number_of_pages	print_language	original_language	price	genre	collection	publisher
1	1	014062080X	The Scarlet Letter	1994	1850	224	English	English	4.50	Fiction	Penguin Popular Classics	Penguin Books
2	2	0140620923	Plain Tales from the Hills	1994	1888	336	English	English	42.19	Fiction	Penguin Popular Classics	Penguin Books
3	3	0140620834	Treasure Island	1994	1883	224	English	English	64.59	Fiction	Penguin Popular Classics	Penguin Books
4	4	0140620508	Ivanhoe	1994	1819	519	English	English	34.97	Fiction	Penguin Popular Classics	Penguin Books
5	5	0140620168	Great Expectations	1994	1861	443	English	English	8.00	Fiction	Penguin Popular Classics	Penguin Books
6	6	0140620842	Gulliver's Travels	1994	1726	329	English	English	32.95	Fiction	Penguin Popular Classics	Penguin Books
7	7	2070365875	La machine à explorer le temps	1988	1895	362	French	English	16.08	Science-Fiction	Folio	Folio
8	8	2070330494	Charlie et la chocolaterie	1986	1964	154	French	English	17.99	Fiction	Folio Junior	Folio
9	9	2070379000	Don Quichotte	1988	1605	614	French	Spanish	6.06	Fiction	Folio Classique	Folio
10	10	2070383466	Fables	1991	1668	428	French	French	15.00	Fiction	Folio Classique	Folio
11	11	2253009636	Boule de Suif	1984	1880	235	French	French	26.66	Fiction		Le livre de poche
12	12	9780385349949	Leanin	2013	2013	228	English	English	24.95	Biography		Alfred A. Knopf
13	13	0521357306	Two Treatises of Government	1988	1690	428	English	English	19.19	Political Philosophy		Cambridge University Press
14	14	0521424461	The Social Contract and other later political w...	1997	1762	285	English	French	19.19	Political Philosophy		Cambridge University Press
15	15	2253065145	Fondements de la métaphysique des moeurs	1993	1785	202	French	German	11.87	Political Philosophy		Cambridge University Press
16	16	00000000000001	Peril at End House	1977	1932	189	English	English	0.99	Fiction		Fontana Books
17	17	9781524763169	A Promised Land	2020	2020	751	English	English	45.00	Biography		Crown Publishing
18	18	0140481389	The Crucible	1981	1952	145	English	English	5.95	Play	Penguin Plays	Penguin Books
19	19	9781455542260	Coach Wooden and me	2018	2017	291	English	English	17.99	Biography	NYT Bestseller	Grand Central Publishing
20	20	0140620451	The Last of the Mohicans	1994	1826	415	English	English	6.99	Fiction	Penguin Popular Classics	Penguin Books
21	21	0156711427	A Passage to India	1984	1924	362	English	English	3.99	Fiction		Harcourt Brace & Company
22	22	014062015X	Robinson Crusoe	1994	1719	298	English	English	6.99	Fiction	Penguin Popular Classics	Penguin Books
23	23	0140311890	Boy	1986	1984	176	English	English	4.99	Biography	Puffin Books	Penguin Books
24	24	287097017X	Les 3 formules du Professeur Sato, Tome 2	1990	1990	48	French	French	22.07	Graphic Novel	Les aventures de Blake et Mortmer	Dargaud
25	25	2848440120	Grand livre de cuisine	2003	2003	735	French	French	100.00	Cookbook		Les Editions d'Alain Ducasse
26	26	0863217241	The Far Side Gallery 4	1993	1993	167	English	English	12.95	Comic		Andrews and McMeel
27	27	2277223883	Le robot qui rêvait	1986	1986	511	French	English	13.88	Science-Fiction		J'ai lu
28	28	207036822X	1984	1989	1950	417	French	English	35.42	Fiction	Folio	Folio

```
-- Add book_author_list (associative table) --
```

```
INSERT INTO book_author_list(book_id,author_id)
VALUES
```

```
(1,9),(2,8),(3,7),(4,6),(5,5),(6,4),(7,14),(8,13),(9,12),(10,10),(11,11),(12,19),(13,18),
(14,20),(15,17),(16,16),(17,15),(18,21),(19,1),(20,2),(21,3),(22,22),(23,13),(24,27),(25,
26),(26,25),(27,24),(28,23)
```

