# CITY LIBRARY MANAGEMENT SYSTEM

## CS631

**BY**

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## Implementation and Problems Faced

**Objective:** To develop a menu driven application system for the public library system database.

The following are the webpages been developed:
1. Welcome Page: Reader functions Menu (ask for card number, and then login to Reader Home Page).
Administrative Functions Menu (ask for ID and password, and then login to Admin Home Page).

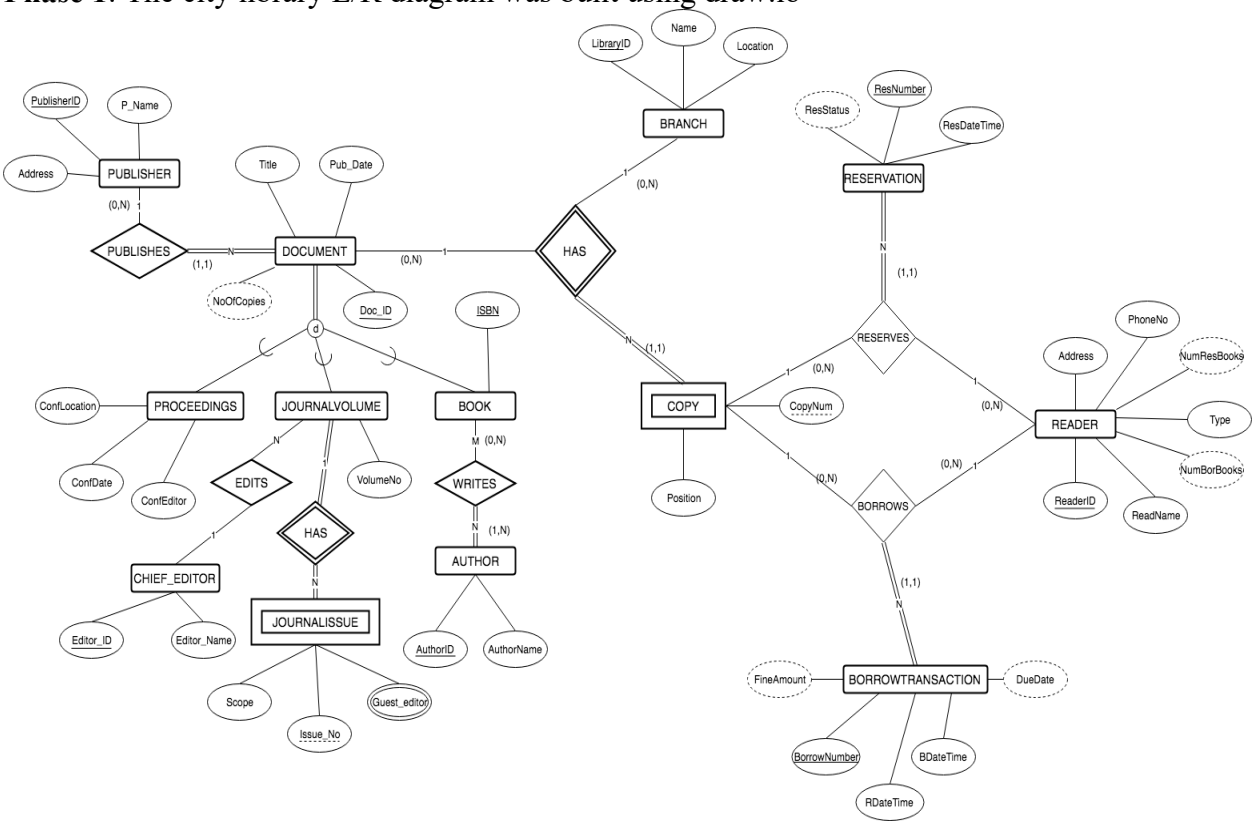
2. Reader Functions Webpage:
Search a document by ID, title, or publisher name.
Document checkout.
Document return.
Document reserve.
Compute fine for a document copy borrowed by a reader based on the current date.
Print the list of documents reserved by a reader and their status.
Print the document id and document titles of documents published by a publisher.
Logout.

3. Administrative Functions Webpage:
Add a document copy.
Search document copy and check its status.
Add new reader.
Print branch information (name and location).
Print top 10 most frequent borrowers in a branch and the number of books each has borrowed.
Print top 10 most borrowed books in a branch.
Print the 10 most popular books of the year.
Find the average fine paid per reader.
Logout.

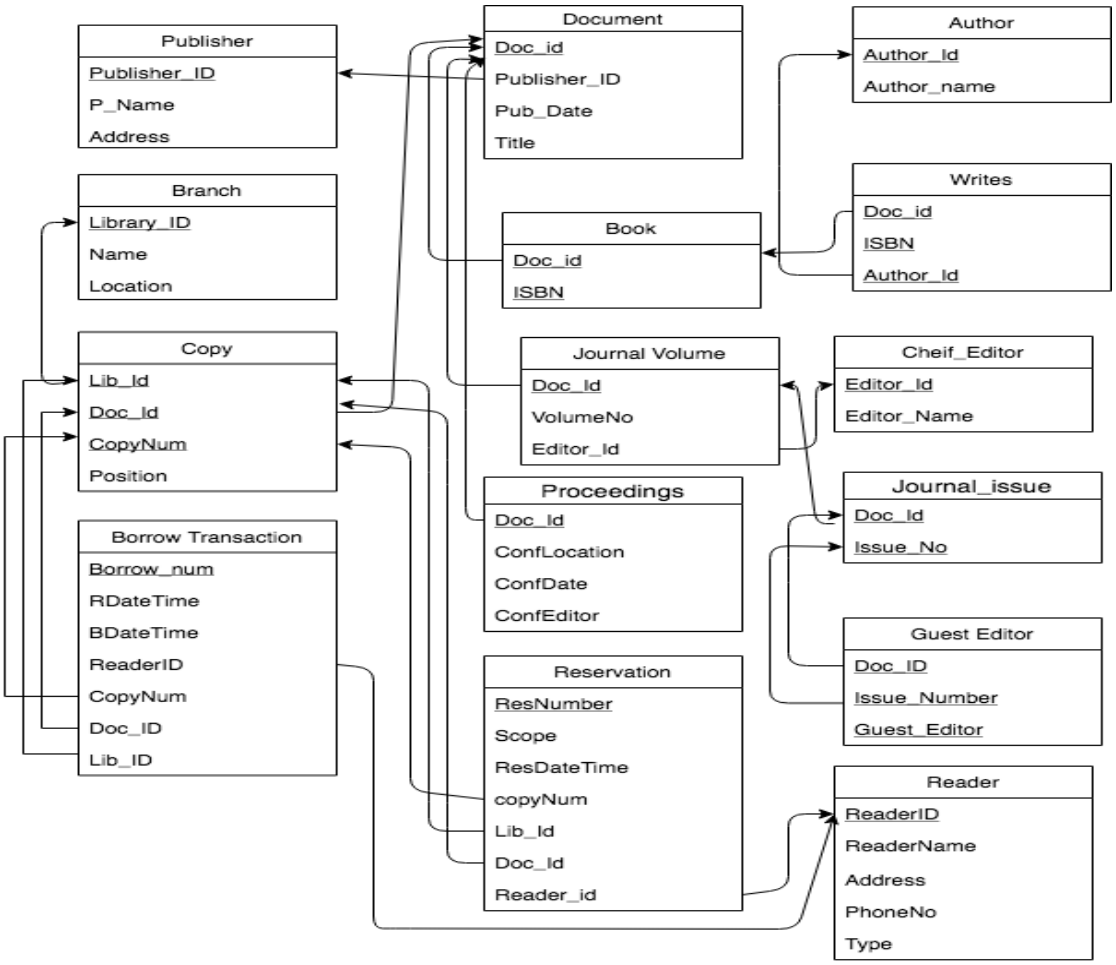
## Design of Implementation

**The library management system was designed in three phases as follows:**

**Phase 1**: The city library E/R diagram was built using draw.io



**Phase 2**: the derived EER diagram was designed using draw.io



**Phase 3**:

The implementation of the final web application was made using MySQL and JavaScript.
Database Design and Development is done based on knowledge of Deliverables 1 and 2.
Development is then done based on the model developed.
Database Creation is done in mysql terminal.

