



Downtown Brooklyn Library



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Downtown Brooklyn Library (DBL) is an independent library system that serves many students who reside in the city of Brooklyn. DBL has a collection of more than 2 million physical book copies with a plethora of genres which any student can borrow and place on hold. Another feature that the DBL has is a central library system that manages all libraries located in Brooklyn (Macon library, Grand Army Central Library and etc.).

Requirements

Downtown Brooklyn Library will keep track of the following:

- Library, Student, Book, System
- For each Student: a unique student ID identifier, as well as a student pin, and FullName (first and last name can be combined into a full name) which will keep track of FirstName and LastName.
- For each Library: LibraryID, LibraryName, and LibraryLocation
- For each Book: ISBN(unique), BookName, BookAuthor, and multiple BookGenre.
- For each System: SystemID, DueDate, PastDueDate, and BookHolds.

Requirements Continued

- For every instance of a user borrowing a book, we will record the User's DateOfBorrow in the library.
- The system informs one or many users, and users are informed by one and only one system.
- A system manages one or many libraries, and a library is managed by one and only one system. Each system is managed by one library and each library has many systems.
- A library keeps track of one or many books, and a book is tracked by one or many libraries.
- A user can borrow one or many books, and a book is borrowed by one or many users.

Problem 1 : The System can't keep track of a Student's ID's and their due dates.

```
50 SELECT SYSTEM.DUEDATE, STUDENT.STUDENTID
51 FROM SYSTEM
52 INNER JOIN STUDENT ON
53 SYSTEM.SYSTEMID = STUDENT.SYSTEMID;
54
```

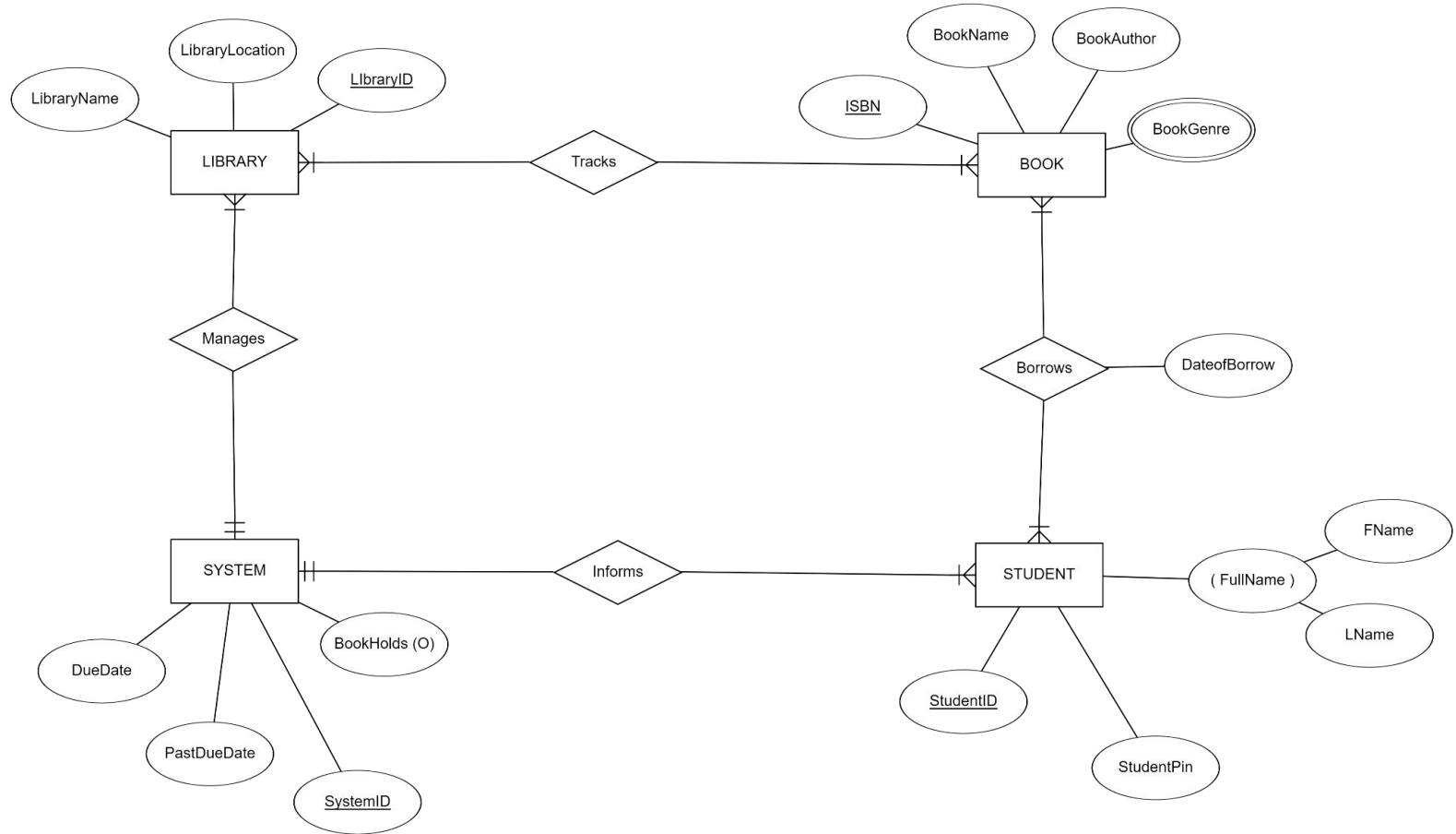
DUEDATE	STUDENTID
07-AUG-22	S-72346078
02-MAR-22	S-58463790
13-DEC-22	S-18175864
07-DEC-22	S-19588728
16-SEP-20	S-99155006

