/\*

\* Eric Tam

\* 007989423

\* CS157A Project

\* 12/04/2014

\*/

import java.sql.\*;

import java.util.ArrayList;

import java.util.logging.Level;

import java.util.logging.Logger;

public class CS157AProject {

private static Connection conn;

private static Statement stmt;

private static ResultSet rs;

/\*

\* Starts connection with MySQL Database

\*/

private static void start() throws SQLException {

try {

Class.forName("com.mysql.jdbc.Driver").newInstance();

} catch (Exception ex) {

System.out.println("Unable to load driver");

}

conn = DriverManager.getConnection("jdbc:mysql://localhost:3306/", "USERNAME", "PASSWORD");

stmt = conn.createStatement();

}

/\*

\* Closes Connections with MySQL Database

\*/

private static void close() throws SQLException {

if (rs != null) {

rs.close();

}

stmt.close();

conn.close();

}

public static void main(String[] args) throws SQLException, ClassNotFoundException {

createDB();

populateDB();

getAllAuthors();

System.out.println();

getAllPublishers();

System.out.println();

getAllTitlesFromPublisher();

System.out.println();

addNewAuthor();

System.out.println();

editAuthor();

System.out.println();

addNewTitle();

System.out.println();

addNewPublisher();

System.out.println();

editPublisher();

}

/\*

\* Populates tables in books database

\*/

public static void populateDB() throws SQLException {

start();

stmt.executeUpdate("use Books;");

//Populating authors table

stmt.executeUpdate("INSERT INTO authors(firstName,lastName) VALUES('Cay','Horstmann'),('Hector','Garcia-Molina'),('James','Stewart'),"

+ "('Lois','Lowry'),('Thomas','Cormen'),('Randal','Bryant'),('Brian','Kernighan'),('Larry','Peterson'),('Joel','Murach'),"

+ "('David','Lay'),('Jerrold','Marsden'),('Stephanie','Coopman'),('Thomas','Nechyba'),('Susanna','Epp'),('Michael','Sipser')");

//Populating publishers table

stmt.executeUpdate("INSERT INTO publishers(publisherName) VALUES('Pearson Prentice Hall'),('Wiley'),('Addison-Wesley Professional'),('Cengage Learning'),"

+ "(\"Random House Children's Books\"),('The MIT Press'),('Morgan Kaufmann'),('Freeman'),('Mike Murach & Associates'),('McGraw-Hill'),"

+ "('Scholastic'),('Houghton Mifflin Harcourt'),('Harper Collins'),('Simon & Schuster'),('Perseus')");

//Populating titles table

stmt.executeUpdate("INSERT INTO titles(isbn,title,editionNumber,copyright,publisherID,price) VALUES"

+ "('0131873253', 'Database Systems: The Complete Book', 2, '2009', (SELECT publisherID FROM publishers WHERE publisherName='Pearson Prentice Hall'), 202),"

+ "('0470509481', 'Big Java: Compatible with Java 5, 6 and 7', 4, '2010', (SELECT publisherID FROM publishers WHERE publisherName='Wiley'), 162.27),"

+ "('0321774094', 'Scala for the Impatient', 1, '2012', (SELECT publisherID FROM publishers WHERE publisherName='Addison-Wesley Professional'), 31.73),"

+ "('0538497815', 'Calculus', 7, '2012', (SELECT publisherID FROM publishers WHERE publisherName='Cengage Learning'), 238.57),"

+ "('0440237688', 'The Giver', 1, '1993', (SELECT publisherID FROM publishers WHERE publisherName=\"Random House Children's Books\"), 6.99),"

+ "('0262033844', 'Introduction to Algorithms', 3, '2009', (SELECT publisherID FROM publishers WHERE publisherName='The MIT Press'), 78.3),"

+ "('0136108040', \"Computer Systems: A Programmer's Perspective\", 2, '2011', (SELECT publisherID FROM publishers WHERE publisherName='Pearson Prentice Hall'), 129.39),"

+ "('0131103628', 'The C Programming Language', 2, '1988', (SELECT publisherID FROM publishers WHERE publisherName='Pearson Prentice Hall'), 50.6),"