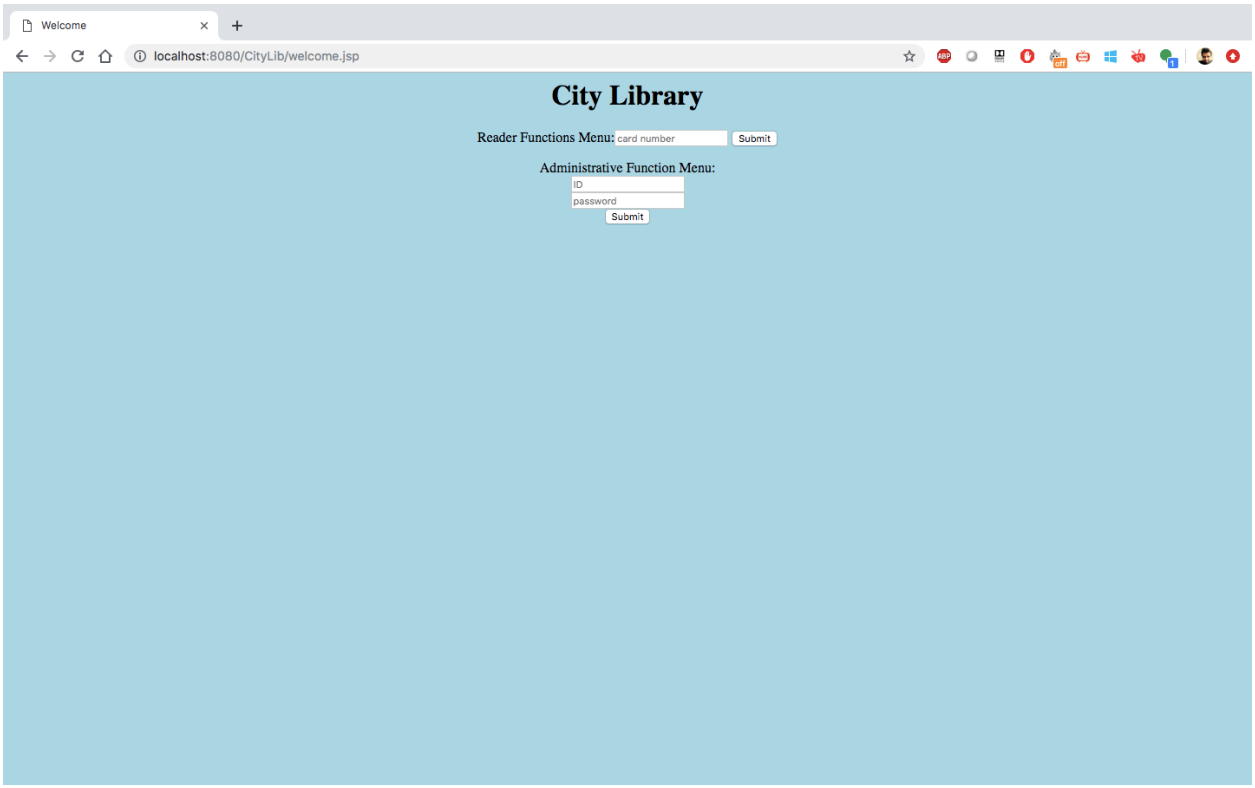
**Tools used:** Draw.io, Microsoft Word, Eclipse IDE, MySQL Terminal.
**Frameworks Used:** JavaScript, HTML.

## Problems faced during implementation:

1. JDBC Connection between Eclipse IDE and MySQL
2. Understanding and Monitoring the relationship between various tables of database.
3. Understanding the working of Reserves and Borrows table.
4. A document with publisher ID could be added without populating the publisher table.
5. Validation of data during insertion in tables.
6. There was a confusion between the implementation of documents and copies, so we moved on with maintaining uniformity with just documents in our library system.
7. Data Insertion in Database took time as it is required in sequential manner due to foreign key constraint.
8. Calculation of a Reader Fine in Database after due data i.e. 20 days is not been implemented in backend part of a Application.

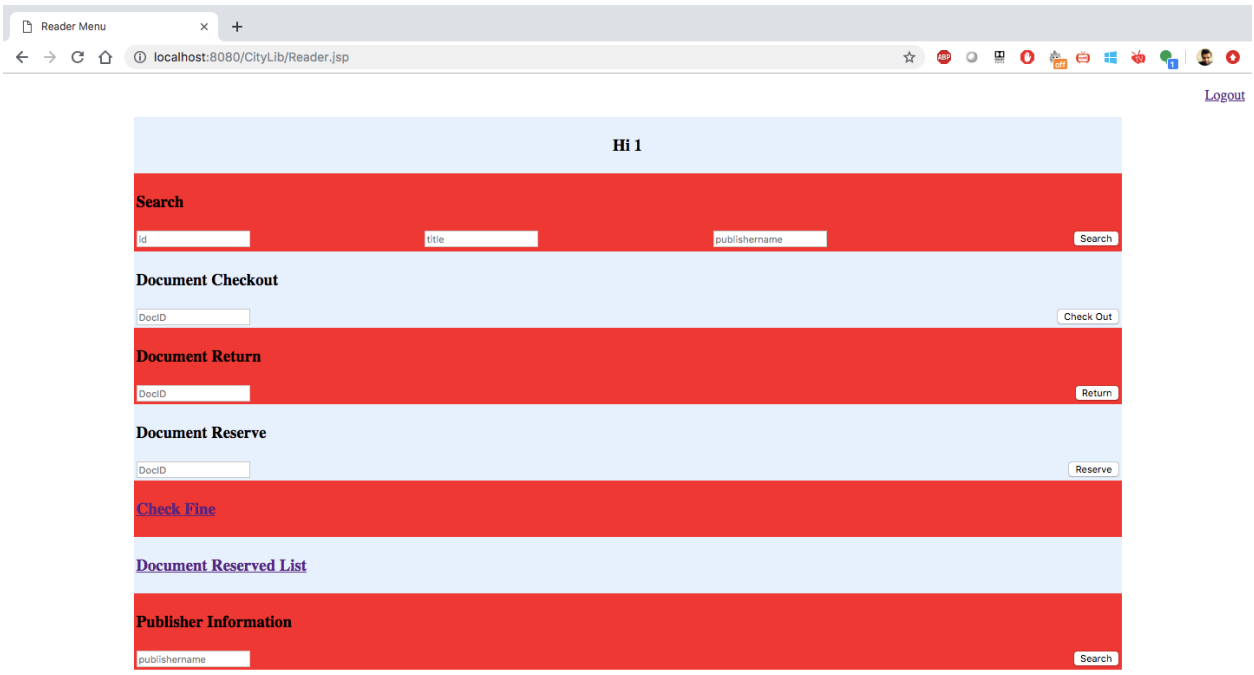
# Users Guide

Welcome Page:




Here if the user is Reader, he can login to his profile by entering his Registered Card Number.
If the user is Admin He can login to his profile by providing his login credentials.

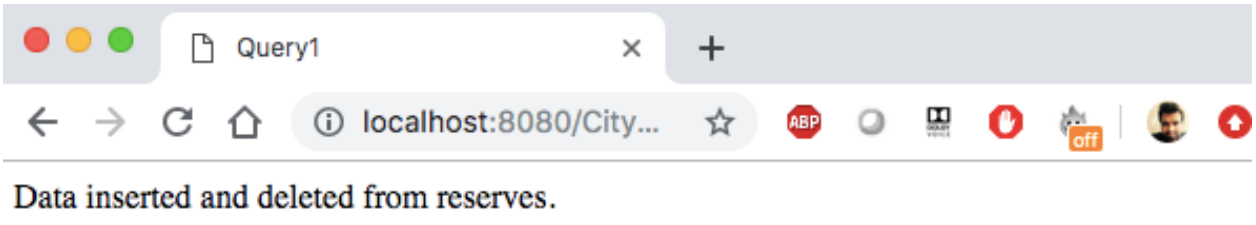
Reader Web Page:



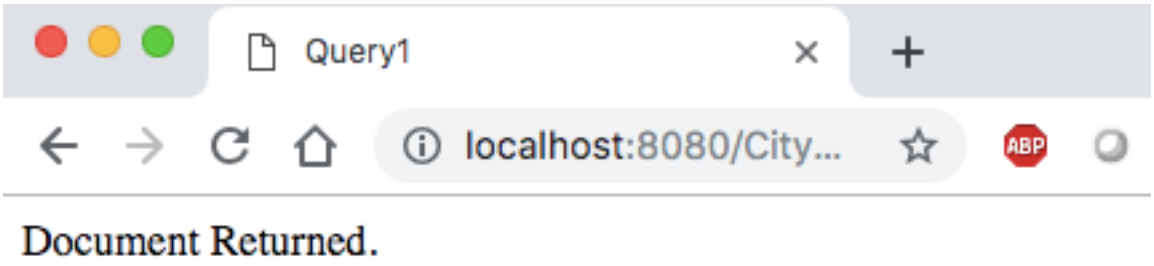

As seen in Screenshot, this is home Page of a Reader. Reader can perform or check 7 functionalities of a Library mentioned below with the screenshots of output. All these functions are implemented using various SQL commands.

1. Search a document by ID, title, or publisher name.

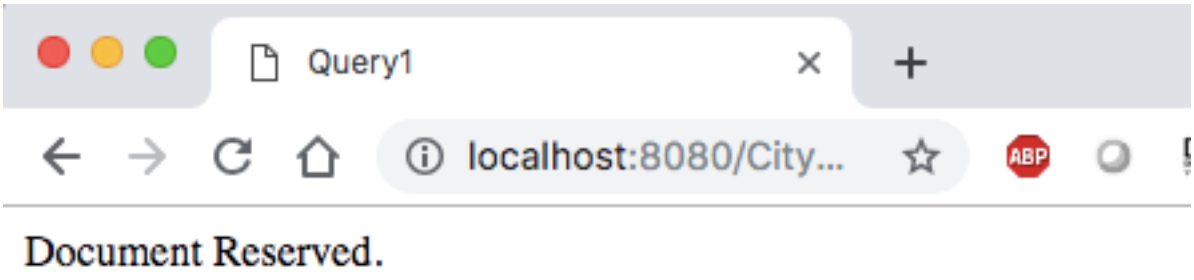
2. Document checkout.