GO

```
-- Check to see if book_author list populated correctly
```

```
SELECT* FROM book_author_list
```

	book_author_id	author_id	book_id
1	1	9	1
2	2	8	2
3	3	7	3
4	4	6	4
5	5	5	5
6	6	4	6
7	7	14	7
8	8	13	8
9	9	12	9
10	10	10	10
11	11	11	11
12	12	19	12
13	13	18	13
14	14	20	14
15	15	17	15
16	16	16	16
17	17	15	17
18	18	21	18
19	19	1	19
20	20	2	20
21	21	3	21
22	22	22	22
23	23	13	23
24	24	27	24
25	25	26	25
26	26	25	26
27	27	24	27
28	28	23	28

```
-- Add book_reader_list (associative table) --
INSERT INTO book_reader_list(book_id,reader_id)
VALUES
(1,1),(2,1),(3,1),(4,1),(5,1),(6,1),(7,1),(8,1),(9,1),(10,1),(11,1),(12,1),(13,1),(14,1),
(15,1),(16,1),(17,1),(18,1),(19,1),(20,1),(21,1),(22,1),(23,2),(24,1),(25,1),(26,1),
(27,1),
(28,1),(12,2),(26,3),(19,4),(26,4),(21,2),(23,3),(17,2)

-- Check to see if book_reader list populated correctly
SELECT * FROM book_reader_list
```

	Results	Messages	
	book_reader_id	book_id	reader_id
1	1	1	1
2	2	2	1
3	3	3	1
4	4	4	1
5	5	5	1
6	6	6	1
7	7	7	1
8	8	8	1
9	9	9	1
10	10	10	1
11	11	11	1
12	12	12	1
13	13	13	1
14	14	14	1
15	15	15	1
16	16	16	1
17	17	17	1
18	18	18	1
19	19	19	1
20	20	20	1
21	21	21	1
22	22	22	1
23	23	23	2
24	24	24	1
25	25	25	1
26	26	26	1
27	27	27	1
28	28	28	1
29	29	12	2
30	30	26	3
31	31	19	4
32	32	26	4
33	33	21	2
34	34	23	3
35	35	17	2

-- Testing the various views --

```
SELECT * FROM Book_and_author
GO
```

	title	first_name	last_name
1	1984	George	Orwell
2	A Passage to India	E.M.	Forster
3	A Promised Land	Barack	Obama
4	Boule de Suif	Guy	de Maupassant
5	Boy	Roald	Dahl
6	Charlie et la chocolaterie	Roald	Dahl
7	Coach Wooden and me	Kareem	Abdul-Jabbar
8	Don Quichotte	Miguel	de Cervantes
9	Fables	Jean	de la Fontaine
10	Fondements de la métaphysique des moeurs	Immanuel	Kant
11	Grand livre de cuisine	Alain	Ducasse
12	Great Expectations	Charles	Dickens
13	Gulliver's Travels	Jonathan	Swift
14	Ivanhoe	Walter	Scott
15	La machine à explorer le temps	H.G.	Wells
16	Le robot qui rêvait	Isaac	Asimov
17	LeanIn	Sheryl	Sandberg
18	Les 3 formules du Professeur Sato, Tome 2	E.P.	Jacobs
19	Peril at End House	Agatha	Christie
20	Plain Tales from the Hills	Rudyard	Kipling
21	Robinson Crusoe	Daniel	Defoe
22	The Crucible	Arthur	Miller
23	The Far Side Gallery 4	Gary	Larson
24	The Last of the Mohicans	James	Fenimore Co...
25	The Scarlet Letter	Nathaniel	Hawthorne
26	The Social Contract and other later politica...	Jean-Ja...	Rousseau
27	Treasure Island	Robert ...	Stevenson
28	Two Treatises of Government	John	Locke

```
SELECT * FROM dbo.book_and_reader
GO
```

