Final Project: Part 1

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Step 1 - Business Rules:

* A title may have one, or two ISBNs, an ISBN may only have one title
* An ISBN may be 10 digits
* A title may have one or many authors
* A title usually has one publisher, a publisher can have one or many books
* An author may have one or many books (authors with zero books are not relevant to this library)
* A title may have one or many pages, pages may only have one title
* A title can only belong to one category, a category can have many books
* A book can only be donated by one friend
* A title can only have been purchased for one price
* A title can have one or many subject matters, and a subject matter zero or many books
* A title/ISBN can only have one year, but a year many titles
* A friend may have zero or many books, a book can only be checked out by one friend at a time
* A book can only be borrowed (checked out, in, length of time) once at a time

Step 2 – Relational Schema



Diagram

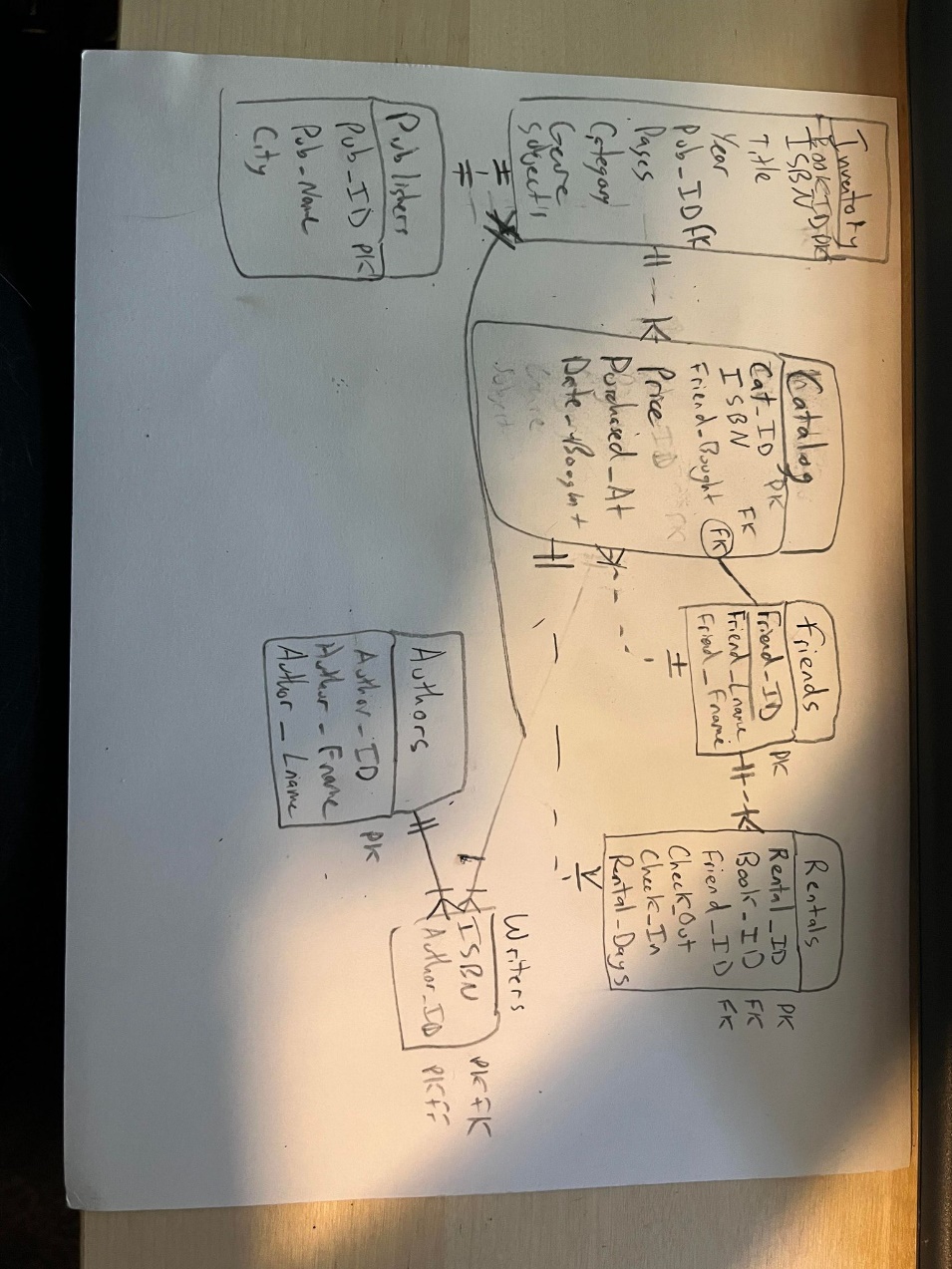
Description automatically generated with medium confidence

