



30.12.2021

DATABASE SYSTEMS

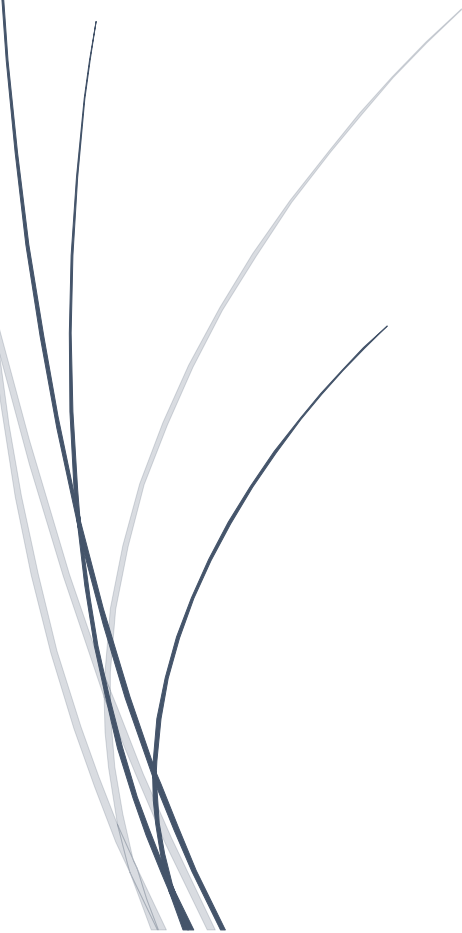
STUDENT

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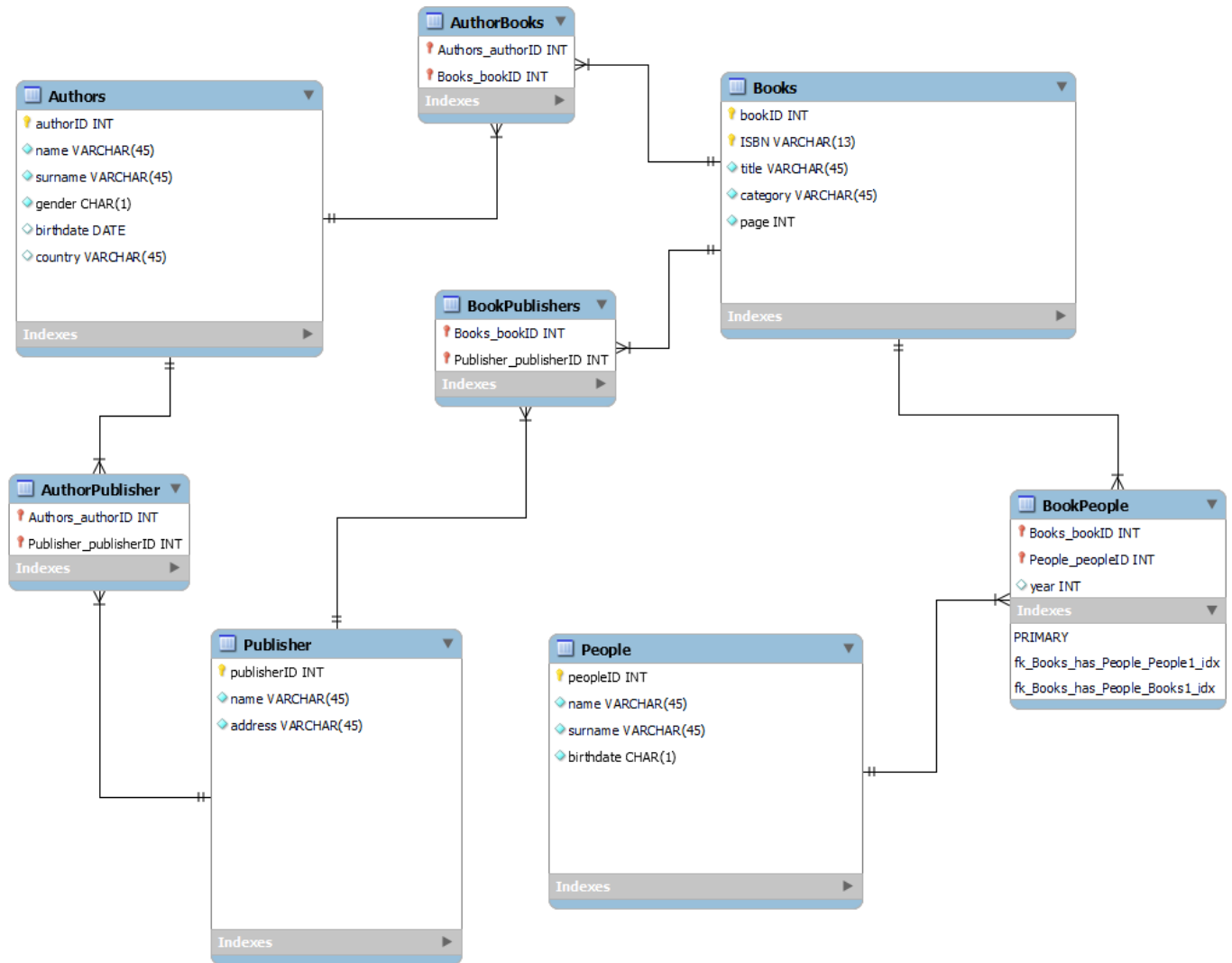
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E/R Diagram