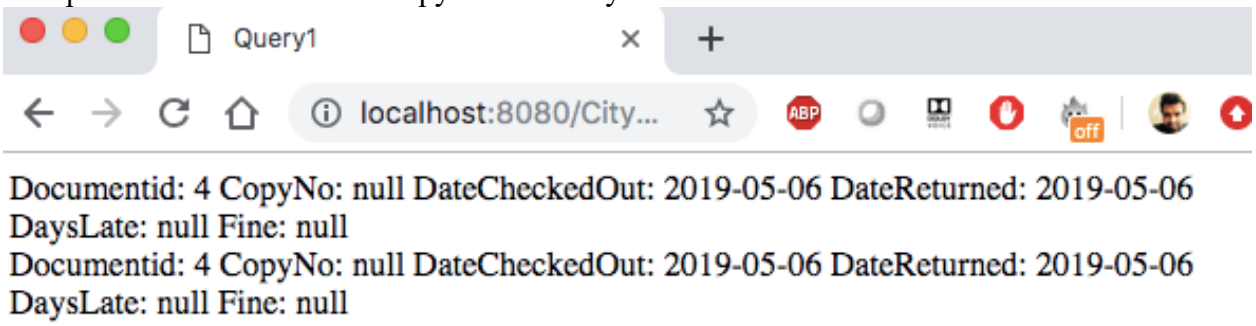

3. Document return.



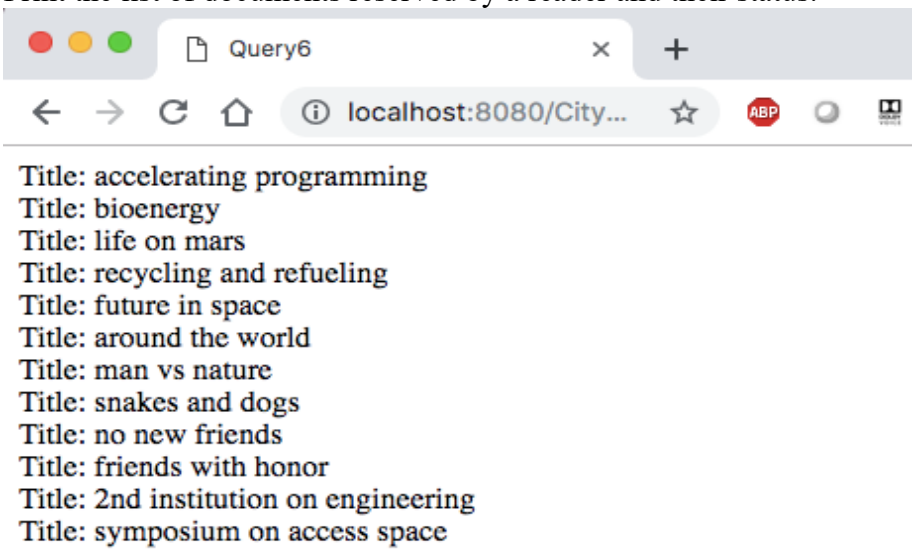
4. Document reserve.



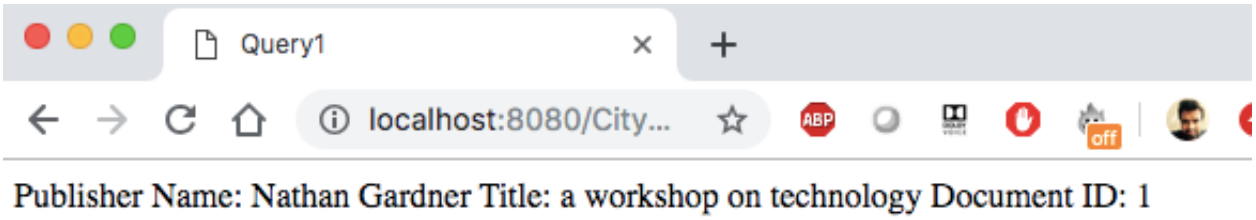

5. Compute fine for a document copy borrowed by a reader based on the current date.



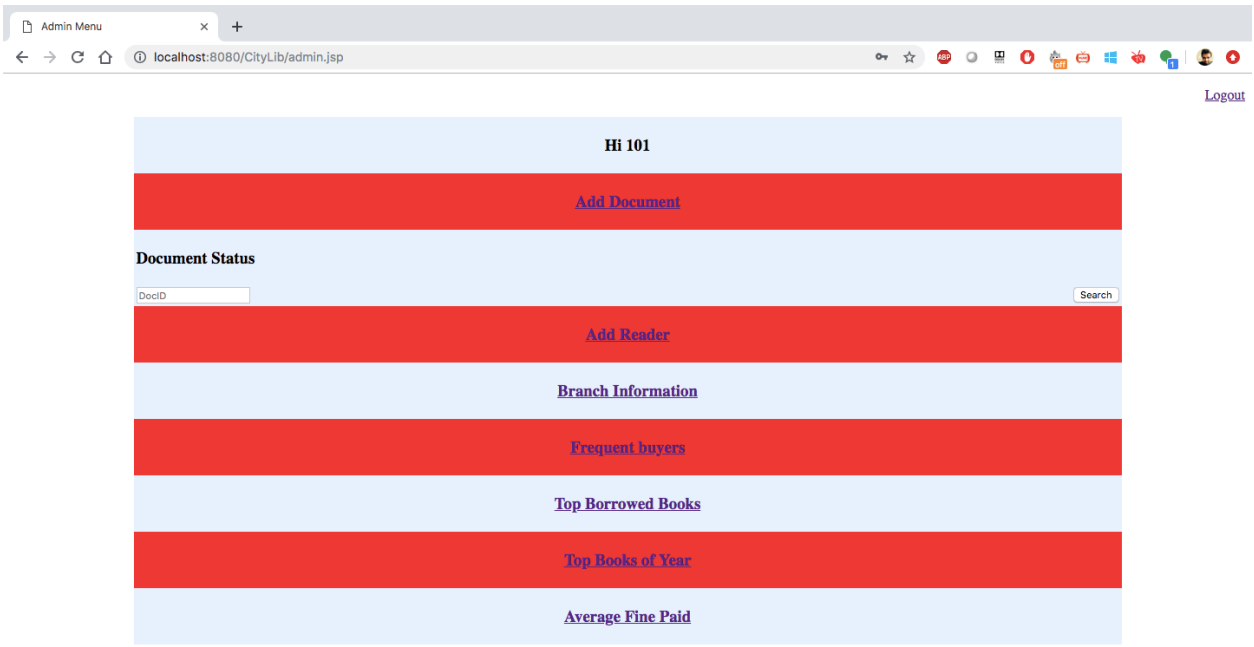
6. Print the list of documents reserved by a reader and their status.




7. Print the document id and document titles of documents published by a publisher.



Admin Home Page:

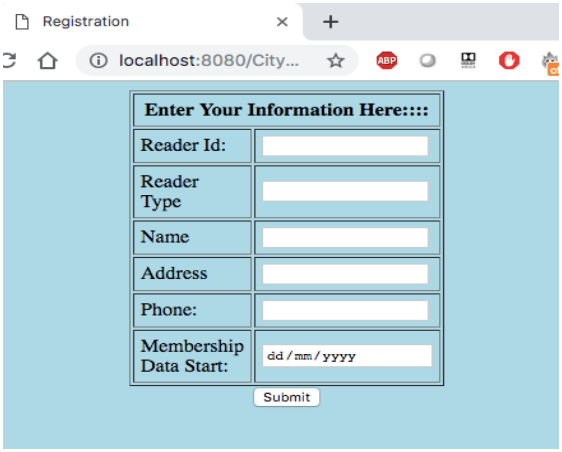



As seen in Screenshot, this is home Page of a Admin. Admin can perform or check 8 functionalities of a Library mentioned below with the screenshots of output. All these functions are implemented using various SQL commands.

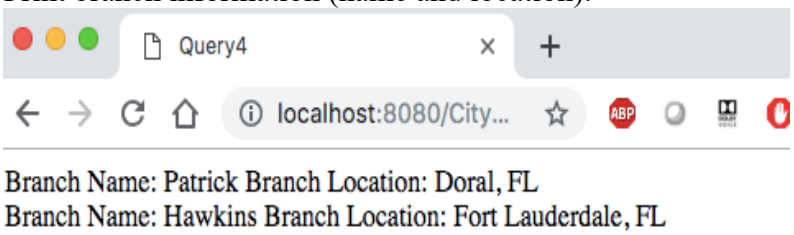
1. Add a document copy.

2. Search document copy and check its status.

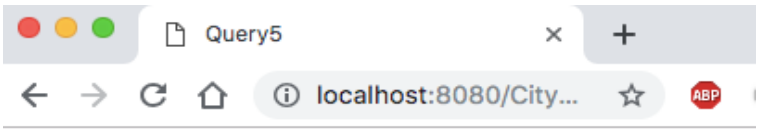
3. Add new reader.