+ "('1890774782', \"Murach's Java Servlets and JSP\", 3, '2014', (SELECT publisherID FROM publishers WHERE publisherName='Mike Murach & Associates'), 40.84),"

+ "('0123850592', 'Computer Networks, Fifth Edition: A Systems Approach', 5, '2011', (SELECT publisherID FROM publishers WHERE publisherName='Morgan Kaufmann'), 86.91),"

+ "('0321385179', 'Linear Algebra and Its Applications', 4, '2011', (SELECT publisherID FROM publishers WHERE publisherName='Pearson Prentice Hall'), 158.74),"

+ "('0716749920', 'Vector Calculus', 5, '2003', (SELECT publisherID FROM publishers WHERE publisherName='Freeman'), 169.22),"

+ "('049590578X', 'Public Speaking: The Evolving Art', 2, '2011', (SELECT publisherID FROM publishers WHERE publisherName='Cengage Learning'), 119.23),"

+ "('0538453247', 'Microeconomics: An Intuitive Approach with Calculus', 1, '2011', (SELECT publisherID FROM publishers WHERE publisherName='Cengage Learning'), 242.51),"

+ "('0495391328', 'Discrete Mathematics with Applications', 4, '2010', (SELECT publisherID FROM publishers WHERE publisherName='Cengage Learning'), 289.39)");

//Populate authorISBN table

stmt.executeUpdate("INSERT INTO authorISBN(authorID, isbn) VALUES"

+ "((SELECT authorID FROM authors WHERE firstName='Hector' AND lastName='Garcia-Molina'),'0131873253'),"

+ "((SELECT authorID FROM authors WHERE firstName='Cay' AND lastName='Horstmann'),'0470509481'),"

+ "((SELECT authorID FROM authors WHERE firstName='Cay' AND lastName='Horstmann'),'0321774094'),"

+ "((SELECT authorID FROM authors WHERE firstName='James' AND lastName='Stewart'),'0538497815'),"

+ "((SELECT authorID FROM authors WHERE firstName='Lois' AND lastName='Lowry'),'0440237688'),"

+ "((SELECT authorID FROM authors WHERE firstName='Thomas' AND lastName='Cormen'),'0262033844'),"

+ "((SELECT authorID FROM authors WHERE firstName='Randal' AND lastName='Bryant'),'0136108040'),"

+ "((SELECT authorID FROM authors WHERE firstName='Brian' AND lastName='Kernighan'),'0131103628'),"

+ "((SELECT authorID FROM authors WHERE firstName='Larry' AND lastName='Peterson'),'0123850592'),"

+ "((SELECT authorID FROM authors WHERE firstName='Joel' AND lastName='Murach'),'1890774782'),"

+ "((SELECT authorID FROM authors WHERE firstName='David' AND lastName='Lay'),'0321385179'),"

+ "((SELECT authorID FROM authors WHERE firstName='Jerrold' AND lastName='Marsden'),'0716749920'),"

+ "((SELECT authorID FROM authors WHERE firstName='Stephanie' AND lastName='Coopman'),'049590578X'),"

+ "((SELECT authorID FROM authors WHERE firstName='Thomas' AND lastName='Nechyba'),'0538453247'),"

+ "((SELECT authorID FROM authors WHERE firstName='Susanna' AND lastName='Epp'),'0495391328')");

close();

}

/\*

\* Creates Books Database and Create Tables

\*/

public static void createDB() throws SQLException {

start();

stmt.executeUpdate("DROP DATABASE IF EXISTS Books;");

stmt.executeUpdate("CREATE DATABASE Books;");

stmt.executeUpdate("use Books;");

stmt.executeUpdate("CREATE TABLE authors (authorID INTEGER AUTO\_INCREMENT PRIMARY KEY, firstName VARCHAR(20) NOT NULL, lastName CHAR(20) NOT NULL);");

stmt.executeUpdate("CREATE TABLE publishers (publisherID INTEGER AUTO\_INCREMENT PRIMARY KEY, publisherName CHAR(100) NOT NULL);");

stmt.executeUpdate("CREATE TABLE titles (isbn CHAR(10) PRIMARY KEY, title VARCHAR(500) NOT NULL, editionNumber INTEGER NOT NULL, copyright CHAR(4) NOT NULL, publisherID INTEGER NOT NULL REFERENCES publishers(publisherID), price FLOAT NOT NULL);");

stmt.executeUpdate("CREATE TABLE authorISBN (authorID INTEGER NOT NULL REFERENCES authors(authorID), isbn CHAR(10) NOT NULL REFERENCES titles(isbn));");

close();