EXPLAINING TO E/R DIAGRAM

_____ Represent Primary Key (PK) * Represent many – many relationship
----- Represent Foreign Key(FK)

Tables:

Books(bookID , ISBN , title , category , page)

Authors (authorID , name , surname , gender , birthdate , country)

*AuthorBooks(authorID , bookID)

Publisher(publisherID , name , address)

*AuthorPublisher(authorID , publisherID)

*BookPublishers(bookID , publisherID)

People (peopleID , name , surname , birthdate)

*BookPeople(bookID , peopleID , year)

Relationships:

- 1) Books – Author = many – many relationship. [AuthorBooks]
- 2) Books – Publisher = many – many relationship. [BookPublishers]
- 3) Books – People = many – many relationship. [BookPeople]
- 4) Authors – Publishers = many – many relationship [AuthorPublisher]

1- Books – Author:

I create relationship Books to Author tables, because some books have one more than author. For example C How to Programs have two authors. (Harvey Deitel , Paul Deitel)

2- Books – Publisher:

I contact many-many relationship between Books and Authors because I think that , if book has global popularity , book has different Publisher in different country.

3- Books – People:

A book can read by more than one person , in the same way, a person can read one more than book.

4- Authors – Publishers:

An author can work multiple publishers and a Publisher has many authors.

QUERIES AND ANSWERS (MySQL)

SAMPLE DATA:

Authors

	authorID	name	surname	gender	birthdate	country
►	1	Paul	Deitel	M	1977-12-12	USA
	2	Harvey	Deitel	M	1978-05-11	USA
	3	Kevin	Mitnick	M	1969-01-25	USA
	4	Frank	Herbert	M	1972-06-04	Germany
	5	Joanne Kathleen	Rowling	F	1967-12-12	US

Books:

	bookID	ISBN	title	category	page
►	1	9780134743356	Java How to Program	Computer Science	1224
	2	9780316037723	Ghost in the Wires	Adventure	554
	3	9780316380522	The Art of Invisibility	Action	365
	4	9780340960196	Dune	Adventure	592
	5	9781408855669	Harry Potter Chamber of Secrets	Action	371

People:

	peopleID	name	surname	birthdate
►	1	John	Wick	1999-01-25
	2	Neon	Matrix	1974-06-22
	3	Nuri Can	Öztürk	1999-01-25
	4	Rebecca	Ferguson	1984-12-14
	5	Tobey	Maguire	2002-03-16

Publishers:

	publist	name	address
►	1	Pearson	New York
	2	Back Bay Books	Canada
	3	Hodder Paperback	Germany
	4	HarperCollins	Los Angeles
	5	National Geographic	Miami

1- Show the author name(s) and surname(s) whose name starts with a given string

For example: input string is "P"

```
1. SELECT name , surname FROM Authors WHERE name LIKE "P%";
```

	name	surname
►	Paul	Deitel

2- Show the title of the books written by a given author

For example: Input string is "Kevin"

```
1. select DISTINCT book.title FROM AuthorBooks ab
2. INNER JOIN Authors author ON ab.authorID = author.authorID
3. INNER JOIN Books book ON book.bookID = ab.bookID
4. WHERE author.name = "Kevin";
```

	title
►	The Art of Invisibility
	Ghost in the Wires

3- Show the book title, author name, surname and country, publisher name and address for a given book's ISBN

For example : Input ISBN: "9780134743356"

```
1. SELECT book.title , a.name , a.surname , a.country , p.name as publisherName,
   p.address AS publisherAddr
2. FROM Books book , Authors a , AuthorBooks ab , BookPublishers bp , Publishers p
3. WHERE book.bookID = ab.BookID
4. AND a.authorID = ab.authorID AND p.publisherID = bp.publisherID
5. AND bp.bookID = book.bookID AND book.ISBN = "9780134743356";
```

	title	name	surname	country	publisherName	publisherAddr
►	Java How to Program	Paul	Deitel	USA	Pearson	New York
	Java How to Program	Harvey	Deitel	USA	Pearson	New York

■ Two different authors so , output count is two.

