

## **Project 2 Phase 2**

Edosa Aigbuza & Brian Shamayev

## **TASK 1: Create tables for the LMS database.**

```
CREATE TABLE PUBLISHER (  
    Publisher_Name VARCHAR(50) PRIMARY KEY,  
    Phone VARCHAR(20),  
    Address TEXT  
);
```

```
CREATE TABLE BOOK (  
    Book_Id INTEGER PRIMARY KEY,  
    Title VARCHAR(50) NOT NULL,  
    Publisher_Name VARCHAR(50),  
    FOREIGN KEY (Publisher_Name) REFERENCES PUBLISHER(Publisher_Name)  
ON DELETE SET NULL  
);
```

--Book\_Id is made an INTEGER so it auto increments for every new entry

```
CREATE TABLE LIBRARY_BRANCH (  
    Branch_Id INT PRIMARY KEY,  
    Branch_Name VARCHAR(50) NOT NULL,  
    Branch_Address TEXT NOT NULL  
);
```

```
CREATE TABLE BOOK_COPIES (  
    Book_Id INT,  
    Branch_Id INT,  
    No_Of_Copies INT,  
  
    PRIMARY KEY (Book_Id, Branch_Id),  
    FOREIGN KEY (Book_Id) REFERENCES BOOK(Book_Id) ,  
    FOREIGN KEY (Branch_Id) REFERENCES LIBRARY_BRANCH(Branch_Id)  
);
```

```
CREATE TABLE BORROWER (  
    Card_No INT PRIMARY KEY,
```

```
Name VARCHAR(50) NOT NULL,  
Address TEXT NOT NULL,  
Phone VARCHAR(20) NOT NULL  
);
```

```
CREATE TABLE BOOK_LOANS (  
    Book_Id INT,  
    Branch_Id INT,  
    Card_No INT,  
    Date_Out DATE,  
    Due_Date DATE,  
    Returned_date DATE,  
    PRIMARY KEY (Book_Id, Branch_Id, Card_No, Date_Out),  
    FOREIGN KEY (Book_Id) REFERENCES BOOK(Book_Id),  
    FOREIGN KEY (Branch_Id) REFERENCES LIBRARY_BRANCH(Branch_Id),  
    FOREIGN KEY (Card_No) REFERENCES BORROWER(Card_No)  
);
```

```
CREATE TABLE BOOK_AUTHORS (  
    Book_Id INTEGER PRIMARY KEY,  
    Author_Name VARCHAR(50)  
)
```

--Book\_Id is made an INTEGER so it auto increments for every new entry

**TASK 2: Load the data from the text files into the corresponding tables.**

To load the data we used the .import command for each of the .csv files. I started by running .mode csv to tell sqlite to interpret the incoming data in a csv format. Then the following commands were used to import the data:

```
.import --skip 1 Book_Authors.csv BOOK_AUTHORS
```

```
.import --skip 1 Book_Copies.csv BOOK_COPIES
```

```
.import --skip 1 Book_Loans.csv BOOK_LOANS
```

```
.import --skip 1 Book.csv BOOK
```

```
.import --skip 1 Borrower.csv BORROWER
```

```
.import --skip 1 Library_Branch.csv LIBRARY_BRANCH
```

```
.import --skip 1 Publisher.csv PUBLISHER
```

```
sqlite> SELECT COUNT(*) AS Total FROM PUBLISHER;
```

```
17
```

```
sqlite> SELECT COUNT(*) AS Total FROM BOOK;
```

```
21
```

```
sqlite> SELECT COUNT(*) AS Total FROM LIBRARY_BRANCH;
```

```
3
```

```
sqlite> SELECT COUNT(*) AS Total FROM BORROWER;
```

```
21
```

```
sqlite> SELECT COUNT(*) AS Total FROM BOOK_COPIES;
```

```
21
```

```
sqlite> SELECT COUNT(*) AS Total FROM BOOK_LOANS;
```

```
21
```

### **TASK 3: Execute the following queries on the database tables.**

--1 Insert yourself as a New Borrower. Do not provide the Card\_no in your query.