Diagram

Description automatically generated

Step 3 – Entity Relationship Model

I edited this for part two because I realized my friends table didn’t make sense, so this resembles your example more.



Step 4: Data Dictionary

A screenshot of a computer

Description automatically generated with low confidence

5.

Indexes:

1. ISBN (unique to each book, would work for catalog and inventory)
2. Friend\_ID (Need to easily query which friend belongs to which ID in case of rentals)
3. Book\_ID (unique to each copy of a book, in case a copy gets lost or its sticker comes off)
4. Rental\_ID (quickly discover what books were checked out in a rental
5. Author\_ID (quickly determine who wrote a specific book to seek out more books by same author)

Part 6 and **7 oops**:

CREATE TABLE `authors` (

  `Author\_ID` varchar(3) NOT NULL,

  `Author\_Fname` varchar(20) DEFAULT NULL,

  `Author\_Lname` varchar(20) DEFAULT NULL,

  PRIMARY KEY (`Author\_ID`),

  UNIQUE KEY `Author\_ID\_UNIQUE` (`Author\_ID`)

)

CREATE TABLE `catalog` (

  `Cat\_ID` int NOT NULL,

  `ISBN` char(10) NOT NULL,

  `Friend\_Bought` varchar(2) NOT NULL,

  `Price` double(5,2) DEFAULT NULL,

  `Purchased\_At` varchar(20) DEFAULT NULL,

  `Date\_Bought` date DEFAULT NULL,

  PRIMARY KEY (`Cat\_ID`),

  UNIQUE KEY `Cat\_ID\_UNIQUE` (`Cat\_ID`),

  UNIQUE KEY `ISBN\_UNIQUE` (`ISBN`),

  KEY `Friend\_Bought\_idx` (`Friend\_Bought`),

  CONSTRAINT `Friend\_Bought` FOREIGN KEY (`Friend\_Bought`) REFERENCES `friends` (`Friend\_ID`),

  CONSTRAINT `ISBN` FOREIGN KEY (`ISBN`) REFERENCES `inventory` (`ISBN`)

)

CREATE TABLE `friends` (

  `Friend\_ID` varchar(2) NOT NULL,

  `Friend\_Lname` varchar(20) NOT NULL,

  `Friend\_Fname` varchar(20) NOT NULL,

  PRIMARY KEY (`Friend\_ID`),

  UNIQUE KEY `Friend\_ID\_UNIQUE` (`Friend\_ID`)

)

CREATE TABLE `inventory` (

  `Book\_ID` varchar(4) NOT NULL,

  `ISBN` char(10) NOT NULL,

  `Title` varchar(30) NOT NULL,

  `Year` int DEFAULT NULL,

  `Pub\_ID` varchar(3) NOT NULL,

  `Pages` int NOT NULL,

  `Category` varchar(20) NOT NULL,

  `Genre` varchar(10) DEFAULT NULL,

  `Subject` varchar(15) DEFAULT NULL,

  PRIMARY KEY (`Book\_ID`),

  UNIQUE KEY `Book\_ID\_UNIQUE` (`Book\_ID`),

  UNIQUE KEY `ISBN\_UNIQUE` (`ISBN`),

  KEY `Pub\_ID\_idx` (`Pub\_ID`),

  CONSTRAINT `Pub\_ID` FOREIGN KEY (`Pub\_ID`) REFERENCES `publishers` (`Pub\_ID`)

)