4- Count how many different people has read a given book

For example : Input Book: "Ghosts in the Wires"

1. **SELECT** book.title , **COUNT**(p1.peopleID) AS COUNT **FROM**
2. Books book , People p1 , BooksPeople bp
3. **WHERE** book.bookID = bp.bookID AND p1.peopleID = bp.peopleID AND book.title = "Ghost in the Wires";

	title	COUNT
►	Ghost in the Wires	3

5- Update the address of a given publisher.

For example: Input is "Italy"

1. **SET** SQL_SAFE_UPDATES = 0;
2. **UPDATE** Publishers **SET** address = " Italy" **WHERE** name = "Pearson";
3. **SELECT** * **FROM** Publishers;

	publist	name	address
►	1	Pearson	Italy
	2	Back Bay Books	Canada
	3	Hodder Paperback	Germany
	4	HarperCollins	Los Angeles
	5	National Geographic	Miami

- 6- Insert a book that a person has read in a specific year. Before insertion, check if the given book data exists in the DB

For example: Inputs CALL insertBookPeople(2,4,2022)

```
7- DELIMITER $$
8- CREATE PROCEDURE insertBookPeople (in peopleID INT , in bookID INT , in year INT )
9- BEGIN
10-     IF NOT EXISTS (SELECT peopleID , bookID FROM BooksPeople bp WHERE bp.peopleID
    = peopleID AND bp.bookID = bookID) THEN
11-         INSERT INTO BooksPeople VALUES (peopleID , bookID ,year) ;
12-     END IF;
13- END$$
14- DELIMITER ;
```

	peopleID	bookID	year
▶	2	1	2020
	2	2	2019
	1	4	2022
	2	5	2008
	2	4	2022

- In this question , I check the in procedure, book is exist or not. (line 11), Then I insert.

7- Delete a person (from all the relevant tables of your DB) who has not read a book for the last 20 years. Make sure to maintain the Referential Integrity

```
1. CREATE TABLE Temp
2. (
3.     pID INT UNIQUE
4. );
```

```
1. DELIMITER $$
2. CREATE PROCEDURE deleteLastNYear(in idx INT)
3. BEGIN
4.
5.     INSERT INTO Temp SELECT DISTINCT p.peopleID FROM BooksPeople bp , People p
        WHERE bp.peopleID = p.peopleID AND
6.     YEAR(current_date()) - idx <= ANY (SELECT bp2.year FROM BooksPeople bp2 WHERE
        bp.peopleID = bp2.peopleID );
7.
8.     DELETE FROM People WHERE peopleID NOT IN(select pID FROM Temp);
9.
10.    SET @num := 0;
11.    UPDATE People SET peopleID = @num := (@num + 1);
12.    ALTER TABLE People AUTO_INCREMENT = 1;
13.
14.    TRUNCATE Temp; -- For clean the Temp table
15. END $$
16. DELIMITER ;
```

In this problem , I use temporary table and I wrote a procedure. I insert the readers for the last N year to Temp table (line 5 and 6) . Then , in line 8 I delete unmatched person from People table.

Also , in remove operations , I use a variable (line 10) because in People table, peopleID is autoIncrement. If I did not write line between 10 to 12 , when I remove the person , peopleID is not updated. In this situation , peopleID create again and start to 1 (line 12).

In line 14 , I have to use Temp Table again , if I remove non-reader last N years. I need to clean the table. I research and I found the “TRUNCATE” keyword. This keyword clean the table completely.

■ In BookPeople table , I use two FK and I add the necessary update and delete keys.