}

/\*

\* Get all authors lastName, firstName in the authors table ordered alphabetically by lastName and then first Name

\*/

public static void getAllAuthors() throws SQLException {

start();

stmt.executeUpdate("use books;");

String query = "SELECT lastName,firstName FROM authors ORDER BY lastName ASC, firstName ASC";

System.out.println(query);

rs = stmt.executeQuery(query);

System.out.println("Authors:");

while (rs.next()) {

System.out.println(rs.getString(1) + ", " + rs.getString(2));

}

close();

}

/\*

\* Get all publishers' name in the publishers table

\*/

public static void getAllPublishers() throws SQLException {

start();

stmt.executeUpdate("use books;");

String query = "SELECT publisherName FROM publishers";

rs = stmt.executeQuery(query);

System.out.println(query);

System.out.println("Publishers:");

while (rs.next()) {

System.out.println(rs.getString(1));

}

close();

}

/\*

\* Get the name, year and isbn of all titles published by a publisher

\*/

public static void getAllTitlesFromPublisher() throws SQLException {

start();

stmt.executeUpdate("use books;");

String query = "SELECT title,copyright,isbn FROM titles "

+ "WHERE publisherID = ANY (SELECT publisherID FROM publishers WHERE publisherName='Pearson Prentice Hall') ORDER BY title ASC";

System.out.println(query);

rs = stmt.executeQuery(query);

System.out.println("titles from Publishers (title,year,isbn)");

while (rs.next()) {

System.out.println(rs.getString(1) + ", " + rs.getString(2) + ", " + rs.getString(3));

}

close();

}

/\*

\* Add new author into the authors table

\*/

public static void addNewAuthor() throws SQLException {

start();

stmt.executeUpdate("use books;");

//PRINT OUT CURRENT AUTHORS IN THE TABLE

System.out.println("Current Authors:");

rs = stmt.executeQuery("SELECT firstName,lastName FROM authors");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

String query = "INSERT INTO authors(firstName, lastName) VALUES('William','Shakespeare')";

System.out.println("\n" + query);

rs.close();

//PERFORMING QUERY ADDING AUTHOR "William Shakespeare"

int temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected");

}

//PRINT OUT THE AUTHORS AFTER PERFORMING QUERY

System.out.println("\nAfter Query Authors:");

rs = stmt.executeQuery("SELECT firstName,lastName FROM authors");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

close();

}

/\*

\* Edit an Author's information in the authors table

\*/

public static void editAuthor() throws SQLException {

start();

stmt.executeUpdate("use books;");

//PRINT OUT CURRENT AUTHORS IN THE TABLE

System.out.println("Current Authors:");

rs = stmt.executeQuery("SELECT firstName,lastName FROM authors");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

rs.close();

String query = "UPDATE authors SET lastName = 'Jordan' WHERE firstName = 'Michael' AND lastName = 'Sipser'";

System.out.println("\n" + query);

//PERFORMING QUERY, EDITING AUTHOR INFORMATION "Michael Sipser into Michael Jordan"

int temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected\n");

}

//PRINT OUT THE AUTHORS AFTER PERFORMING QUERY

System.out.println("After Query Authors:");

rs = stmt.executeQuery("SELECT firstName,lastName FROM authors");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

close();

}

/\*

\* Adds new title into the titles table and add the isbn into the authorISBN table

\*/

public static void addNewTitle() throws SQLException {

start();

//New Title informations

String title = "Object-Oriented Design and Patterns";

String isbn = "0471744875";

String year = "2005";

String edition = "2";