CREATE TABLE `publishers` (

  `Pub\_ID` varchar(3) NOT NULL,

  `Pub\_Name` varchar(20) NOT NULL,

  `City` varchar(20) NOT NULL,

  PRIMARY KEY (`Pub\_ID`),

  UNIQUE KEY `Pub\_ID\_UNIQUE` (`Pub\_ID`)

)

CREATE TABLE `rentals` (

  `Rental\_ID` varchar(4) NOT NULL,

  `Book\_ID` varchar(4) NOT NULL,

  `Friend\_ID` varchar(2) NOT NULL,

  `Check\_Out` date DEFAULT NULL,

  `Check\_In` date DEFAULT NULL,

  `Rental\_Days` int DEFAULT NULL,

  PRIMARY KEY (`Rental\_ID`),

  UNIQUE KEY `Rental\_ID\_UNIQUE` (`Rental\_ID`),

  KEY `Book\_ID\_idx` (`Book\_ID`),

  KEY `Friend\_ID\_idx` (`Friend\_ID`),

  CONSTRAINT `Book\_ID` FOREIGN KEY (`Book\_ID`) REFERENCES `inventory` (`Book\_ID`),

  CONSTRAINT `Friend\_ID` FOREIGN KEY (`Friend\_ID`) REFERENCES `friends` (`Friend\_ID`)

)

CREATE TABLE `writers\_written` (

  `ISBN` char(10) NOT NULL,

  `Author\_ID` varchar(3) NOT NULL,

  PRIMARY KEY (`ISBN`,`Author\_ID`),

  KEY `Author\_ID\_idx` (`Author\_ID`),

  CONSTRAINT `Author\_ID` FOREIGN KEY (`Author\_ID`) REFERENCES `authors` (`Author\_ID`),

  CONSTRAINT `ISBN(10)` FOREIGN KEY (`ISBN`) REFERENCES `inventory` (`ISBN`)

)

Part 8:

INSERT INTO `jesse\_final`.`authors` (`Author\_ID`, `Author\_Fname`, `Author\_Lname`) VALUES ('0', 'Jerry', 'Springer');

INSERT INTO `jesse\_final`.`authors` (`Author\_ID`, `Author\_Fname`, `Author\_Lname`) VALUES ('1', 'Billy', 'Scapegoat');

INSERT INTO `jesse\_final`.`authors` (`Author\_ID`, `Author\_Fname`, `Author\_Lname`) VALUES ('2', 'Chicken', 'Cacchiatore');

INSERT INTO `jesse\_final`.`authors` (`Author\_ID`, `Author\_Fname`, `Author\_Lname`) VALUES ('3', 'Matt', 'Pandamiglio');

INSERT INTO `jesse\_final`.`authors` (`Author\_ID`, `Author\_Fname`, `Author\_Lname`) VALUES ('4', 'Mike', 'Birbiglia');

INSERT INTO `jesse\_final`.`friends` (`Friend\_ID`, `Friend\_Lname`, `Friend\_Fname`) VALUES ('0', 'Jampson', 'Johnny');

INSERT INTO `jesse\_final`.`friends` (`Friend\_ID`, `Friend\_Lname`, `Friend\_Fname`) VALUES ('1', 'Frejard', 'Bon');

INSERT INTO `jesse\_final`.`friends` (`Friend\_ID`, `Friend\_Lname`, `Friend\_Fname`) VALUES ('2', 'Aikikio', 'Sarasuka');

INSERT INTO `jesse\_final`.`friends` (`Friend\_ID`, `Friend\_Lname`, `Friend\_Fname`) VALUES ('3', 'Honch', 'Phillip');

INSERT INTO `jesse\_final`.`friends` (`Friend\_ID`, `Friend\_Lname`, `Friend\_Fname`) VALUES ('4', 'Flores', 'Corazon');

INSERT INTO `jesse\_final`.`publishers` (`Pub\_ID`, `Pub\_Name`, `City`) VALUES ('0', 'Randy Day Books', 'Norman, OK');

INSERT INTO `jesse\_final`.`publishers` (`Pub\_ID`, `Pub\_Name`, `City`) VALUES ('1', 'Rainy Day Books', 'OKC, OK');