BEFORE THE RUN:

	peopleID	bookID	year
▶	1	2	2008
	1	4	2002
	1	3	2003
	3	1	2020
	3	2	2019
	2	4	2022
	3	5	2008
	4	1	2006
	5	2	2005

AFTER THE RUN:

	peopleID	bookID	year
▶	2	1	2020 •
	2	2	2019
	1	4	2022 •
	2	5	2008

GUI SCREENSHOTS (GENERAL)

Library

Insert

Update

Search:

Remove

Quick Answers

1

2

5

3

4

ISBN	Title	Category	Page	Author
9780134743356	Java How to Program	Computer Science	1224	Paul Deitel
9780134743356	Java How to Program	Computer Science	1224	Harvey Deitel
9780316380522	The Art of Invisibility	Action	365	Kevin Mitnick
9780316037723	Ghost in the Wires	Adventure	554	Kevin Mitnick
9780340960196	Dune	Adventure	592	Frank Herbert
9781408855669	Harry Potter Chamber of Se...	Action	371	Joanne Kathleen Rowling

Enter the ISBN:

Enter the Title:

Enter the category:

Enter the page:

2

Connect Book to others

Choose Book:

Choose Author:

Choose Publisher:

Choose People:

Year:

Update

Update Publisher Address

Publisher Name:

Old Address:

New Address:

Update Book ISBN

Book Name:

Old ISBN:

New ISBN:

Remove

Person	Author	Book
Neon	Paul	Java How to Program
<input type="button" value="delete"/>	<input type="button" value="delete"/>	<input type="button" value="delete"/>

Show the author name(s) and surname(s) whose name starts with a given string. Enter the string

Show the title of the books written by a given author. Enter the Author Name (Only name)

Show the book title, author name, surname and country, publisher name and addressfor a given book's ISBN. Enter ISBN

Count how many different people has read a given book. (please enter the full title)

Delete a person (from all the relevant tables of your DB) who has not read a book for the last 20 years.

Year

SAMPLE OUTPUTS IN APP

A - Show the author name(s) and surname(s) whose name starts with a given string.

The screenshot shows the 'Quick Answers' application with several input fields and buttons. The first section, 'Show the author name(s) and surname(s) whose name starts with a given string. Enter the string', has a 'click' button and an empty text input. The second section, 'Show the title of the books written by a given author. Enter the Author Name (Only name)', has a 'click' button and a dropdown menu showing 'Paul'. The third section, 'Show the book title, author name, surname and country, publisher name and address for a given book's ISBN. Enter ISBN', has a 'click' button and an empty text input. The fourth section, 'Count how many different people has read a given book. (please enter the full title)', has a 'click' button and a dropdown menu showing 'Java How to Program'. The fifth section, 'Delete a person (from all the relevant tables of your DB) who has not read a book for the last 20 years.', has a 'Year' input field and a 'Delete' button. A modal window titled 'Starting with: P' is open, displaying a table with two columns: 'Author Name' and 'Author Surname'. The table contains one row: 'Paul' and 'Deitel'. Below the modal, a code snippet is visible: `SCROLL_INSENSITIVE, ResultSet.CONCUR_READ_ONLY)`.

Author Name	Author Surname
Paul	Deitel

- When I typing , automatically deleted. This Picture first Click button. Same Orders with questions

B - Show the title of the books written by a given author

The screenshot shows the 'Quick Answers' application with the same input fields and buttons as in the previous screenshot. The dropdown menu in the second section now shows 'Kevin'. A modal window titled 'Author: Kevin' is open, displaying a table with four columns: 'ISBN', 'Title', 'Category', and 'page'. The table contains two rows: '9780316380522' for 'The Art of Invisibility' (Action, 365 pages) and '9780316037723' for 'Ghost in the Wires' (Adventure, 554 pages).

ISBN	Title	Category	page
9780316380522	The Art of Invisibility	Action	365
9780316037723	Ghost in the Wires	Adventure	554

C - Show the book title, author name, surname and country, publisher name and address for a given book's ISBN.

The screenshot shows the 'Quick Answers' application with the ISBN search function selected. The ISBN '9780316380522' is entered. The resulting data is displayed in a table:

title	Author Name	Author Surname	Author Country	Publisher Name	Publisher Address
The Art of Invisibility	Kevin	Mitnick	USA	Hodder Paperback	Germany

D - Count how many different people has read a given book

The screenshot shows the 'Quick Answers' application with the book title search function selected. The title 'Ghost in the Wires' is entered. The resulting count is displayed in a table:

Title	Count
Ghost in the Wires	1

H - Delete a person (from all the relevant tables of your DB) who has not read a book for the last 20 years. Make sure to maintain the Referential Integrity.