4. Print branch information (name and location).

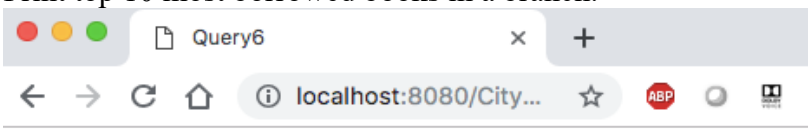


5. Print top 10 most frequent borrowers in a branch and the number of books each has borrowed.



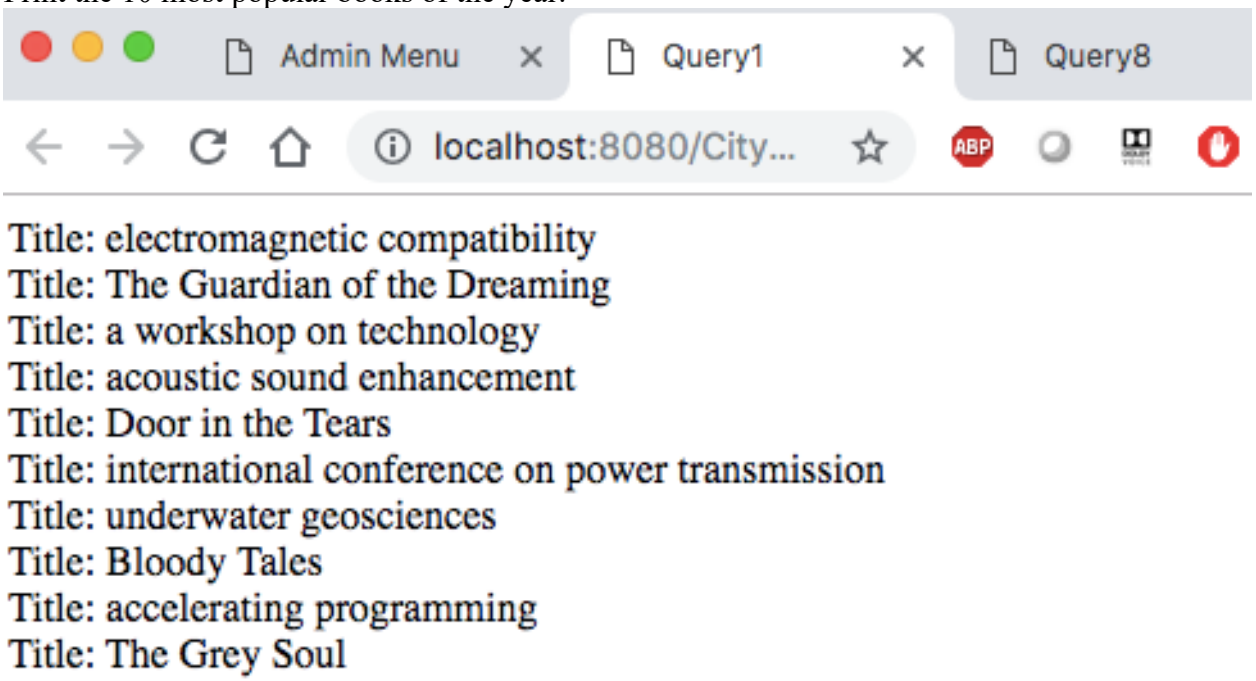

Count: 7 Reader ID: 1
Count: 4 Reader ID: 2
Count: 3 Reader ID: 3
Count: 2 Reader ID: 9
Count: 2 Reader ID: 10
Count: 2 Reader ID: 4
Count: 2 Reader ID: 5
Count: 2 Reader ID: 6
Count: 2 Reader ID: 7
Count: 2 Reader ID: 8

6. Print top 10 most borrowed books in a branch.

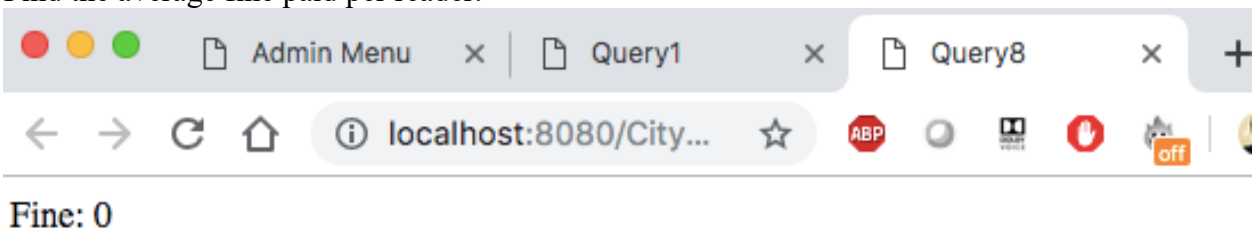



Title: electromagnetic compatibility Count: 2
Title: The Guardian of the Dreaming Count: 2
Title: a workshop on technology Count: 2
Title: acoustic sound enhancement Count: 2
Title: Door in the Tears Count: 2
Title: international conference on power transmission Count: 2
Title: underwater geosciences Count: 2
Title: Bloody Tales Count: 2
Title: accelerating programming Count: 2
Title: The Grey Soul Count: 2