INSERT INTO BORROWER (Name, Address, Phone)

VALUES ('Edosa Aigbuza', '20 Ingram Street, New York, NY', '555-555-5555');



	Card_No	INT PRIMARY KEY	Name	VARCHAR(50) NOT NULL	Address	TEXT NOT NULL	Phone	VARCHAR(20) NOT NULL
1	123456		John Smith		456 Oak St, Arizona...		205-555-5555	
2	789012		Jane Doe		789 Maple Ave, New ...		555-235-5556	
3	345678		Bob Johnson		12 Elm St, Arizona,...		545-234-5557	
4	901234		Sarah Kim		345 Pine St, New Yo...		515-325-2158	
5	567890		Tom Lee		678 S Oak St, New ...		209-525-5559	
6	234567		Emily Lee		389 Oaklay St, Ariz...		231-678-5560	
7	890123		Michael Park		123 Pinewood St, Ne...		655-890-2161	
8	456789		Laura Chen		345 Mapman Ave, Ari...		565-985-9962	
9	111111		Alex Kim		983 Sine St, Arizon...		678-784-5563	
10	222222		Rachel Lee		999 Apple Ave, Ariz...		231-875-5564	
11	333333		William Johnson		705 Paster St, New ...		235-525-5567	
12	444444		Ethan Martinez		466 Deeplm St, New ...		555-555-5569	
13	555555		Grace Hernandez		315 Babes St, Arizo...		455-567-5587	
14	565656		Sophia Park		678 Dolphin St, New...		675-455-5568	
15	676767		Olivia Lee		345 Spine St, New Y...		435-878-5569	
16	787878		Noah Thompson		189 GreenOak Ave, N...		245-555-5571	
17	989898		Olivia Smith		178 Elm St, New Jer...		325-500-5579	
18	121212		Chloe Park		345 Shark St, Arizo...		755-905-5572	
19	232323		William Chen		890 Sting St, New Y...		406-755-5580	
20	343434		Olivia Johnson		345 Pine St, New Je...		662-554-5575	
21	454545		Dylan Kim		567 Cowboy way St, ...		435-254-5578	
22	NULL		Edosa Aigbuza		20 Ingram Street, N...		555-555-5555	

--image showing the insertion of new Borrower; 1 record added

--2 Update your phone number to (837) 721-8965

UPDATE BORROWER

SET Phone = '(837) 721-8965'

WHERE Name = 'Edosa Aigbuza';

21	434343	Dylan Kim	567 Cowboy Way St, ...	433-234-5578
22	NULL	Edosa Aigbuza	20 Ingram Street, N...	(837) 721-8965

--Even though the text format is normally XXX-XXX-XXXX, we kept the text as requested with –parentheses; image shows update of phone number; 1 record affected

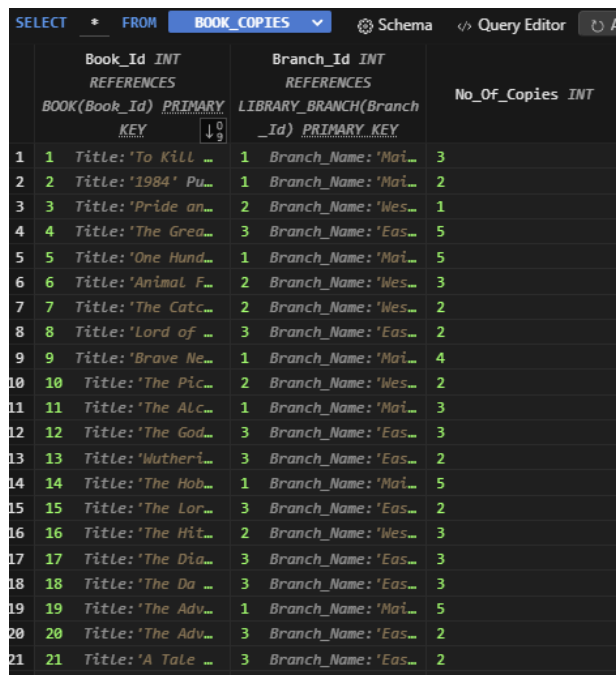
--3 Increase the number of book\_copies by 1 for the 'East Branch'

UPDATE BOOK\_COPIES

SET No\_Of\_Copies = No\_Of\_Copies + 1

WHERE Branch\_Id = (SELECT Branch\_Id FROM LIBRARY\_BRANCH

WHERE Branch\_Name = 'East Branch' );