The screenshot shows a Java application window titled "Quick Answers" with a light gray background. It contains five sections, each with a "click" button and a text input field or dropdown menu:

- Section 1: "Show the author name(s) and surname(s) whose name starts with a given string. Enter the string". The input field is empty.
- Section 2: "Show the title of the books written by a given author. Enter the Author Name (Only name)". The dropdown menu shows "Kevin".
- Section 3: "Show the book title, author name, surname and country, publisher name and address for a given book's ISBN. Enter ISBN". The input field is empty.
- Section 4: "Count how many different people has read a given book. (please enter the full title)". The dropdown menu shows "Ghost in the Wires".
- Section 5: "Delete a person (from all the relevant tables of your DB) who has not read a book for the last 20 years.". Below this text is a "Year" label, a text input field containing "20", and a "Delete" button.

A modal dialog box titled "DELETED!" is overlaid on the bottom right. It features a blue information icon (i) and the text "Deleted Non Readers Last 20 !". An "OK" button is at the bottom right of the dialog.

In the background, a code editor window is visible with tabs for "Insert.java" and "Remove.java". The code editor shows the following line of code:

```
Utility.showBookBox(connection, statement, bookBox);
```

HOW TO USE

The screenshot shows a 'Library' application window. At the top, there is a search bar labeled 'Search:'. Below the search bar, there are four buttons: 'Insert' (labeled 1), 'Update' (labeled 2), 'Remove' (labeled 3), and 'Quick Answers' (labeled 4). A red '5' is placed above the search bar. Below the buttons is a table with the following data:

ISBN	Title	Category	Page	Author
9780134743356	Java How to Program	Computer Science	1224	Paul Deitel
9780134743356	Java How to Program	Computer Science	1224	Harvey Deitel
9780316380522	The Art of Invisibility	Action	365	Kevin Mitnick
9780316037723	Ghost in the Wires	Adventure	554	Kevin Mitnick
9780340960196	Dune	Adventure	592	Frank Herbert
9781408855669	Harry Potter Chamber of Se...	Action	371	Joanne Kathleen Rowling

GENERAL INFORMATION:

- 1 – Insert Operations
- 2- Update Operations (Publisher Address and Book ISBN)
- 3- Remove (You dont delete only Publishers)
- 4- Quick Answers (Impelement a - d and h queries)
- 5 – When you type the character , table is updated for each character

INSERT

Enter the ISBN:

Enter the Title:

Enter the category:

Enter the page:

insert Book

Connect Book to others

Choose Book:

Choose Author:

Choose Publisher:

Choose People:

Year:

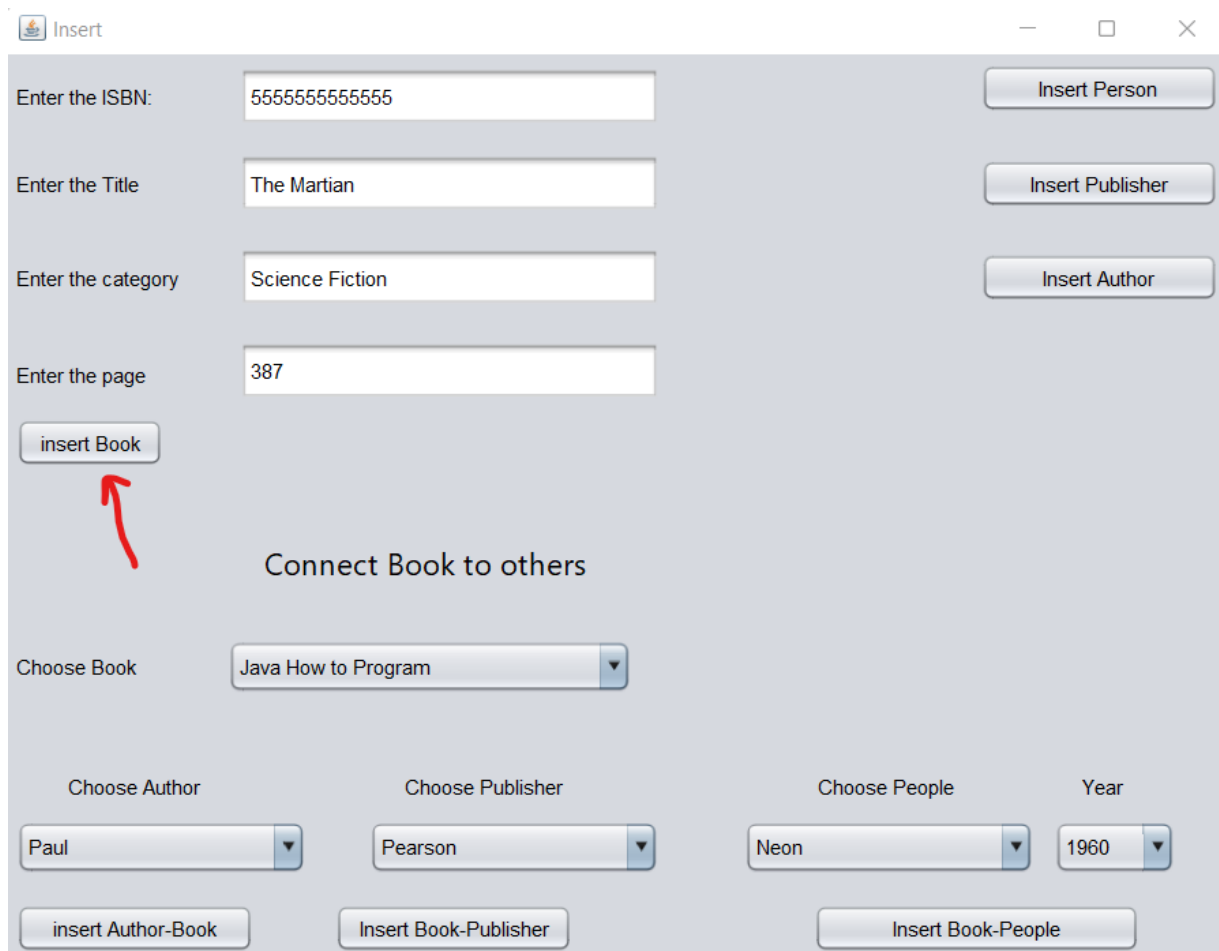
insert Author-Book Insert Book-Publisher Insert Book-People

Area 1: If book does not exists , you should insert the book.

Area 2: Firstly, you should select the book in “Choose Book” box. After then , If you want to add book to author, Publisher or people, you should select string in the box and click on the button “Insert X-Book” or “Insert Book - X”.

Area 3: If author, Publisher or person does not exists, you should area 3 buttons.

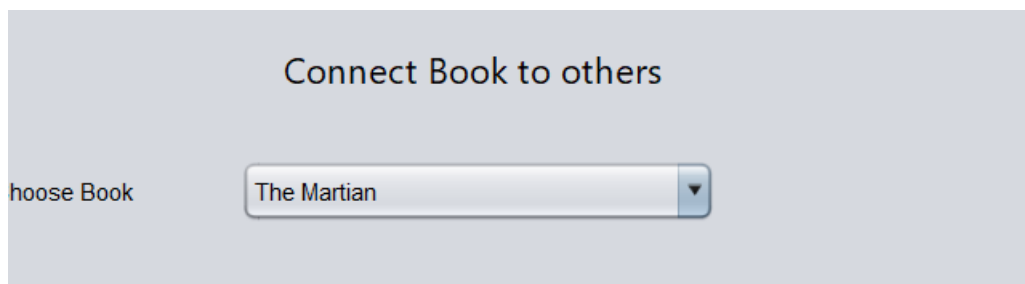
For instances:



The 'Insert' window contains the following elements:

- Fields for book information: ISBN (555555555555), Title (The Martian), Category (Science Fiction), and Page (387).
- Buttons for inserting related entities: Insert Person, Insert Publisher, and Insert Author.
- An 'insert Book' button, which is highlighted with a red arrow.
- A section titled 'Connect Book to others' containing a 'Choose Book' dropdown menu (currently showing 'Java How to Program').
- Fields for selecting related entities: Choose Author (Paul), Choose Publisher (Pearson), Choose People (Neon), and Year (1960).
- Buttons for connecting the book: insert Author-Book, Insert Book-Publisher, and Insert Book-People.

If you want to enter the new book (not include in “Choose Book” box), firstly you should enter the book informations (Area 1). Then click on the “insert Book” button.



This section shows the 'Choose Book' dropdown menu, which now displays 'The Martian'.

Our book is entered the “Choose Book” box. Then, we want to assign Author, Publisher, People to book .

⇒ Case 1: (Author , Publisher , People Not exists)

Order is not important. Firstly, I want to enter the author.