7. Print the 10 most popular books of the year.




8. Find the average fine paid per reader.



SQL Commands for Creation and Insertion of Database:

```
-- MySQL dump 10.13  Distrib 8.0.16, for macos10.14 (x86_64)
--
-- Host: 127.0.0.1    Database: cityLib
-- ------------------------------------------------------
-- Server version 8.0.16

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
 SET NAMES utf8 ;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
-- Table structure for table `AdminLogin`
--

DROP TABLE IF EXISTS `AdminLogin`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
use cityLib


SET character_set_client = utf8mb4 ;
CREATE TABLE `AdminLogin` (
  `AdminID` varchar(10) NOT NULL,
  `LoginPassword` varchar(10) NOT NULL,
  `usertype` varchar(45) DEFAULT NULL,
  PRIMARY KEY (`AdminID`,`LoginPassword`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `AdminLogin`
--

LOCK TABLES `AdminLogin` WRITE;
/*!40000 ALTER TABLE `AdminLogin` DISABLE KEYS */;
INSERT INTO `AdminLogin` VALUES ('101','123','Admin'),('102','abc','User');
/*!40000 ALTER TABLE `AdminLogin` ENABLE KEYS */;
UNLOCK TABLES;

--
```

```
-- Table structure for table `Author`
--

DROP TABLE IF EXISTS `Author`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Author` (
  `AuthorID` int(11) NOT NULL AUTO_INCREMENT,
  `Author_Name` varchar(50) DEFAULT NULL,
  PRIMARY KEY (`AuthorID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Author`
--

LOCK TABLES `Author` WRITE;
/*!40000 ALTER TABLE `Author` DISABLE KEYS */;
/*!40000 ALTER TABLE `Author` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Book`
--

DROP TABLE IF EXISTS `Book`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Book` (
  `DocID` int(11) DEFAULT NULL,
  `ISBN` varchar(20) DEFAULT NULL,
  KEY `DocID` (`DocID`),
  CONSTRAINT `book_ibfk_1` FOREIGN KEY (`DocID`) REFERENCES `document` (`DocID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Book`
--

LOCK TABLES `Book` WRITE;
/*!40000 ALTER TABLE `Book` DISABLE KEYS */;
/*!40000 ALTER TABLE `Book` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Borrow_History`
```

```
--

DROP TABLE IF EXISTS `Borrow_History`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Borrow_History` (
  `ReaderID` int(11) DEFAULT NULL,
  `DocID` int(11) DEFAULT NULL,
  `CopyNo` int(11) DEFAULT NULL,
  `DateCheckedOut` date DEFAULT NULL,
  `DateReturned` date DEFAULT NULL,
  `DaysLate` int(11) DEFAULT NULL,
  `Fine` float DEFAULT NULL
)

ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Borrow_History`
--

LOCK TABLES `Borrow_History` WRITE;
/*!40000 ALTER TABLE `Borrow_History` DISABLE KEYS */;
/*!40000 ALTER TABLE `Borrow_History` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Borrows`
--

DROP TABLE IF EXISTS `Borrows`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Borrows` (
  `BorNumber` int(11) NOT NULL AUTO_INCREMENT,
  `ReaderID` int(11) DEFAULT NULL,
  `DocID` int(11) DEFAULT NULL,
  `CopyNo` int(11) DEFAULT NULL,
  `LibID` int(11) DEFAULT NULL,
  `BTimeStamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,
  PRIMARY KEY (`BorNumber`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Borrows`
--
```

```
LOCK TABLES `Borrows` WRITE;
/*!40000 ALTER TABLE `Borrows` DISABLE KEYS */;
/*!40000 ALTER TABLE `Borrows` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Branch`
--

DROP TABLE IF EXISTS `Branch`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character  set  client = utf8mb4 ;
CREATE TABLE `Branch` (
  `LibID` int(11) NOT NULL AUTO_INCREMENT,
  `LName` varchar(50) DEFAULT NULL,
  `LLocation` varchar(225) DEFAULT NULL,
  PRIMARY KEY (`LibID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Branch`
--

LOCK TABLES `Branch` WRITE;
/*!40000 ALTER TABLE `Branch` DISABLE KEYS */;
/*!40000 ALTER TABLE `Branch` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Chief_Editor`
--

DROP TABLE IF EXISTS `Chief_Editor`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character  set  client = utf8mb4 ;
CREATE TABLE `Chief_Editor` (
  `Editor_ID` int(11) NOT NULL AUTO_INCREMENT,
  `EName` varchar(50) DEFAULT NULL,
  PRIMARY KEY (`Editor  ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Chief_Editor`
--
```

```
LOCK TABLES `Chief  Editor` WRITE;
/*!40000 ALTER TABLE `Chief_Editor` DISABLE KEYS */;
/*!40000 ALTER TABLE `Chief_Editor` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Copy`
--

DROP TABLE IF EXISTS `Copy`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Copy` (
  `DocID` int(11) DEFAULT NULL,
  `CopyNo` int(11) DEFAULT NULL,
  `LibID` int(11) DEFAULT NULL,
  `Position` varchar(6) DEFAULT NULL,
  UNIQUE KEY `DocID` (`DocID`,`CopyNo`,`LibID`),
  KEY `LibID` (`LibID`),
  CONSTRAINT `copy_ibfk_1` FOREIGN KEY (`LibID`) REFERENCES `branch` (`LibID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Copy`
--

LOCK TABLES `Copy` WRITE;
/*!40000 ALTER TABLE `Copy` DISABLE KEYS */;
/*!40000 ALTER TABLE `Copy` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Document`
--

DROP TABLE IF EXISTS `Document`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Document` (
  `DocID` int(11) NOT NULL AUTO  INCREMENT,
  `Title` varchar(50) DEFAULT NULL,
  `PDate` date DEFAULT NULL,
  `PublisherID` int(11) DEFAULT NULL,
  PRIMARY KEY (`DocID`),
  KEY `PublisherID` (`PublisherID`),
  CONSTRAINT `document_ibfk_1` FOREIGN KEY (`PublisherID`) REFERENCES `publisher` (`PublisherID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
```

```
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Document`
--

LOCK TABLES `Document` WRITE;
/*!40000 ALTER TABLE `Document` DISABLE KEYS */;
/*!40000 ALTER TABLE `Document` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Inv_Editor`
--

DROP TABLE IF EXISTS `Inv_Editor`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Inv_Editor` (
  `DocID` int(11) NOT NULL,
  `Issue_Number` int(11) NOT NULL,
  `IE_Name` varchar(50) NOT NULL,
  PRIMARY KEY (`DocID`,`Issue_Number`,`IE_Name`),
  CONSTRAINT `inv_editor_ibfk_1` FOREIGN KEY (`DocID`, `Issue_Number`) REFERENCES `journal_issue` (`DocID`,
`Issue_Number`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Inv_Editor`
--

LOCK TABLES `Inv_Editor` WRITE;
/*!40000 ALTER TABLE `Inv_Editor` DISABLE KEYS */;
/*!40000 ALTER TABLE `Inv_Editor` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Journal_Issue`
--

DROP TABLE IF EXISTS `Journal_Issue`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Journal_Issue` (
  `DocID` int(11) NOT NULL,
  `Issue_Number` int(11) NOT NULL,
  `Scope` varchar(100) DEFAULT NULL,
```

```
  PRIMARY KEY (`DocID`,`Issue  Number`),
  CONSTRAINT `journal_issue_ibfk_1` FOREIGN KEY (`DocID`) REFERENCES `journal_volume` (`DocID`),
  CONSTRAINT `journal_issue_chk_1` CHECK (((`Issue_Number` >= 0) and (`Issue_Number` <= 10)))
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character  set  client = @saved  cs  client */;


--
-- Dumping data for table `Journal_Issue`
--

LOCK TABLES `Journal_Issue` WRITE;
/*!40000 ALTER TABLE `Journal_Issue` DISABLE KEYS */;
/*!40000 ALTER TABLE `Journal  Issue` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Table structure for table `Journal  Volume`
--

DROP TABLE IF EXISTS `Journal_Volume`;
/*!40101 SET @saved  cs  client     = @@character  set  client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Journal_Volume` (
  `DocID` int(11) NOT NULL,
  `JVolume` int(11) DEFAULT NULL,
  `Editor_ID` int(11) DEFAULT NULL,
  PRIMARY KEY (`DocID`),
  KEY `Editor_ID` (`Editor_ID`),
  CONSTRAINT `journal  volume  ibfk  1` FOREIGN KEY (`DocID`) REFERENCES `document` (`DocID`),
  CONSTRAINT `journal_volume_ibfk_2` FOREIGN KEY (`Editor_ID`) REFERENCES `chief_editor` (`Editor_ID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;


--
-- Dumping data for table `Journal_Volume`
--

LOCK TABLES `Journal_Volume` WRITE;
/*!40000 ALTER TABLE `Journal_Volume` DISABLE KEYS */;
/*!40000 ALTER TABLE `Journal_Volume` ENABLE KEYS */;
UNLOCK TABLES;


--
-- Table structure for table `Proceedings`
--

DROP TABLE IF EXISTS `Proceedings`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
```

```
 SET character  set  client = utf8mb4 ;
CREATE TABLE `Proceedings` (
  `DocID` int(11) NOT NULL,
  `CDate` date DEFAULT NULL,
  `CLocation` varchar(25) DEFAULT NULL,
  `CEditor` varchar(50) DEFAULT NULL,
  PRIMARY KEY (`DocID`),
  CONSTRAINT `proceedings_ibfk_1` FOREIGN KEY (`DocID`) REFERENCES `document` (`DocID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Proceedings`
--

LOCK TABLES `Proceedings` WRITE;
/*!40000 ALTER TABLE `Proceedings` DISABLE KEYS */;
/*!40000 ALTER TABLE `Proceedings` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Publisher`
--

DROP TABLE IF EXISTS `Publisher`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Publisher` (
  `PublisherID` int(11) NOT NULL AUTO  INCREMENT,
  `PubName` varchar(50) DEFAULT NULL,
  `PubAddress` varchar(225) DEFAULT NULL,
  PRIMARY KEY (`PublisherID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Publisher`
--

LOCK TABLES `Publisher` WRITE;
/*!40000 ALTER TABLE `Publisher` DISABLE KEYS */;
/*!40000 ALTER TABLE `Publisher` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Reader`
--
```

```
DROP TABLE IF EXISTS `Reader`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character_set_client = utf8mb4 ;
CREATE TABLE `Reader` (
  `ReaderID` int(11) NOT NULL AUTO  INCREMENT,
  `RType` varchar(20) DEFAULT NULL,
  `RName` varchar(50) DEFAULT NULL,
  `RAddress` varchar(225) DEFAULT NULL,
  `Phone  Number` bigint(20) DEFAULT NULL,
  `MemStart` date DEFAULT NULL,
  `Fine` float DEFAULT NULL ,
  `NumResDocs` int(11) NOT NULL DEFAULT '0',
  `NumBorDocs` int(11) NOT NULL DEFAULT '0',
  PRIMARY KEY (`ReaderID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Reader`
--

LOCK TABLES `Reader` WRITE;
/*!40000 ALTER TABLE `Reader` DISABLE KEYS */;
/*!40000 ALTER TABLE `Reader` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Reserves`
--

DROP TABLE IF EXISTS `Reserves`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character  set  client = utf8mb4 ;
CREATE TABLE `Reserves` (
  `ResNumber` int(11) NOT NULL AUTO_INCREMENT,
  `ReaderID` int(11) DEFAULT NULL,
  `DocID` int(11) DEFAULT NULL,
  `CopyNo` int(11) DEFAULT NULL,
  `LibID` int(11) DEFAULT NULL,
  `RTimeStamp` timestamp NOT NULL DEFAULT CURRENT_TIMESTAMP,
  PRIMARY KEY (`ResNumber`),
  UNIQUE KEY `DocID` (`DocID`,`CopyNo`,`LibID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Reserves`
--
```

```
LOCK TABLES `Reserves` WRITE;
/*!40000 ALTER TABLE `Reserves` DISABLE KEYS */;
/*!40000 ALTER TABLE `Reserves` ENABLE KEYS */;
UNLOCK TABLES;

--
-- Table structure for table `Writes`
--

DROP TABLE IF EXISTS `Writes`;
/*!40101 SET @saved_cs_client     = @@character_set_client */;
 SET character  set  client = utf8mb4 ;
CREATE TABLE `Writes` (
  `AuthorID` int(11) NOT NULL,
  `DocID` int(11) NOT NULL,
  PRIMARY KEY (`AuthorID`,`DocID`),
  KEY `DocID` (`DocID`),
  CONSTRAINT `writes_ibfk_1` FOREIGN KEY (`AuthorID`) REFERENCES `author` (`AuthorID`),
  CONSTRAINT `writes_ibfk_2` FOREIGN KEY (`DocID`) REFERENCES `book` (`DocID`)
) ENGINE=InnoDB DEFAULT CHARSET=utf8;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `Writes`
--

LOCK TABLES `Writes` WRITE;
/*!40000 ALTER TABLE `Writes` DISABLE KEYS */;
/*!40000 ALTER TABLE `Writes` ENABLE KEYS */;
UNLOCK TABLES;
/*!40103 SET TIME_ZONE=@OLD_TIME_ZONE */;

/*!40101 SET SQL_MODE=@OLD_SQL_MODE */;
/*!40014 SET FOREIGN_KEY_CHECKS=@OLD_FOREIGN_KEY_CHECKS */;
/*!40014 SET UNIQUE_CHECKS=@OLD_UNIQUE_CHECKS */;
/*!40101 SET CHARACTER_SET_CLIENT=@OLD_CHARACTER_SET_CLIENT */;
/*!40101 SET CHARACTER_SET_RESULTS=@OLD_CHARACTER_SET_RESULTS */;
/*!40101 SET COLLATION_CONNECTION=@OLD_COLLATION_CONNECTION */;
/*!40111 SET SQL_NOTES=@OLD_SQL_NOTES */;

-- Dump completed on 2019-05-03  6:00:23

INSERT INTO `cityLib`.`Reader` (`RType`, `RName`, `RAddress`, `Phone_Number`, `MemStart`, `Fine`)
VALUES
('Regular', 'Glen Howell', '648 South Oak St.', '7326975126', '2003-01-01',0.00),
('Regular', 'Jan Sanders', '8044 Newbridge Road', '7321964875', '2002-05-06', 0.00),
('Regular', 'Patsy Peterson', '811 Coffee Street', '7326985874', '2004-06-04',0.00),
```

```
('Employee', 'Randolph Hansen', '316 N. Indian Spring Rd.', '7327896541', '2004-04-08',0.00),
('Student', 'Noah Moss', '7419C Boston St.', '7324856925', '2006-08-06', 0.00),
('Regular', 'Marcella Fields', '173 Greystone Street', '7324859632', '2009-09-04', 0.00),
('Student', 'Eula Hardy', '397 Santa Clara St.', '7321859646', '2007-01-06', 0.00),
('Employee', 'Diane Morris', '16 Highland Street', '7327892584', '2006-02-08', 0.00),
('Student', 'Betsy Weber', '72 Somerset Dr.', '7325896147', '2008-03-01', 0.00),
('Student', 'Erika Hoffman', '988 Woreaderodsman Dr.', '7324685216', '2006-06-06', 0.00),
('Employee', 'Erika Hoffman', '8718 Blue Spring St.', '7329853214', '2004-08-04', 0.00),
('Student', 'Michelle Page', '339 W. North St.', '7324896156', '2006-07-06', 0.00),
('Employee', 'Elizabeth Bush', '553 Elizabeth Street', '7328594146', '2004-09-04', 0.00),
('Student', 'Sonya Murray', '263 Fieldstone Rd.','7328945612', '2009-05-03', 0.00),
('Regular', 'Jose Alexander', '547 Peg Shop Ave.','7325268943', '2008-04-04',0.00);

INSERT INTO `cityLib`.`Branch` (`LName`, `LLocation`)
VALUES
('Patrick', 'Doral, FL'),
('Hawkins', 'Fort Lauderdale, FL');

INSERT INTO `cityLib`.`Publisher` (`PubName`, `PubAddress`)
VALUES
('Nathan Gardner', '456 Ketch Harbour Street'),
('Johnathan Evans', '7984 Riverview Street'),
('Betsy Waters', '35 Monroe Road'),
('Stephen Simpson', '70 Snake Hill St.'),
('Naomi Mccoy', '28 Bridgeton St.'),
('Leticia Wolfe', '14 Clay Street'),
('Cassandra Barnett', '8743 Ridgewood St.'),
('Shelly Colon', '675 Old York Drive'),
('Esther Johnson', '34 North Rd.'),
('Terry Townsend', '877 W. Old York St.'),

('Johanna Thompson', '374 Kerwin Ave'),
('Becky Carlson', '4896 Jamie St.'),
('Bianca Sitter', '159 Jesse Drive'),
('Emily Rider', '96 South Rd.'),
('Theo Frank', '479 Grey St.'),
('John Snow', '198 Bling St.'),

 ('Victor Reed', '159 Jesse Drive'),
('Sam Change', '96 South Rd.'),
('Mike Tailor', '479 Grey St.'),
('Alex Scott', '198 Bling St.'),

('Glen Martain', '957 Hanover St.'),
('Kelly Baker', '4763 Grand St.');

INSERT INTO `cityLib`.`Author` (`Author_Name`)
VALUES
```

```
('Freda Hunt'),
('Felicia Stewart'),
('Moses Gibbs'),
('Bertha Cox'),
('Monique Hogan'),
('Irene Grant');



INSERT INTO `cityLib`.`Chief  Editor` (`EName`)
VALUES
('Cesar Harvey'),
('Tabitha Bishop'),
('Dorothy Ray'),
('Darrel Washington');



INSERT INTO `cityLib`.`Document` (`Title`, `PDate`, `PublisherID`)
VALUES
('a workshop on technology', '1992-08-20', 1),
('international conference on power transmission', '2001-07-02', 2),
('accelerating programming', '1998-07-09', 3),
('symposium on access space', '1948-01-03', 4),
('ethics in the workplace', '2008-04-23', 5),
('2nd institution on engineering', '2003-06-07', 6),
('RF measurement', '1995-05-05', 7),
('electromagnetic compatibility', '1985-11-27', 8),
('acoustic sound enhancement', '1987-12-08', 9),
('underwater geosciences', '2009-04-22', 10),
('Hero Of Rainbows', '2011-09-02', 11),
('Prized Person', '2012-05-02', 11),
('The Elemental Child', '2012-05-02', 11),
('Pleasure of Savior', '2012-05-02', 11),
('The Dream Lover', '2012-05-02', 11),
('The Guardian of the Dreaming', '2012-05-02', 11),
('Door in the Tears', '2012-05-02', 12),
('Bloody Tales', '2012-05-02', 12),
('The Grey Soul', '2012-05-02', 12),
('Weeping of Ship', '2012-05-02', 12),
('The School Abyss', '2012-05-02', 12),
('The Dreams of the Return', '2012-05-02', 12),
('River in the Prophecy', '2012-05-02', 13),
('No Names', '2012-05-02', 13),
('The Growing Visions', '2012-05-02', 13),
('Truth of Teacher', '2012-05-02', 13),
('The Flame Abyss', '2012-05-02', 13),
('The Woman of the Dream', '2012-05-02', 13),
```

```
('Ice in the Angels', '2012-05-02', 14),
('Invisible Dreams', '2012-05-02', 14),
('The Erect Luck', '2012-05-02', 14),
('Shores of Husband', '2012-05-02', 14),
('The Sons Rose', '2012-05-02', 14),
('The Slave of the Servants', '2012-05-02', 14),
('Name in the Door', '2012-05-02', 15),
('Naked Dreams', '2012-05-02', 15),
('The Red Wings', '2012-05-02', 15),
('Edge of Wind', '2012-05-02', 15),
('The Edge Ship', '2012-05-02', 15),
('The Shadow of the Bridge', '2012-05-02', 15),
('Serpents in the Door', '2012-05-02', 16),
('Luscious Name', '2012-05-02', 16),
('The Cold Planet', '2012-05-02', 16),
('Crying of Force', '2012-05-02', 16),
('The Swordss Prophecy', '2012-05-02', 16),
('The Healer of the Doors', '2012-05-02', 16),
('Souls in the Game', '2012-05-02', 11),
('thief of dawn', '1992-04-19', 11),
('pirate with sins', '2001-08-05', 12),
('girls of the curse', '1998-03-02', 13),
('friends with honor', '1948-06-05', 14),
('no new friends', '2008-02-20', 11),
('snakes and dogs', '2003-02-25', 15),
('man vs nature', '1991-06-03', 17),
('around the world', '1948-01-09', 18),
('future in space', '2008-06-19', 19),
('recycling and refueling', '2002-06-20', 20),
('life on mars', '2003-02-03', 21),
('bioenergy', '2012-05-02', 22);

INSERT INTO `cityLib`.`Proceedings` (`DocID`, `CDate`, `CLocation`,`CEditor`)
VALUES
(1, '2011-02-03', 'Easton, PA','Cesar Harvey'),
(2, '2003-02-04', 'Jamaica Plain','Tabitha Bishop'),
(3, '1992-05-08', 'Oshkosh, WI','Cesar Harvey'),
(4, '1994-09-07', 'Torrington, CT','Tabitha Bishop'),
(5, '1998-05-12', 'Wyoming, MI','Cesar Harvey'),
(6, '1989-03-10', 'Marion, NC', 'Edna Lane'),
(7, '2001-12-12', 'Orange Park','abc'),
(8, '2004-12-09', 'Vienna, VA','Tabitha Bishop'),
(9, '2001-08-09', 'Newton, NJ','def'),
(10, '2006-04-07', 'Niles, MI','Cesar Harvey');


INSERT INTO `cityLib`.`Copy` (`DocID`,`CopyNo`, `LibID`, `Position`)
VALUES
```