	Book_Id INT REFERENCES BOOK(Book_Id) PRIMARY KEY	Branch_Id INT REFERENCES LIBRARY_BRANCH(Branch _Id) PRIMARY KEY	No_Of_Copies INT
1	1 Title: 'To Kill ...	1 Branch_Name: 'Mai...	3
2	2 Title: '1984' Pu...	1 Branch_Name: 'Mai...	2
3	3 Title: 'Pride an...	2 Branch_Name: 'Wes...	1
4	4 Title: 'The Grea...	3 Branch_Name: 'Eas...	5
5	5 Title: 'One Hund...	1 Branch_Name: 'Mai...	5
6	6 Title: 'Animal F...	2 Branch_Name: 'Wes...	3
7	7 Title: 'The Catc...	2 Branch_Name: 'Wes...	2
8	8 Title: 'Lord of ...	3 Branch_Name: 'Eas...	2
9	9 Title: 'Brave Ne...	1 Branch_Name: 'Mai...	4
10	10 Title: 'The Pic...	2 Branch_Name: 'Wes...	2
11	11 Title: 'The Alc...	1 Branch_Name: 'Mai...	3
12	12 Title: 'The God...	3 Branch_Name: 'Eas...	3
13	13 Title: 'Wutheri...	3 Branch_Name: 'Eas...	2
14	14 Title: 'The Hob...	1 Branch_Name: 'Mai...	5
15	15 Title: 'The Lor...	3 Branch_Name: 'Eas...	2
16	16 Title: 'The Hit...	2 Branch_Name: 'Wes...	3
17	17 Title: 'The Dia...	3 Branch_Name: 'Eas...	3
18	18 Title: 'The Da ...	3 Branch_Name: 'Eas...	3
19	19 Title: 'The Adv...	1 Branch_Name: 'Mai...	5
20	20 Title: 'The Adv...	3 Branch_Name: 'Eas...	2
21	21 Title: 'A Tale ...	3 Branch_Name: 'Eas...	2

--All copies from East Branch incremented by 1; 9 records affected

--4a Insert a new BOOK with the following info: Title: 'Harry Potter and the Sorcerer's Stone' --;Book\_author: 'J.K. Rowling' ; Publisher\_name: 'Oxford Publisheing'

```
INSERT INTO BOOK (Title, Publisher_Name)
```

```
VALUES ('Harry Potter and the Sorcerer"s Stone', 'Oxford Publisheing');
```

```
22  22      Harry Potter and th...  Oxford Publisheing...
```

```
INSERT INTO PUBLISHER (Publisher_Name, Phone, Address)
```

```
VALUES ('Oxford Publisheing', NULL, NULL);
```

```
INSERT INTO BOOK_AUTHORS (Book_Id, Author_Name)
```

```
VALUES ( (SELECT Book_Id FROM BOOK WHERE Title = 'Harry Potter and the  
Sorcerer"s Stone'), 'J.K. Rowling');
```

--1 record added to BOOK, PUBLISHER, BOOK\_AUTHORS

--4b You also need to insert the following branches:

--North Branch 456 NW, Irving, TX 76100

--UTA Branch 123 Cooper St, Arlington TX 76101

```
INSERT INTO LIBRARY_BRANCH (Branch_Id, Branch_Name, Branch_Address)
```

```
VALUES (4, 'North Branch', '456 NW, Irving, TX 76100'),
```

```
(5, 'UTA Branch', '123 Cooper St, Arlington TX 76101');
```

Branch_Id	Branch_Name	Branch_Address
1	Main Branch	123 Main St, New York, NY 10003
2	West Branch	456 West St, Arizona, AR 70622
3	East Branch	789 East St, New Jersey, NY 32032
4	North Branch	456 NW, Irving, TX 76100
5	UTA Branch	123 Cooper St, Arlington TX 76101

--2 records added



--5 Return all Books that were loaned between March 5, 2022 until March 23, 2022. List Book title and Branch name, and how many days it was borrowed for.

```
SELECT B.Title, LB.Branch_Name, (julianday(BL.Returned_date) -  
julianday(BL.Date_Out)) AS Days_Borrowed
```

```
FROM BOOK_LOANS BL
```

```
JOIN BOOK B ON BL.Book_Id = B.Book_Id
```

```
JOIN LIBRARY_BRANCH LB ON BL.Branch_Id = LB.Branch_Id
```

```
WHERE BL.Date_Out BETWEEN '2022-03-05' AND '2022-03-23' AND  
BL.Returned_date IS NOT NULL;
```

Title	Branch_Name	Days_Borrowed
The Hitchhiker's Guide to the Galaxy	West Branch	19.0
The Diary of a Young Girl	East Branch	7.0

--2 records returned

--6 Return a List borrower names, that have books not returned.

```
SELECT DISTINCT BR.Name
```

```
FROM BORROWER BR
```

```
JOIN BOOK_LOANS BL ON BR.Card_No = BL.Card_No
```

```
WHERE BL.Returned_date = 'NULL' OR BL.Returned_date IS NULL;
```