	title	first_name
1	1984	Garen
2	A Passage to India	Ani
3	A Passage to India	Garen
4	A Promised Land	Ani
5	A Promised Land	Garen
6	Boule de Suif	Garen
7	Boy	Alec
8	Boy	Ani
9	Charlie et la chocolaterie	Garen
10	Coach Wooden and me	Garen
11	Coach Wooden and me	Greg
12	Don Quichotte	Garen
13	Fables	Garen
14	Fondements de la métaphysique des moeurs	Garen
15	Grand livre de cuisine	Garen
16	Great Expectations	Garen
17	Gulliver's Travels	Garen
18	Ivanhoe	Garen
19	La machine à explorer le temps	Garen
20	Le robot qui rêvait	Garen
21	LeanIn	Ani
22	LeanIn	Garen
23	Les 3 fomules du Professeur Sato, Tome 2	Garen
24	Peril at End House	Garen
25	Plain Tales from the Hills	Garen
26	Robinson Crusoe	Garen
27	The Crucible	Garen
28	The Far Side Gallery 4	Garen
29	The Far Side Gallery 4	Alec
30	The Far Side Gallery 4	Greg
31	The Last of the Mohicans	Garen
32	The Scarlet Letter	Garen
33	The Social Contract and other later political writings	Garen
34	Treasure Island	Garen
35	Two Treatises of Government	Garen

```
SELECT * FROM dbo.total_books_in_original_language
GO
```

	total_original_language
1	21

```
-- Testing the various functions--
```

```
-- Testing the author lookup function, for example for author with first name of Guy
```

```
SELECT dbo.author_ID_lookup ('Guy', '')
```

```
GO
```

(No column name)	
1	11

```
-- Testing the function "what was their first name again?", for example if the last name  
is Obama, what is their first name?
```

```
SELECT dbo.what_was_their_first_name ('Obama')
```

```
GO
```

(No column name)	
1	Barack

```
-- Testing the function "what was their last name again?", for example if the first name  
is Guy, what is their last name?
```

```
SELECT dbo.what_was_their_last_name ('guy')
```

```
GO
```

(No column name)	
1	de Maupassant

```
-- Testing the function "look up a reader's ID"
```

```
SELECT dbo.reader_ID_lookup ('Alec')
```

```
GO
```

(No column name)	
1	3

```
-- Testing the function to look up a book's ID
```

```
SELECT dbo.book_lookup ('Don Quichotte')
```

```
GO
```

(No column name)	
1	9


```
-- Testing the various procedures --
```

```
-- Entering new author --
```

```
EXEC dbo.add_new_author
    @first_name = 'John',
    @last_name = 'Steinbeck',
    @date_of_birth = '1902',
    @date_of_death = '1968',
    @nationality = 'American',
    @country_of_birth = 'USA',
    @gender = 'M'
```

```
GO
```

```
-- Entering new book --
```

```
EXEC dbo.add_new_book
    @isbn = '2070360830',
    @title = 'Les raisins de la colère',
    @print_date = '1989',
    @publication_date = '1939',
    @number_of_pages = '632',
    @print_language = 'French',
    @original_language = 'English',
    @price = '15.95',
    @genre = 'Fiction',
    @collection = 'Folio',
    @publisher = 'Folio'
```

```
GO
```

```
-- Entering new book-author relationship --
```

```
EXEC dbo.link_book_author
    @book_id = '29',
    @author_id = '28'
```

```
GO
```

```
SELECT * FROM author WHERE author.first_name = 'JOHN' AND author.last_name = 'STEINBECK'
```

```
SELECT * FROM book WHERE isbn = '2070360830'
```

```
SELECT * FROM book_author_list WHERE book_id = '29'
```