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(1, 6, 1,'001A01'),
(2, 8, 1,'001A02'),
(3, 10, 1,'001A03'),
(4, 12, 1,'001A04'),
(5, 15, 1,'001A05'),
(6, 18, 1,'001A06'),
(7, 17, 1,'001A07'),
(8, 7, 1,'001A08'),
(9, 21, 1,'001A09'),
(10, 1, 1,'001A10'),
(1, 7, 1,'001A11'),
(2, 9, 1,'001A12'),
(3, 11, 1,'001A13'),
(4, 13, 1,'001A14'),
(5, 16, 1,'001A15'),
(6, 19, 1,'001A16'),
(7, 18, 1,'001A17'),
(8, 8, 1,'001A18'),
(9, 22, 1,'001A19'),
(10, 2, 1,'001A20'),
(11, 21, 1,'001A21'),
(12, 6, 2,'001A22'),
(13, 8, 2,'001A23'),
(14, 10, 2,'001A24'),
(15, 12, 2,'001A25'),
(16, 15, 2,'001A26'),
(17, 18, 2,'001A27'),
(18, 17, 2,'001A28'),
(19, 7, 2,'001A29'),
(20, 21, 2,'001A30'),
(21, 1, 2,'001A31'),
(12, 7, 2,'001A32'),
(13, 9, 2,'001A33'),
(14, 11, 2,'001A34'),
(15, 13, 2,'001A35'),
(16, 16, 2,'001A36'),
(17, 19, 2,'001A37'),
(18, 18, 2,'001A38'),
(19, 8, 2,'001A39'),
(20, 22, 2,'001A40'),
(21, 23, 2,'001A41'),
(22, 21, 2,'001A42'),
(59, 1, 1, '001A43'),
(58, 2, 2, '001A44'),
(57, 3, 1, '001A45'),
(56, 4, 2, '001A46'),
(55, 5, 1, '001A47'),
(54, 9, 2, '001A48'),
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(53, 19, 1, '001A49'),
(52, 11, 1, '001A50'),
(51, 13, 1, '001A51'),
(50, 20, 2, '001A52'),
(1, 11, 1,'011A01'),
(2, 15, 1,'011A02'),
(3, 21, 1,'011A03'),
(4, 15, 1,'011A04'),
(5, 11, 1,'011A05'),
(6, 20, 1,'011A06'),
(7, 11, 1,'011A07'),
(8, 1, 1,'011A08'),
(9, 20, 1,'011A09'),
(10, 17, 1,'011A10'),
(1, 13, 1,'011A11'),
(2, 14, 1,'011A12'),
(3, 02, 1,'011A13'),
(4, 4, 1,'011A14'),
(5, 1, 1,'011A15'),
(6, 12, 1,'011A16'),
(7, 1, 1,'011A17'),
(8, 36, 1,'011A18'),
(9, 7, 1,'011A19'),
(10, 9, 1,'011A20'),
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(17, 3, 2,'011A27'),
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(20, 2, 2,'011A30'),
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(12, 1, 2,'011A32'),
(13, 4, 2,'011A33'),
(14, 1, 2,'011A34'),
(15, 3, 2,'011A35'),
(16, 6, 2,'011A36'),
(17, 9, 2,'011A37'),
(18, 8, 2,'011A38'),
(19, 18, 2,'011A39'),
(20, 62, 2,'011A40'),
(21, 73, 2,'011A41'),
(22, 31, 2,'011A42'),
(59, 14, 1, '011A43'),
(58, 24, 2, '011A44'),
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(57, 31, 1, '011A45'),
(56, 14, 2, '011A46'),
(55, 15, 1, '011A47'),
(54, 11, 2, '011A48'),
(53, 9, 1, '011A49'),
(52, 13, 1, '011A50'),
(51, 17, 1, '011A51'),
(50, 2, 2, '011A52');