String publisher = "Wiley";

String firstName = "Cay";

String lastName = "Horstmann";

String price = "99.4";

stmt.executeUpdate("use books;");

//PRINT OUT CURENT TITLE NAMES IN THE TABLE

System.out.println("Current Titles:");

rs = stmt.executeQuery("SELECT title FROM titles");

while (rs.next()) {

System.out.println(rs.getString(1));

}

rs.close();

String query = "INSERT INTO titles(isbn,title,editionNumber,copyright,publisherID,price) "

+ "VALUES('" + isbn + "','" + title + "'," + edition + ",'" + year + "'," + "(SELECT publisherID FROM publishers WHERE publisherName='" + publisher + "')," + price + ")";

System.out.println("\n" + query);

//PERFORMING QUERY, ADDING TITLE INTO TITLES TABLE

int temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected\n");

}

//PRINT OUT TITLE NAMES IN THE TABLE AFTER ADDING

System.out.println("After query Titles:");

rs = stmt.executeQuery("SELECT title FROM titles");

while (rs.next()) {

System.out.println(rs.getString(1));

}

rs.close();

//PRINTING OUT CURRENT INFORMATION IN AUTHORISBN TABLE

System.out.println("\nCurrent ISBN with AuthorID:");

rs = stmt.executeQuery("SELECT authorID, isbn FROM authorISBN");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

rs.close();

query = "INSERT INTO authorISBN(isbn,authorID) VALUES ('" + isbn + "',(SELECT authorID FROM authors WHERE firstName='" + firstName + "' AND lastName='" + lastName + "'))";

//PERFORMING QUERY, ADDING ISBN INTO AUTHORISBN TABLE

System.out.println("\n" + query);

temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected\n");

}

//PRINT OUT AUTHORISBN TABLE AFTER ADDING THE ISBN

System.out.println("After Query ISBN with AuthorID:");

rs = stmt.executeQuery("SELECT authorID, isbn FROM authorISBN");

while (rs.next()) {

System.out.println(rs.getString(1) + " " + rs.getString(2));

}

close();

}

/\*

\* Adds new publisher into the publishers table

\*/

public static void addNewPublisher() throws SQLException {

String name = "Cambridge University Press";

start();

stmt.executeUpdate("use books;");

//PRINT OUT CURRENT PUBLISHERS IN THE TABLE

System.out.println("Current Publishers:");

rs = stmt.executeQuery("SELECT publisherName FROM publishers");

while (rs.next()) {

System.out.println(rs.getString(1));

}

rs.close();

String query = "INSERT INTO publishers(publisherName) VALUES('" + name + "')";

System.out.println("\n" + query);

//PERFORMING QUERY, ADDING NEW PUBLISHER INTO THE TABLE

int temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected\n");

}

//PRINT OUT PUBLISHERS AFTER THE QUERY

System.out.println("After Query Publishers:");

rs = stmt.executeQuery("SELECT publisherName FROM publishers");

while (rs.next()) {

System.out.println(rs.getString(1));

}

close();

}

public static void editPublisher() throws SQLException {

start();

stmt.executeUpdate("use books;");

//PRINT OUT CURRENT PUBLISHERS IN THE TABLE

System.out.println("Current Publishers:");

rs = stmt.executeQuery("SELECT publisherName FROM publishers");

while (rs.next()) {

System.out.println(rs.getString(1));

}

rs.close();

String query = "UPDATE publishers SET publisherName = 'Prentice Hall' WHERE publisherName='Pearson Prentice Hall'";

System.out.println("\n" + query);

//PERFORMING QUERY, EDITING PUBLISHER "PEARSON PRENTICE HALL" TO "PRENTICE HALL"

int temp = stmt.executeUpdate(query);

if (temp != 0) {

System.out.println("Query OK, " + temp + " row affected\n");

}

//PRINT OUT PUBLISHERS AFTER THE QUERY

System.out.println("After Query Publishers:");

rs = stmt.executeQuery("SELECT publisherName FROM publishers");

while (rs.next()) {

System.out.println(rs.getString(1));

}

close();

}

}