	author_id	first_name	last_name	date_of_birth	date_of_death	nationality	country_of_birth	gender
1	28	John	Steinbeck	1902	1968	American	USA	M

	book_id	isbn	title	print_date	publication_date	number_of_pages	print_language	original_language	price	genre	collection	publisher
1	29	2070360830	Les raisins de la colère	1989	1939	632	French	English	15.95	Fiction	Folio	Folio

	book_author_id	author_id	book_id
1	29	28	29

```
-- Updating information --
```

```
-- Update title of one of the books, after realizing there are two stories in the book -
```

```
UPDATE book
```

```
SET title='La machine à explorer le temps - L'île du docteur Moreau'
```

```
WHERE book_id=7
```

```
SELECT * FROM book WHERE Book_id =7
```

	book_id	isbn	title	print_date
1	7	2070365875	La machine à explorer le temps - L'île du docteur Moreau	1988

Data questions:

```
-- Data question: which of my books are translations? (ie: the print language is  
different from the original language), how many are there?
```

```
SELECT title, original_language, print_language  
FROM book  
WHERE original_language<>print_language  
ORDER BY title
```

```
SELECT COUNT(book_id)  
FROM book  
WHERE original_language<>print_language
```

100 %

Results Messages

	title	original_language	print_language
1	1984	English	French
2	Charlie et la chocolaterie	English	French
3	Don Quichotte	Spanish	French
4	Fondements de la métaphysique des moeurs	German	French
5	La machine à explorer le temps - L'île du docte...	English	French
6	Le robot qui rêvait	English	French
7	Les raisins de la colère	English	French
8	The Social Contract and other later political writ...	French	English

	(No column name)
1	8

Query executed successfully.

-- Data question: which of my books were originally published in the 17th century and how many are there?

```
SELECT title, publication_date
FROM book
WHERE publication_date BETWEEN 1601 AND 1701
ORDER BY publication_date
```

```
SELECT COUNT (book_id)
FROM book
WHERE publication_date BETWEEN 1601 AND 1701
```

	title	publication_date
1	Don Quichotte	1605
2	Fables	1668
3	Two Treatises of Government	1690

	(No column name)
1	3

-- Data question: which of my books were written by female authors?

```
SELECT book.title,
       author.first_name,
       author.last_name
FROM book_author_list
JOIN book ON book_author_list.book_id = book.book_id
JOIN author ON book_author_list.author_id=author.author_id
WHERE gender='F'
ORDER BY title ASC OFFSET 0 ROWS
GO
```

	title	first_name	last_name
1	LeanIn	Sheryl	Sandberg
2	Peril at End House	Agatha	Christie

-- Data question: which of my books have authors that are still alive? who are the authors?

```
SELECT book.title
FROM book_author_list
JOIN book ON book_author_list.book_id = book.book_id
JOIN author ON book_author_list.author_id=author.author_id
WHERE date_of_death = ''
```

```
SELECT author.first_name,
author.last_name
FROM author
WHERE date_of_death = ''
GO
```

	title
1	LeanIn
2	A Promised Land
3	Coach Wooden and me
4	Grand livre de cuisine
5	The Far Side Gallery 4

	first_name	last_name
1	Kareem	Abdul-Jabbar
2	Barack	Obama
3	Sheryl	Sandberg
4	Gary	Larson
5	Alain	Ducasse

-- Data question: which of my books were authored by French nationals?

```
SELECT book.title
FROM book_author_list
JOIN book ON book_author_list.book_id=book.book_id
JOIN author ON book_author_list.author_id=author.author_id
WHERE nationality='French'
```

	title
1	Fables
2	Boule de Suif
3	The Social Contract and other later political writings
4	Grand livre de cuisine

```
-- Data question: how many of my books are in French?
SELECT COUNT (book_id)
FROM book
WHERE print_language='French'
```