The screenshot shows a software interface with a main window and a modal dialog. The main window has the following elements:

- Input fields: "Enter the ISBN:" (with value 555555555555), "Enter the Title:", "Enter the category:", "Enter the page:", "Choose Book:", "Choose Author:" (with dropdown value Paul), "Choose Publisher:" (with dropdown value Pearson), "Choose People:" (with dropdown value Neon), and "Year:" (with dropdown value 1960).
- Buttons: "insert Book", "insert Author-Book", "Insert Book-Publisher", "Insert Book-People", "Insert Person", "Insert Publisher", and "Insert Author".

A modal dialog titled "Insert" is open, containing the following fields:

- Author Name: Andy
- Author Surname: Weir
- gender: M
- Country: Canada
- birthdate: 1975-01-25
- Insert button (highlighted with a red arrow)

Red arrows indicate the sequence of actions: one points to the "Insert Author" button on the main screen, and another points to the "Insert" button within the modal dialog.

Click on the button “insert Author” in Area 3 and please fill the spaces. Then click the “insert” button.

Then, I want to Publisher and Person in the same way.

The screenshot shows the 'Insert' application window. At the top, there is a text input field for 'Enter the ISBN:' with the value '555555555555'. To the right of this field are three buttons: 'Insert Person', 'Insert Publisher', and 'Insert Author'. A red arrow points to the 'Insert Publisher' button. Below the ISBN field is a dialog box titled 'Insert Another Publisher'. This dialog has two text input fields: 'Publisher Name' with the value 'Broadway Books' and 'Publisher Address' with the value 'New York'. At the bottom of this dialog is a button labeled 'click', with a red arrow pointing to it. Below the dialog box, the main window has a section titled 'Connect Book to others'. It contains a 'Choose Book' dropdown menu with 'The Martian' selected. Below this are four dropdown menus: 'Choose Author' (Paul), 'Choose Publisher' (Pearson), 'Choose People' (Neon), and 'Year' (1960). At the bottom of this section are three buttons: 'insert Author-Book', 'Insert Book-Publisher', and 'Insert Book-People'.

The screenshot shows the 'Insert' application window. At the top, there is a text input field for 'Enter the ISBN:' with the value '555555555555'. To the right of this field are three buttons: 'Insert Person', 'Insert Publisher', and 'Insert Author'. A red arrow points to the 'Insert Person' button. Below the ISBN field is a text input field for 'Enter the Title:' with the value 'The Martian'. Below this is a dialog box titled 'Insert People'. This dialog has three text input fields: 'Name:' with the value 'Nurgül', 'Surname:' with the value 'Kaleli', and 'Birthdate:' with the value '1999-01-25'. At the bottom of this dialog is a button labeled 'Insert', with a red arrow pointing to it. Below the dialog box, the main window has a section titled 'Choose Book' with a dropdown menu showing 'The Martian'. Below this are four dropdown menus: 'Choose Author' (Paul), 'Choose Publisher' (Pearson), 'Choose People' (Neon), and 'Year' (1960). At the bottom of this section are three buttons: 'insert Author-Book', 'Insert Book-Publisher', and 'Insert Book-People'.

So, we register the Author, Publisher and People.

⇒ Case 2: (Author, Publisher, People exists or we already regitered)

Insert

Enter the ISBN: 555555555555

Enter the Title: The Martian

Enter the category: Science Fiction

Enter the page: 387

insert Book

Connect Book to others 1

Choose Book: The Martian

Choose Author: Andy 2

Choose Publisher: Broadway Books 3

Choose People: Nurgül 4

Year: 2022

insert Author-Book

Insert Book-Publisher

Insert Book-People

In this part , we assign the author, Publisher, people to book.

Number 1: Firstly we should choose book in “Choose Book” box.

Number 2,3,4: Order not important. After we select the (Publisher,author,person) from “Choose X” box , then click on the button for every choice. Then, we can see book in the main table.