Problem 2 : The library can't keep track of which ISBN code on the Date of Borrow.

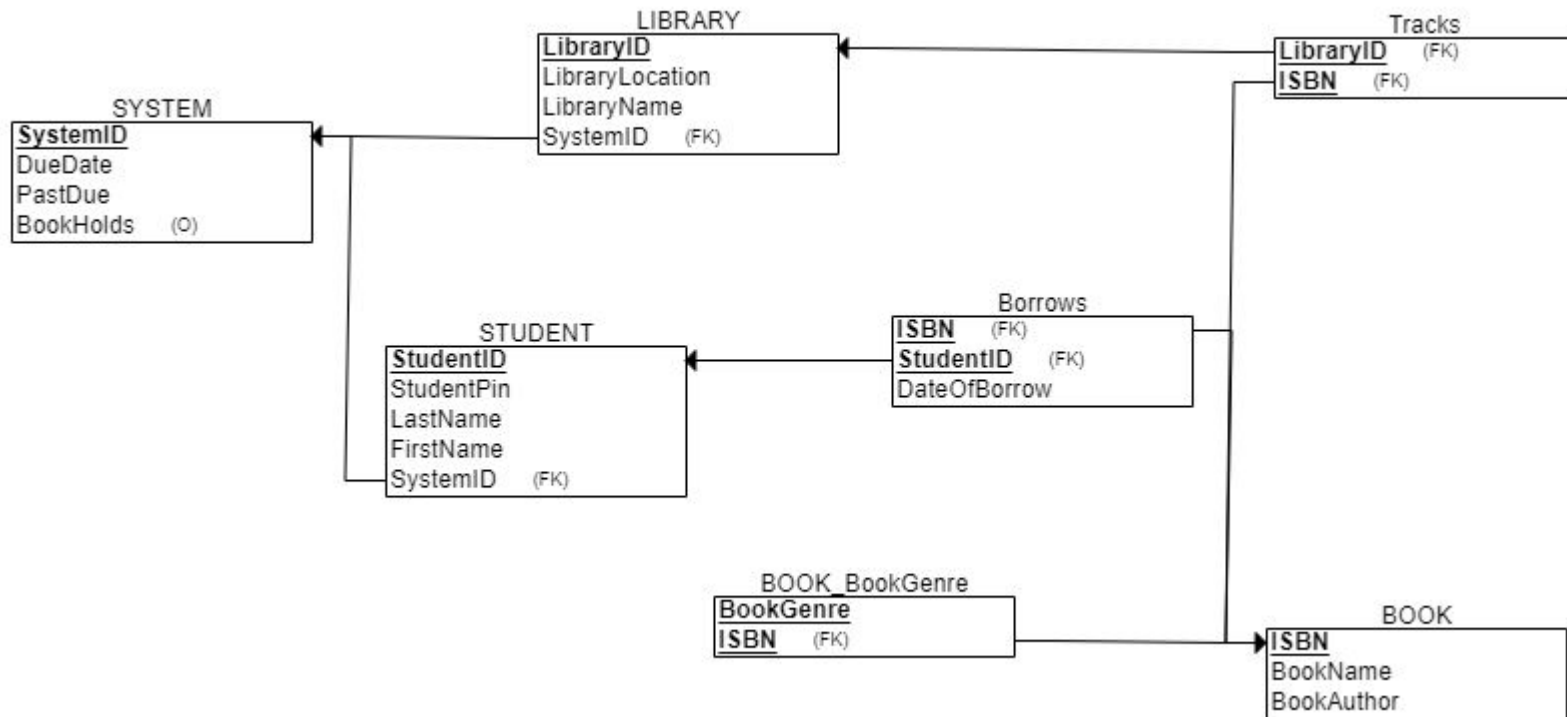
```
56 | SELECT BORROWS.DATEOFBORROW, TRACKS.ISBN  
57 | FROM BORROWS  
58 | INNER JOIN TRACKS ON  
59 | BORROWS.ISBN = TRACKS.ISBN;  
60
```