	(No column name)
1	11

```
-- Data question: which of my books are biographies?
SELECT book.title
FROM book
WHERE genre='biography'
```

title
LeanIn
A Promised Land
Coach Wooden and me
Boy

```
-- Data question: what is the least, most and average number of pages of my books?
SELECT MIN(number_of_pages) AS fewest_pages , MAX(number_of_pages) AS most_pages,
AVG(number_of_pages) AS average_number_of_pages
FROM book
```

	fewest_pages	most_pages	average_number_of_pages
1	48	751	349

```
-- Data question: rank my books by price, in descending order
SELECT MAX (price), book.title
from book
GROUP BY book.title
ORDER BY MAX(price) DESC
```

	(No column name)	title
1	100.00	Grand livre de cuisine
2	64.59	Treasure Island
3	45.00	A Promised Land
4	42.19	Plain Tales from the Hills
5	35.42	1984
6	34.97	Ivanhoe
7	32.95	Gulliver's Travels
8	26.66	Boule de Suif
9	24.95	LeanIn
10	22.07	Les 3 fomules du Professeur Sato, Tome 2
11	19.19	The Social Contract and other later political w...
12	19.19	Two Treatises of Government
13	17.99	Charlie et la chocolaterie
14	17.99	Coach Wooden and me
15	16.08	La machine à explorer le temps - L'île du doct...
16	15.95	Les raisins de la colère
17	15.00	Fables
18	13.88	Le robot qui rêvait
19	12.95	The Far Side Gallery 4
20	11.87	Fondements de la métaphysique des moeurs
21	8.00	Great Expectations
22	6.99	The Last of the Mohicans
23	6.99	Robinson Crusoe
24	6.06	Don Quichotte
25	5.95	The Crucible
26	4.99	Boy
27	4.50	The Scarlet Letter
28	3.99	A Passage to India
29	0.99	Peril at End House

```
-- Data question: rank my books by price per page, in descending order
SELECT (price)/(number_of_pages) AS price_per_page, book.title
from book
ORDER BY price_per_page DESC offset 0 rows
```

	price_per_page	title
1	0.4597	Les 3 fomules du Professeur Sato, Tome 2
2	0.2883	Treasure Island
3	0.136	Grand livre de cuisine
4	0.1255	Plain Tales from the Hills
5	0.1168	Charlie et la chocolaterie
6	0.1134	Boule de Suif
7	0.1094	LeanIn
8	0.1001	Gulliver's Travels
9	0.0849	1984
10	0.0775	The Far Side Gallery 4
11	0.0673	Ivanhoe
12	0.0673	The Social Contract and other later political w...
13	0.0618	Coach Wooden and me
14	0.0599	A Promised Land
15	0.0587	Fondements de la métaphysique des moeurs
16	0.0448	Two Treatises of Government
17	0.0444	La machine à explorer le temps - L'île du doct...
18	0.041	The Crucible
19	0.035	Fables
20	0.0283	Boy
21	0.0271	Le robot qui rêvait
22	0.0252	Les raisins de la colère
23	0.0234	Robinson Crusoe
24	0.02	The Scarlet Letter
25	0.018	Great Expectations
26	0.0168	The Last of the Mohicans
27	0.011	A Passage to India
28	0.0098	Don Quichotte
29	0.0052	Peril at End House

Implementation:

Below is an Access form that allows a user to enter a new book into my library

The screenshot shows an Access form titled "Book Entry". The form has a menu bar with "External Data", "Database Tools", "Help", and a search icon. The form is divided into two main sections. The top section contains fields for book details: book_id (37), isbn (2070385817), title (Dublinois), genre (Fiction), collection (Folio), publisher (Folio), print_date (1993), publication_date (1914), number_of_pages (350), print_language (French), original_language (English), and price (\$16.08). The bottom section is a table named "dbo_book_author_list" with columns "book_autho", "author_id", and "book_id". The table has one row with the value "(New)" in the "book_autho" column and "37" in the "book_id" column. The table has a status bar at the bottom that says "Record: 14 of 1 of 1" and "No Filter Search".