INSERT INTO `cityLib`.`Borrows` (`ReaderID`, `DocID`, `CopyNo`, `LibID`, `BTimeStamp`)
VALUES
(1, 1, 6, 1, '2016-12-01 04:02:00'),
(1, 2, 8, 1, '2016-11-29 05:03:00'),
(2, 3, 10, 1, '2016-12-03 12:22:00'),
(2, 4, 12, 1, '2016-12-04 18:53:00'),
(3, 5, 15, 1, '2016-12-05 14:24:00'),
(3, 6, 18, 1, '2016-12-06 17:25:00'),
(4, 7, 17, 1, '2016-12-07 12:46:00'),
(4, 8, 7, 1, '2016-12-08 13:27:00'),
(5, 9, 21, 1, '2016-12-09 15:08:00'),
(5, 10, 2, 1, '2016-11-10 09:48:00'),
(6, 1, 7, 1, '2016-12-01 04:02:00'),
(7, 2, 8, 1, '2016-12-10 05:03:00'),
(8, 3, 11, 1, '2016-12-03 12:22:00'),
(9, 4, 12, 1, '2016-12-04 18:53:00'),
(10, 5, 15, 1, '2016-11-05 14:24:00'),
(11, 6, 18, 1, '2016-11-30 17:25:00'),
(12, 7, 17, 1, '2016-12-07 12:46:00'),
(13, 8, 7, 1, '2016-12-08 13:27:00'),
(14, 9, 21, 1, '2016-12-09 15:08:00'),
(15, 10, 22, 1, '2016-11-28 09:48:00'),
(1, 11, 21, 1, '2016-12-09 15:08:00'),
(1, 12, 6, 2, '2016-12-01 04:02:00'),
(1, 13, 8, 2, '2016-11-28 05:03:00'),
(2, 14, 10, 2, '2016-12-03 12:22:00'),
(2, 15, 12, 2, '2016-12-04 18:53:00'),
(3, 16, 15, 2, '2016-12-05 14:24:00'),
(3, 17, 18, 2, '2016-12-06 17:25:00'),
(4, 18, 17, 2, '2016-12-07 12:46:00'),
(4, 19, 7, 2, '2016-12-08 13:27:00'),
(5, 20, 21, 2, '2016-12-09 15:08:00'),
(5, 21, 1, 2, '2016-12-10 09:48:00'),
(6, 12, 7, 2, '2016-12-01 04:02:00'),
(7, 13, 9, 2, '2016-12-05 05:03:00'),
(8, 14, 11, 2, '2016-12-03 12:22:00'),
(9, 15, 13, 2, '2016-12-04 18:53:00'),
(10, 16, 16, 2, '2016-10-05 14:24:00'),
(11, 17, 19, 2, '2016-12-06 17:25:00'),
```

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(12, 18, 18, 2, '2016-12-07 12:46:00'),
(13, 19, 8, 2, '2016-12-08 13:27:00'),
(14, 20, 22, 2, '2016-12-09 15:08:00'),
(15, 21, 23, 2, '2016-12-10 09:48:00'),
(7, 57, 3, 1, '2016-10-10 09:48:00'),
(1, 22, 21, 2, '2016-12-09 15:08:00');

INSERT INTO `cityLib`.`Reserves` (`ReaderID`, `DocID`, `CopyNo`, `LibID`, `RTimeStamp`)
VALUES
(1, 3, 10, 1, now()),
(1, 59, 1, 1, now()),
(1, 58, 2, 2, now()),
(1, 57, 3, 1, now()),
(1, 56, 4, 2, now()),
(1, 55, 5, 1, now()),
(1, 54, 9, 2, now()),
(1, 53, 19, 1, now()),
(1, 52, 11, 1, now()),
(1, 51, 13, 1, now()),
(15, 50, 20, 2, now());

INSERT INTO `cityLib`.`Book` (`DocID`, `ISBN`)
VALUES
(11, '9576702756985'),
(12, '1610654262418'),
(13, '5009015624281'),
(14, '5162306315438'),
(15, '8756602944289'),
(16, '9245935090583'),
(11, '9576702756985'),
(12, '1610654262418'),
(13, '5009015624281'),
(14, '5162306315438'),
(15, '8756602944289'),
(16, '9245935090583'),
(17, '5655680268098'),
(18, '9602859820451'),
(19, '4142521914517'),
(20, '8926555749374'),
(21, '6587413932145'),
(22, '3214596321497'),
(23, '3210249632522'),
(24, '6541239874598'),
(25, '1973548620321'),
(26, '2456317896321'),
(27, '8796423145932'),
(28, '3210214569762'),
(29, '3210569879631'),
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```
(30, '3658965471231'),
(31, '3021479431034'),
(32, '3214976548931'),
(33, '7896547132149'),
(34, '9685412364021'),
(35, '6547963125121'),
(36, '4569321078964'),
(37, '5321014789654'),
(38, '2321456987456'),
(39, '3210654796321'),
(40, '8479651230147'),
(41, '7458965893214'),
(42, '6547893210147'),
(43, '4569875984123'),
(44, '4789321021456'),
(45, '3659874562101'),
(46, '3114879632145'),
(47, '2231145698741'),
(48, '2233668877156'),
(49, '3322997788621'),
(50, '8879654123548'),
(51, '9987463156545'),
(52, '6987451251452'),
(53, '4563215522112');


INSERT INTO `cityLib`.`Writes` (`AuthorID`, `DocID`)
VALUES
(1, 11),
(2, 12),
(3, 13),
(4, 14),
(5, 15),
(6, 16),
(6, 17),
(1, 18),
(5, 19),
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(6, 24),
(3, 25),
(5, 26),
(6, 27),
(6, 28),
(4, 29),
(1, 30),
```

```
(2, 31),
(3, 32),
(4, 33),
(5, 34),
(6, 35),
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(6, 45),
(1, 46),
(1, 47),
(2, 48),
(2, 49),
(3, 50),
(3, 51),
(4, 52),
(4, 53);



INSERT INTO `cityLib`.`Journal_Volume` (`DocID`, `JVolume`, `Editor_ID`)
VALUES
(54, 8, 1),
(55, 6, 2),
(56, 2, 3),
(57, 9, 4);

INSERT INTO `cityLib`.`Journal  Issue` (`DocID`, `Issue  Number`, `Scope`)
VALUES
(54, 5, 'null'),
(55, 1, 'null'),
(56, 9, 'null'),
(57, 7, 'null');

INSERT INTO `cityLib`.`Inv_Editor` (`DocID`, `Issue_Number`, `IE_Name`)
VALUES
(54, 5, 'Harold Quibble'),
(57, 7, 'Sheena Arbor');


INSERT INTO `cityLib`.`AdminLogin`(`AdminID`, `LoginPassword`,`usertype`)
VALUES
```

```
('HP','himpatel','user'),
('JH', 'jerhoc','user'),
('AP', 'aapala','user');

INSERT INTO `cityLib`.`Borrow  History` (`ReaderID`,
`DocID`,`CopyNo`,`DateCheckedOut`,`DateReturned`,`DaysLate`,`Fine`)
VALUES
(10,5,15,'2016-11-05','2016-12-1',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20),
(10,16,16,'2016-10-05','2016-11-25',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20),
(7,57,3,'2016-10-10','2016-11-1',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20),
(7, 11,1, '2016-11-05','2016-11-10',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20),
(10,16,16,'2016-10-05','2016-11-25',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20),
(7,57,3,'2016-10-10','2016-11-1',datediff(DateReturned,DateCheckedOut + Interval 20
Day),datediff(DateReturned,DateCheckedOut + Interval 20 Day)*0.20);
```