DATEOFBORROW	ISBN
09-JAN-22	0-9418-6127-9
13-JUN-22	0-1172-8614-1
30-NOV-22	0-3191-0476-1
30-NOV-22	0-1106-6750-6
16-JUN-20	0-4554-7678-0

ER Diagram



Relational Schema :



Create Table Statements:

```
CREATE TABLE LIBRARY
(  
  LibraryID INT NOT NULL,  
  LibraryLocation VARCHAR(25) NOT NULL,  
  LibraryName VARCHAR(25) NOT NULL,  
  PRIMARY KEY (LibraryID)  
);
```

```
-- SYSTEM --  
CREATE TABLE SYSTEM  
(  
  SystemID INT NOT NULL,  
  DueDate DATE NOT NULL,  
  PastDueDate VARCHAR(3) NOT NULL,  
  BookHolds INT,  
  PRIMARY KEY (SystemID)  
);
```

```
--BOOK--  
CREATE TABLE BOOK  
(  
  ISBN CHAR(13) NOT NULL,  
  BookName VARCHAR(25) NOT NULL,  
  BookAuthor VARCHAR(25) NOT NULL,  
  PRIMARY KEY (ISBN)  
);
```

```
--STUDENT--  
CREATE TABLE STUDENT  
(  
  SystemID INT NOT NULL,  
  StudentID CHAR(25) NOT NULL,  
  StudentPin INT NOT NULL,  
  FName VARCHAR(30) NOT NULL,  
  LName VARCHAR(30) NOT NULL,  
  PRIMARY KEY (StudentID),  
  FOREIGN KEY (SystemID) REFERENCES SYSTEM(SystemID)  
);
```

Create Table Statements:

--BORROWS--

CREATE TABLE Borrows

```
(
  ISBN CHAR(13) NOT NULL,
  StudentID CHAR(25) NOT NULL,
  DateofBorrow DATE NOT NULL,
  PRIMARY KEY (ISBN, StudentID),
  FOREIGN KEY (ISBN) REFERENCES BOOK(ISBN),
  FOREIGN KEY (StudentID) REFERENCES
STUDENT(StudentID)
);
```

--BOOK_BOOKGENRE--

CREATE TABLE BOOK_BookGenre

```
(
  ISBN CHAR(13) NOT NULL,
  BookGenre VARCHAR(25) NOT NULL,
  PRIMARY KEY (BookGenre, ISBN),
  FOREIGN KEY (ISBN) REFERENCES BOOK(ISBN)
);
```

-- TRACKS --

CREATE TABLE TRACKS

```
( LibraryID INT NOT NULL,
  ISBN CHAR(13) NOT NULL,
  PRIMARY KEY (LibraryID, ISBN),
  FOREIGN KEY (LibraryID) REFERENCES LIBRARY(LibraryID),
  FOREIGN KEY (ISBN) REFERENCES BOOK(ISBN)
);
```

Insert Into Statements:

-- LIBRARY INSERT --

INSERT INTO LIBRARY VALUES (1, '286 Cadman Plaza W', 'Brooklyn Heights');

INSERT INTO LIBRARY VALUES(2, ' 431 6th Ave', 'Park Slope');

INSERT INTO LIBRARY VALUES(3, '10 Grand Army Plaza', 'Central Library ');

INSERT INTO LIBRARY VALUES(4, '361 Lewis Ave', 'Macon Library');

INSERT INTO LIBRARY VALUES(5, '1901 Mermaid Ave.', 'Coney Island Library');

-- SYSTEM INSERT --

INSERT INTO SYSTEM VALUES(101,DATE '2022-03-02','Y', 0);

INSERT INTO SYSTEM VALUES(625, DATE '2022-08-07','Y', 2);

INSERT INTO SYSTEM VALUES(872, DATE '2022-12-07','N', 1);

INSERT INTO SYSTEM VALUES(365, DATE '2022-12-13','N', 3);

INSERT INTO SYSTEM VALUES(305, DATE '2020-09-16','Y', 5);

Insert Into Statements:

-- BOOK INSERT --

INSERT INTO BOOK VALUES ('0-9418-6127-9', 'Mending The King','D.B Smith');

INSERT INTO BOOK VALUES ('0-1172-8614-1', 'Breath of Fresh Air','Penny Silling');

INSERT INTO BOOK VALUES ('0-3191-0476-1', 'Waiting for Dinner','Eileen Bent');