Name
Jane Doe
Bob Johnson

--2 records returned

--7 Create a report that will return all branches with the number of books borrowed per branch separated by if they have been returned, still borrowed, or late.

```
SELECT LB.Branch_Name, COUNT(CASE WHEN BL.Returned_date IS NOT NULL
AND BL.Returned_date <= BL.Due_Date THEN 1 END) AS Returned_On_Time,
COUNT(CASE WHEN (BL.Returned_date IS NULL OR BL.Returned_date = 'NULL')
AND DATE('now') <= BL.Due_Date THEN 1 END) AS Still_Borrowed,
COUNT(CASE WHEN (BL.Returned_date IS NOT NULL AND BL.Returned_date >
BL.Due_Date) OR ((BL.Returned_date IS NULL OR BL.Returned_date = 'NULL') AND
DATE('now') > BL.Due_Date) THEN 1 END) AS Late
FROM BOOK_LOANS BL
JOIN LIBRARY_BRANCH LB ON BL.Branch_Id = LB.Branch_Id
GROUP BY LB.Branch_Name;
```

Branch_Name	Returned_On_Time	Still_Borrowed	Late
East Branch	7	0	2
Main Branch	4	0	3
West Branch	1	0	4

--3 records returned

--8 List all the books (title) and the maximum number of days that they were borrowed.

```
SELECT B.Title, MAX(julianday(BL.Returned_date) - julianday(BL.Date_Out)) AS  
Max_Days_Borrowed  
FROM BOOK B  
JOIN BOOK_LOANS BL ON B.Book_Id = BL.Book_Id  
WHERE BL.Returned_date IS NOT NULL  
GROUP BY B.Title;
```

Title	Max_Days_Borrowed
1984	
A Tale of Two Cities	31.0
Animal Farm	35.0
Brave New World	28.0
Lord of the Flies	61.0
One Hundred Years of Solitude	35.0
Pride and Prejudice	
The Adventures of Huckleberry Finn	7.0
The Adventures of Tom Sawyer	31.0
The Alchemist	7.0
The Catcher in the Rye	60.0
The Da Vinci Code	31.0
The Diary of a Young Girl	7.0
The God of Small Things	7.0
The Great Gatsby	31.0
The Hitchhiker's Guide to the Galaxy	19.0
The Hobbit	76.0
The Lord of the Rings	37.0
The Picture of Dorian Gray	28.0
To Kill a Mockingbird	31.0
Wuthering Heights	15.0

--If a book has not been returned it is displayed as empty (NULL)

--21 records returned

--9 Create a report for Ethan Martinez with all the books they borrowed. List the book title and author. Also, calculate the number of days each book was borrowed for and if any book is late being returned. Order the results by the date\_out.

```
SELECT B.Title, BA.Author_Name, (julianday(BL.Returned_date) -  
julianday(BL.Date_Out)) AS Days_Borrowed  
  
FROM BORROWER BR  
  
JOIN BOOK_LOANS BL ON BR.Card_No = BL.Card_No  
  
JOIN BOOK B ON BL.Book_Id = B.Book_Id  
  
LEFT JOIN BOOK_AUTHORS BA ON B.Book_Id = BA.Book_Id  
  
WHERE BR.Name = 'Ethan Martinez'  
  
ORDER BY BL.Date_Out;
```

Title	Author_Name	Days_Borrowed
The God of Small Things	Arundhati Roy	7.0

--1 record returned

--10 Return the names of all borrowers that borrowed a book from the West Branch  
include their addresses.

```
SELECT DISTINCT BR.Name, BR.Address  
FROM BORROWER BR  
JOIN BOOK_LOANS BL ON BR.Card_No = BL.Card_No  
JOIN LIBRARY_BRANCH LB ON BL.Branch_Id = LB.Branch_Id  
WHERE LB.Branch_Name = 'West Branch';
```

Name	Address
Bob Johnson	12 Elm St, Arizona, AR 70345
Emily Lee	389 Oaklay St, Arizona, AR 70986
Michael Park	123 Pinewood St, New Jersey, NJ 32954
Rachel Lee	999 Apple Ave, Arizona, AR 70671
Noah Thompson	189 GreenOak Ave, New Jersey, NJ 32453

--5 records returned

## **HONOR CODE**

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I promise that I will submit only work that I personally create or that I contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.

## **CONTRIBUTION LIST**

Edosa Aigbuza – CREATE statements, SELECT statements for queries

Brian Shamayev - CREATE statements, SELECT statements for queries