The Book_id is generated by the system, all the user needs to do is fill out the details. I queried on the SLQ server and got this.

Results												
	book_id	isbn	title	print_date	publication_date	number_of_pages	print_language	original_language	price	genre	collection	publisher
1	37	2070385817	Dublinois	1993	1914	350	French	English	16.08	Fiction	Folio	Folio

Reflection:

What assumptions did you have at the beginning of the project that changed by the end?

- At first, I wanted to dive headfirst in the coding, which I assumed would be the hardest part. I struggled with the conceptual approach and thought that coding and making progress would help me wrap my head around it. I did not think that the models (conceptual and logical) would be that helpful to me. I was wrong, they really assisted me in giving me direction. “Plan the work, work the plan” as they say right? That is exactly what the logical model did for me, every step of the way, from making sure I had my foreign keys on the right columns to designing the Access form. Another assumption I had: I thought this project would be hard, I was wrong: it was very hard!

The next time you do this what will be different?

- For one, my coding skills will be better, I plan on spending more time working on those. It was challenging for me to encounter error after error, sometimes because of a forgotten comma or some other basic issue. But I did feel myself improving almost by the hour: a function that took me 10 minutes to figure out at first took less than a minute towards the end of the project. I plan on continuing this project and cataloging my books, I believe it will prove helpful to know which books I own and any additional information (publication date, original language, etc) will be a good complement. Doing this for myself was a curse and blessing, I set my own rules – I would imagine it would be more challenging working for a client or organization with preexisting rules and expectations. The flip side of that is the structure it might provide to help me build the database.

How will this inform your approach to data?

- I now have greater understanding of databases in general, how the information is stored, how it is retrieved. I can conceptually visualize the process and while I may not be a big fan of SQL server right now (especially given the marathon session to finish the project), I have come to appreciate its simplicity and clarity. I did have an epiphany of sorts towards the middle of the project where I started thinking logically, visualizing the steps. I could envision the flow between the tables and the constraints made more sense as I went along.

Final summary and thoughts:

My books have been with me for 35+ years, some were childhood gifts and purchases, others were added later in life as an adult. Others I have inherited from grandparents who cherished them as much as I do. They run the gamut from cookbooks to biographies, from graphic novels to atlases. I cannot recall ever buying a book with the intent of simply shelving it, I have always read and appreciated every line of them, whether in French, English or Armenian.

This project has been an amazing walk down memory lane as I have poured over the books, looking for page numbers, print dates and other data. I have come across notes I took while reading a Victor Hugo novel in the 10th grade, barely recognizing my handwriting. Another book bears a short message from my grandfather to my dad in Armenian. Cliché as this sounds, these books are me and I am them. Over decades, I have been asked such questions as “how many books do you have in here? Would you say you have more books in French or English? What is the monetary value of a collection like this? (not that I really care for that last one) Are these all translations or do you read them in their original language?” Sometimes, my mom will wonder if I still have such and such work I received for a graduation or birthday.

I have found SQL to be a challenging thing to learn. With most challenging things, motivation plays a big role. I am thankful I had a say in the choice of the project, I do not think I would have been as driven if I had had to work with the fabricated database of a fictitious company for example.

While my data questions were not as elaborate and diverse as those I encountered in homework assignments (no time stamps for example), the motivation I had to get the answers really drove me try and try coding, encountering error after error until I finally understood.

While I feel the data questions helped me showcase my SQL skills, they did not provide me real answers since I have only entered a handful of books. Eventually I will turn some of those SELECT statements into VIEWS and PROCEDURES and as my collection of books increases, I will periodically run them to get a sense of where things stand.

I will no doubt continue this symbolic and sentimental project: some people hit a midlife crisis and buy a Ferrari, I catalog books collected over my lifetime, to each their own.