INSERT INTO BOOK VALUES ('0-1106-6750-6', 'Haunted House','Phil McCavity');

INSERT INTO BOOK VALUES ('0-4554-7678-0', 'Keeping Scores','Seymour Clearly');

-- STUDENT INSERT --

INSERT INTO STUDENT VALUES (625,'S-72346078',6078,'Francis','Nolan');

INSERT INTO STUDENT VALUES(101,'S-58463790',3790,'Maddison','Smith');

INSERT INTO STUDENT VALUES (365,'S-18175864',5864,'David','Miller');

INSERT INTO STUDENT VALUES(872,'S-19588728',8728,'Elliot ','Smith');

INSERT INTO STUDENT VALUES(305,'S-99155006',5006,'Florence ','James');

Insert Into Statements:

-- BORROWS INSERT --

```
INSERT INTO BORROWS VALUES('0-9418-6127-9','S-72346078', DATE '2022-01-09');
```

```
INSERT INTO BORROWS VALUES('0-1172-8614-1','S-58463790', DATE '2022-06-13');
```

```
INSERT INTO BORROWS VALUES('0-3191-0476-1', 'S-18175864', DATE '2022-11-30');
```

```
INSERT INTO BORROWS VALUES('0-1106-6750-6', 'S-19588728', DATE '2022-11-30');
```

```
INSERT INTO BORROWS VALUES('0-4554-7678-0','S-99155006', DATE '2020-06-16');
```

-- BOOK_BookGenre INSERT --

```
INSERT INTO BOOK_BOOKGENRE VALUES('0-1172-8614-1','Poetry');
```

```
INSERT INTO BOOK_BOOKGENRE VALUES('0-9418-6127-9','Fiction');
```

```
INSERT INTO BOOK_BOOKGENRE VALUES('0-3191-0476-1','CookBook');
```

```
INSERT INTO BOOK_BOOKGENRE VALUES('0-1106-6750-6','Horror');
```

```
INSERT INTO BOOK_BOOKGENRE VALUES('0-4554-7678-0','Autobiography');
```

Insert Into Statements:

-- TRACKS --

INSERT INTO TRACKS VALUES (1,'0-9418-6127-9');

INSERT INTO TRACKS VALUES (2,'0-1172-8614-1');

INSERT INTO TRACKS VALUES (3,'0-3191-0476-1');

INSERT INTO TRACKS VALUES (4,'0-1106-6750-6');

INSERT INTO TRACKS VALUES (5,'0-4554-7678-0');

TABLES :

Library

LIBRARYID	LIBRARYLOCATION	LIBRARYNAME
1	286 Cadman Plaza W	Brooklyn Heights
2	431 6th Ave	Park Slope
3	10 Grand Army Plaza	Central Library
4	361 Lewis Ave	Macon Library
5	1901 Mermaid Ave.	Coney Island Library

Book

ISBN	BOOKNAME	BOOKAUTHOR
0-9418-6127-9	Mending The King	D.B Smith
0-1172-8614-1	Breath of Fresh Air	Penny Silling
0-3191-0476-1	Waiting for Dinner	Eileen Bent
0-1106-6750-6	Haunted House	Phil McCavity
0-4554-7678-0	Keeping Scores	Seymour Clearly

Student

SYSTEMID	STUDENTID	STUDENTPIN	FNAME	LNAME
625	S-72346078	6078	Francis	Nolan
101	S-58463790	3790	Maddison	Smith
365	S-18175864	5864	David	Miller
872	S-19588728	8728	Elliot	Smith
305	S-99155006	5006	Florence	James

Tracks

Borrows

ISBN	STUDENTID	DATEOFBORROW
0-9418-6127-9	S-72346078	09-JAN-22
0-1172-8614-1	S-58463790	13-JUN-22
0-3191-0476-1	S-18175864	30-NOV-22
0-1106-6750-6	S-19588728	30-NOV-22
0-4554-7678-0	S-99155006	16-JUN-20

System

SYSTEMID	DUEDATE	PASTDUEDATE	BOOKHOLDS
101	02-MAR-22	Y	0
625	07-AUG-22	Y	2
872	07-DEC-22	N	1
365	13-DEC-22	N	3
305	16-SEP-20	Y	5

Book_BookGenre

ISBN	BOOKGENRE
0-4554-7678-0	Autobiography
0-3191-0476-1	CookBook
0-9418-6127-9	Fiction
0-1106-6750-6	Horror
0-1172-8614-1	Poetry

LIBRARYID	ISBN
1	0-9418-6127-9
2	0-1172-8614-1
3	0-3191-0476-1
4	0-1106-6750-6
5	0-4554-7678-0