INSERT INTO `jesse\_final`.`publishers` (`Pub\_ID`, `Pub\_Name`, `City`) VALUES ('2', 'Fancy Dance Books', 'Tulsa, OK');

INSERT INTO `jesse\_final`.`publishers` (`Pub\_ID`, `Pub\_Name`, `City`) VALUES ('3', 'Bookshelf Books', 'Not Real, OK');

INSERT INTO `jesse\_final`.`publishers` (`Pub\_ID`, `Pub\_Name`, `City`) VALUES ('4', 'Local Book Company', 'Faketown, OK');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('0', '1001100001', '\"The Berry the Boy Eats\"', '1999', '3', '234', 'Fiction', 'Mystery', 'Murder');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('1', '9999999999', '\"Jerry Spring: a Memoir\"', '2005', '2', '1902', 'Non-Fiction', 'Biography', 'Memoir');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('2', '1001190000', '\"Filth\"', '2014', '4', '1', 'Fiction', 'Fantasy', 'Assassins');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('3', '1001110111', '\"Insurrection\"', '2011', '4', '133', 'Reference', 'Encycl.', 'Jan 6');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('4', '1111111111', '\"Cowboys In Clothing\"', '2019', '1', '215', 'Fiction', 'Romance', 'Western');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('0', '1001100001', '\"The Berry the Boy Eats\"', '1999', '3', '234', 'Fiction', 'Mystery', 'Murder');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('1', '9999999999', '\"Jerry Spring: a Memoir\"', '2005', '2', '1902', 'Non-Fiction', 'Biography', 'Memoir');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('2', '1001190000', '\"Filth\"', '2014', '4', '1', 'Fiction', 'Fantasy', 'Assassins');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('3', '1001110111', '\"Insurrection\"', '2011', '4', '133', 'Reference', 'Encycl.', 'Jan 6');

INSERT INTO `jesse\_final`.`inventory` (`Book\_ID`, `ISBN`, `Title`, `Year`, `Pub\_ID`, `Pages`, `Category`, `Genre`, `Subject`) VALUES ('4', '1111111111', '\"Cowboys In Clothing\"', '2019', '1', '215', 'Fiction', 'Romance', 'Western');

INSERT INTO `jesse\_final`.`writers\_written` (`ISBN`, `Author\_ID`) VALUES ('1001100001', '1');

INSERT INTO `jesse\_final`.`writers\_written` (`ISBN`, `Author\_ID`) VALUES ('9999999999', '0');

INSERT INTO `jesse\_final`.`writers\_written` (`ISBN`, `Author\_ID`) VALUES ('1001190000', '3');

INSERT INTO `jesse\_final`.`writers\_written` (`ISBN`, `Author\_ID`) VALUES ('1001110111', '4');

INSERT INTO `jesse\_final`.`writers\_written` (`ISBN`, `Author\_ID`) VALUES ('1111111111', '2');

INSERT INTO `jesse\_final`.`rentals` (`Rental\_ID`, `Book\_ID`, `Friend\_ID`, `Check\_Out`, `Check\_In`) VALUES ('0', '1', '0', '1996-12-03', '1996-12-17');

INSERT INTO `jesse\_final`.`rentals` (`Rental\_ID`, `Book\_ID`, `Friend\_ID`, `Check\_Out`, `Check\_In`) VALUES ('1', '2', '0', '1997-12-01', '1997-12-27');

INSERT INTO `jesse\_final`.`rentals` (`Rental\_ID`, `Book\_ID`, `Friend\_ID`, `Check\_Out`, `Check\_In`) VALUES ('2', '1', '1', '1997-04-01', '1997-04-10');

INSERT INTO `jesse\_final`.`rentals` (`Rental\_ID`, `Book\_ID`, `Friend\_ID`, `Check\_Out`) VALUES ('3', '3', '2', '1998-03-25');

INSERT INTO `jesse\_final`.`rentals` (`Rental\_ID`, `Book\_ID`, `Friend\_ID`, `Check\_Out`, `Check\_In`) VALUES ('4', '4', '1', '2001-09-13', '2001-10-13');