Source Code:

Welcome.jsp:

```
<%@ page import="java.sql.*" %>
<html>

<head>

<meta http-equiv="Content-Type" content="text/html; charset=ISO-8859-1">

<title>Welcome</title>

</head>
```

```
<body bgcolor="lightblue" >

<center><h1> City Library</h1>
<!--  p align=right><a href="logout.jsp">Logout</a></center-->


<form action="Reader_Query.jsp" id="usrform">
<center>
 Reader Functions Menu:<input type="text" name="usrname"  placeholder="card number"
color="blue">
  <input type="submit">
</center>
</form>


<form action="Admin_Query.jsp" id="usrform">
<center>
   Administrative Function Menu:</br>
   <input type="text" name="AdminID" placeholder="ID"></br>
   <input type="password" name="LoginPassword" placeholder="password"></br>
  <input type="submit">
 </center>
</form>

<!--  p><a href="logout.jsp">Logout</a-->
</body>

</html>
```

Admin.jsp:

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
    pageEncoding="UTF-8"%>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Admin Menu</title>
</head>
<body>

<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:center">Hi <%=session.getAttribute("AdminID")%></h3>
</td>
        <p align=right><a href="logout.jsp">Logout</a></p>
```

```
        </tr>

</table>

<form action="Admin_Query_1_1.jsp?namee=<%=session.getAttribute("AdminID")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_1_1.jsp?namee=<%=session.getAttribute("AdminID")%>">Add
Document</h3> </td>
        </tr>

</table>
</form>

<form action="Admin_Query_2.jsp?namee=<%=session.getAttribute("AdminID")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:left">Document Status</h3> </td>
        </tr>
        <td>
        <input type="text" name="DocID" placeholder="DocID"/>
        </td>
        <td>
        <input type="submit" value="Search" id="Search" style="float: right;"/>
        </td>
</table>
</form>


<form action="Admin_Query_3.jsp?namee=<%=session.getAttribute("AdminID")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_3_1.jsp?namee=<%=session.getAttribute("AdminID")%>">Add
Reader</h3> </td>
        </tr>
</table>
</form>

<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
```

```
        <td><h3 style="text-align:center"><a
href="Admin_Query_4.jsp?namee=<%=session.getAttribute("AdminID")%>">Branch
Information</h3> </td>
        </tr>
</table>

<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_5.jsp?namee=<%=session.getAttribute("AdminID")%>">Frequent
buyers</h3> </td>
        </tr>
</table>

<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_6.jsp?namee=<%=session.getAttribute("AdminID")%>">Top Borrowed
Books</h3> </td>
        </tr>
</table>

<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_7.jsp?namee=<%=session.getAttribute("AdminID")%>">Top Books of
Year</h3> </td>
        </tr>
</table>

<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:center"><a
href="Admin_Query_8.jsp?namee=<%=session.getAttribute("AdminID")%>">Average Fine
Paid</h3> </td>
        </tr>
</table>

</body>
</html>
```

Reader.jsp:

```
<%@ page language="java" contentType="text/html; charset=UTF-8"
   pageEncoding="UTF-8"%>
<%@ page import="java.util.ArrayList" %>
<!DOCTYPE html>
<html>
<head>
<meta charset="UTF-8">
<title>Reader Menu</title>
</head>
<body>
<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3  style="text-align:center">Hi <%=session.getAttribute("usrname")%></h3>
</td>
        <p align=right><a href="logout.jsp">Logout</a></p>
        </tr>
</table>

<form action="Reader_Query_1.jsp?namee=<%=session.getAttribute("usrname")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:left">Search</h3> </td>
        </tr>
        <td>
        <input type="text" name="ID" placeholder="id"/>
        </td>
        <td>
        <input type="text" name="Title" placeholder="title"/>
        </td>
        <td>
        <input type="text" name="PublisherName" placeholder="publishername"/>
        </td>
        <td>
        <input type="submit" value="Search" id="Search" style="float: right;"/>
        </td>
        <tr>


</tr>
</table>

</form>

<form action="Reader_Query_2.jsp?namee=<%=session.getAttribute("usrname")%>"
method=post>
```

```
<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:left">Document Checkout</h3> </td>
        </tr>
        <td>
        <input type="text" name="DocID" placeholder="DocID"/>
        </td>
        <td>
        <input type="submit" value="Check Out" id="Search" style="float: right;"/>
        </td>
</table>
</form>

<form action="Reader_Query_3.jsp?namee=<%=session.getAttribute("usrname")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:left">Document Return</h3> </td>
        </tr>
        <td>
        <input type="text" name="DocID" placeholder="DocID"/>
        </td>
        <td>
        <input type="submit" value="Return" id="Search" style="float: right;"/>
        </td>
</table>
</form>

<form action="Reader_Query_4.jsp?namee=<%=session.getAttribute("usrname")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:left">Document Reserve</h3> </td>
        </tr>
        <td>
        <input type="text" name="DocID" placeholder="DocID"/>
        </td>
        <td>
        <input type="submit" value="Reserve" id="Search" style="float: right;"/>
        </td>
</table>
</form>

<form >
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
```

```
        <td><h3 style="text-align:left"><a
href="Reader_Query_5.jsp?namee=<%=session.getAttribute("usrname")%>">Check Fine</h3>
</td>
        </tr>
</table>
</form>

<form >
<table border="0" width="80%" align="center" bgcolor="#EBF1FE">
        <tr>
        <td><h3 style="text-align:left"><a
href="Reader_Query_6.jsp?namee=<%=session.getAttribute("usrname")%>">Document
Reserved List</a></h3> </td>
        </tr>
</table>
</form>

<form action="Reader_Query_7.jsp?namee=<%=session.getAttribute("usrname")%>"
method=post>
<table border="0" width="80%" align="center" bgcolor="#ff0000">
        <tr>
        <td><h3 style="text-align:left">Publisher Information</h3> </td>
        </tr>
        <td>
        <input type="text" name="PublisherName" placeholder="publishername"/>
        </td>
        <td>
        <input type="submit" value="Search" id="Search" style="float: right;"/>
        </td>
</table>
</form>
</body>
</html>
```

Query Implementations:
Reader Function Queries:

1. Search a document by ID, title, or publisher name.

```
if(name.equals("") && password.equals("")){
    sql = "select DocID,Title,PubName from  Publisher, Document  where PubName=? and
Document.PublisherID=Publisher.PublisherID";
}
if(usertype.equals("") && password.equals("")){
    System.out.println("kllll");
    sql = "select DocID,Title,PubName from  Publisher, Document  where DocID=? and
    Document.PublisherID=Publisher.PublisherID";
    }
     if(name.equals("") && usertype.equals("")){
    sql = "select DocID,Title,PubName from  Publisher, Document  where Title=? and
    Document.PublisherID=Publisher.PublisherID";
    }
```

2. Document checkout.

```
String sql=" insert into Borrow_History (ReaderID, DocID, CopyNo, DateCheckedOut,
DateReturned,DaysLate,Fine)"
  + " values (?, ?, ?, ?, ?, ?, ?)";
String sql1="select * from reserves where ReaderId=? and DocID=?";
String sql2="delete from reserves where ReaderId=? and DocID=?";
```

3. Document return.

```
String sql=" update Borrow_History set DateReturned=? where ReaderID=? and
DocID=?";
```

4. Document reserve.

```
String sql=" insert into reserves (ReaderID,DocID,CopyNo,LibID,RTimeStamp) values
(?, ?, ?, ?, ?)";
```

5. Compute fine for a document copy borrowed by a reader based on the current date.

```
String sql=" select * from Borrow_history where READERID=?";
```

6. Print the list of documents reserved by a reader and their status.

```
String sql="select Title from Document, Reserves where Document. DocID = Reserves.
DocID and ReaderID=? ";
```

7. Print the document id and document titles of documents published by a publisher.
   String sql="select DocID,Title,PubName from Publisher, Document where PubName=? and Document.PublisherID=Publisher.PublisherID";

Admin Function Queries:

1. Add a document copy.
   **int** i = st.executeUpdate("insert into Document(Title,PDate,PublisherID) values ('" + Title + "','" + PDate + "','" + PublisherID + "')");

2. Search document copy and check its status.
   String sql="select * from Borrows NATURAL JOIN Document where DocID= ?";

3. Add new reader.
   **int** i = st.executeUpdate("insert into Reader(ReaderID,RType,RName,RAddress,Phone_Number,MemStart) values ('" + a + "','" + b + "','" + c + "','" + d + "','" + m + "','" + f + "')");

4. Print branch information (name and location).
   String sql=" select LName, LLocation from Branch";

5. Print top 10 most frequent borrowers in a branch and the number of books each has borrowed.
   String sql= "select count(BorNumber),ReaderID from Borrows,Book where Book.DocID=Borrows.DocID group by Borrows.ReaderID order by count(BorNumber) desc limit 10";

6. Print top 10 most borrowed books in a branch.
   String sql ="select Title,Count(*) FROM Borrows NATURAL JOIN Document Group By DocID Order By Count(*) DESC LIMIT 10";

7. Print the 10 most popular books of the year.
   String sql ="select Title FROM Borrows NATURAL JOIN Document Group By DocID Order By Count(*) DESC LIMIT 10";

8. Find the average fine paid per reader.
   String sql ="select AVG(Fine) AS Fine From Reader";