Library

Insert

Search:

Remove when

Quick Ans

ISBN	Title	Category	Page	Author
9780134743356	Java How to Program	Computer Science	1224	Paul Deitel
9780134743356	Java How to Program	Computer Science	1224	Harvey Deitel
9780316380522	The Art of Invisibility	Action	365	Kevin Mitnick
9780316037723	Ghost in the Wires	Adventure	554	Kevin Mitnick
9780340960196	Dune	Adventure	592	Frank Herbert
9781408955689	Harry Potter Chamber of ...	Action	371	Joanne Kathleen R
555555555555	The Martian	Science Fiction	387	Andy Weir

Insert

Enter the ISBN: 555555555555

Enter the Title: The Martian

Enter the category: Science Fiction

Enter the page: 387

insert Book

Connect Book to others

Choose Book: The Martian

Choose Author: Andy

Choose Publisher: Broadway Books

Choose People: Nurgül

Year: 2022

insert Author-Book

Insert Book-Publisher

Insert Book-People

UPDATE

The screenshot shows a window titled 'Update' with two main sections. The left section, 'Update Publisher Address', is labeled with a circled '1'. It contains a 'Publisher Name' dropdown menu with 'Hodder Paperback' selected, an 'Old Address' field with 'Germany' and a circled '1.1' next to it, and a 'New Address' field with 'Ankara' and a circled '1.2' next to the 'Update Publishers' button. The right section, 'Update Book ISBN', is labeled with a circled '2'. It contains a 'Book Name' dropdown menu with 'The Martian' selected, an 'Old ISBN' field with '555555555555' and a circled '2.1' next to it, and a 'New ISBN' field with '9790975519843' and a circled '2.2' next to the 'Update ISBN' button.

⇒ In 1 number.

1 - we choose the Publisher.

1.1 – You can see current Address, then you enter new Address.

1.2 Click button.

⇒ In 2 number.

2- we choose the book ISBN.

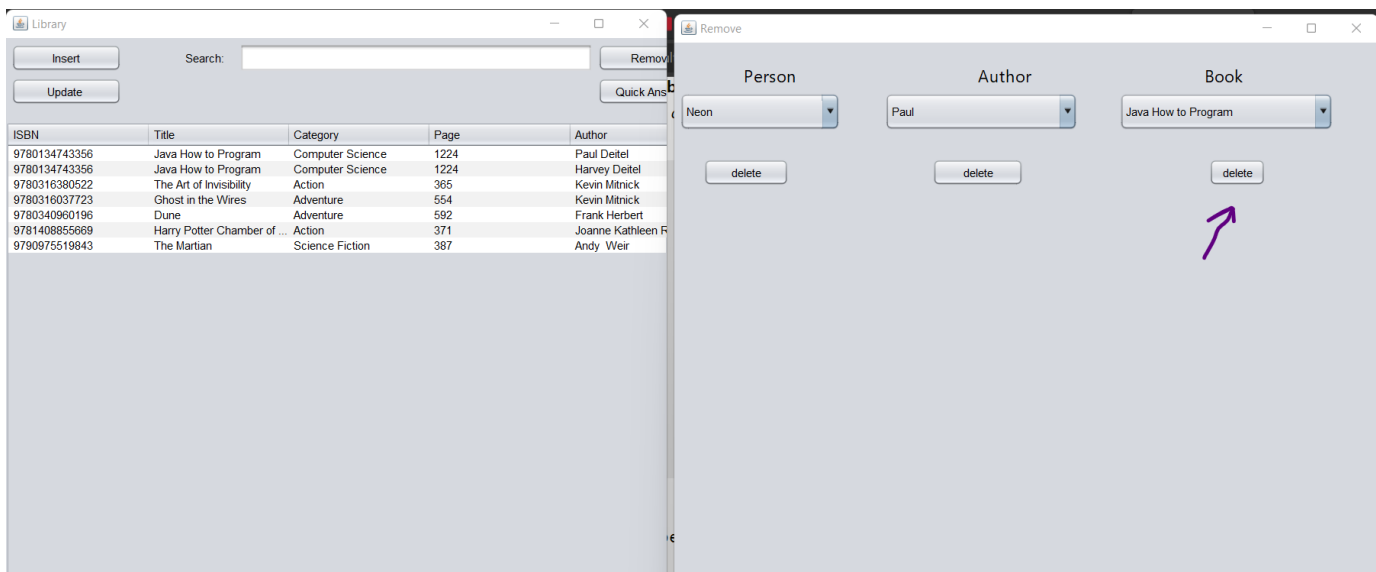
2.1 – You can see current ISBN, then you enter new ISBN.

2.2 Click button.

AFTER UPDATED

The screenshot shows the same 'Update' window after the update process. The 'Old Address' field now displays 'Ankara' and the 'Old ISBN' field displays '9790975519843', both underlined in purple. The 'New Address' and 'New ISBN' fields are empty. The 'Update Publishers' and 'Update ISBN' buttons are still present.

REMOVE



We choose the item and click on the delete button.

