
Course: IT332 "Advanced Database"
Frist Semester 1442 / 1443
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IT332 Project Report

A Library Database Design

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Requirements Document

Data Requirements:

Branch:

The library business owner, which could be the university itself or others, can initiate many branches of the library located on different university's departments. The data held in a branch include: (branch ID, name, address and phone number).

Room:

Rooms in the library are where the people can read or work. Only people with enhanced membership –non-default membership- get access to them. Each *room table* input include: (number, state of availability, type and duration).

Staff:

Are people working in the library who manage the database and provide other services according to their business roles. Each staff member has: (unique ID, name, job title, salary and phone number).

Work_Record:

The work record is one of the mechanisms followed by the library; it records the data associated with the staff 's job description such as permissions, hollydies, work-hours and etc. *Work record table* contains: (unique ID, start date, work hours, permissions...etc).

Book:

Books can be classified as ISSN/ISBN that assigned to any book. They can be logically divided into two types: fiction and non-fiction, however the classification are determined by the related *Classification physical table* which can contain many further different book's classes. Each book has: (unique number, name, author & publisher details, state of availability, how many versions of the book are available, and whether they are available in soft-copy or hard-copy or both).

Resource:

The university library has many resources. They will make it easier for anyone to find a specific book or to further deep-in reading and tracing any book to its resources. It will provide a recognition ID among other resources and also a number that is like a ranking input in respect to the book-references. *Resources* include:(unique ID, number, other book references and URL links if existent).

Type:

It determines the material type for both of the books and resources. It can be either a soft-copy or hard-copy or both. *Type table* includes: (unique ID, a type).

Classification:

Are the sections within the library in which books are classified with. Also it provides further description attribute for the specified class. *Classification Table* include: (unique number, a class-name and related description).

Publisher:

The *Publisher table* contains the data associated with the book-publishing-house whom are responsible for bringing the book to the public for reading purposes. Each publisher has: (unique ID, name, address, phone number...etc).

Author:

An author is the creator or originator of any written work such as: books. The name of the author or any other author-information can be used to look-up for a specific book. Every author has: (unique ID, name, phone number, birth/death date...etc).

Client:

Clients are anyone who can access the library they could be students, instructors, staff or visitors. However the validity of each input must be firstly checked and approved before including them as clients in the database. Each client has: (unique ID, name, phone number..etc).

Membership:

Memberships classify and rank clients in account to what sort of privileges each member can own as well as the cost and duration. It is associated to all clients with a default free membership given to outside-visitors or infrequent clients within the university such like students, instructors or administrators. The *membership table* has: (unique ID, title, duration, description and price).

Loan_Record:

The loan record is another mechanisms applied by the library in order to organize and trace loan or borrowing process associated to each client. The *loan record table* includes the following attributes: (number, state, date loaned and due date).

Fine:

The library collect money for overdue books and other borrowed items which are not returned on time. However not every loan record shall get fines only those clients that violate loan policies-conditions. A *fine record* includes: (a state, a due date, an amount and a description).

Transaction requirements:

• Data Entry:

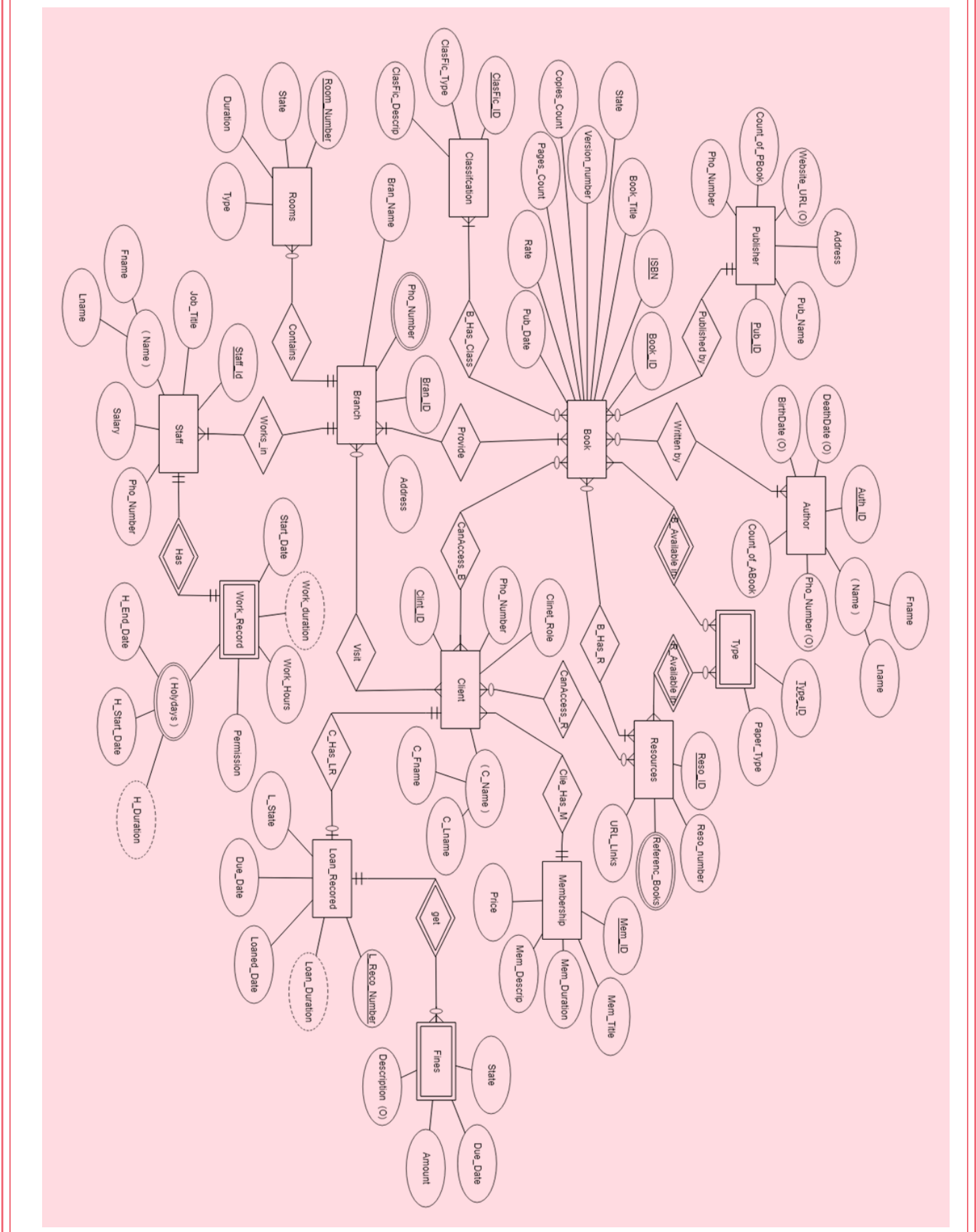
- Enter the details of a branch.
- Enter the details of room.
- Enter the details of new staff.
- Enter the details of new book.
- Enter the details of a resource.
- Enter the details of a type.
- Enter the number of classifications.
- Enter the details of new publisher.
- Enter the details of new author.
- Enter the details of new client.
- Enter the details of membership.
- Enter the number of loans.
- Enter the details of fines.

• Data Update/Deletion:

- Update/Delete the details of branch.
- Update/Delete the details a room.
- Update/Delete the details of new staff.
- Update/Delete the details of new book.
- Update/Delete the details of resource.
- Update/Delete the details of classifications.
- Update/Delete the details of new publisher.
- Update/Delete the details of new author.
- Update/Delete the details of new client.
- Update/Delete the details of membership.
- Update/Delete the details of loans.
- Update/Delete the details of fines.

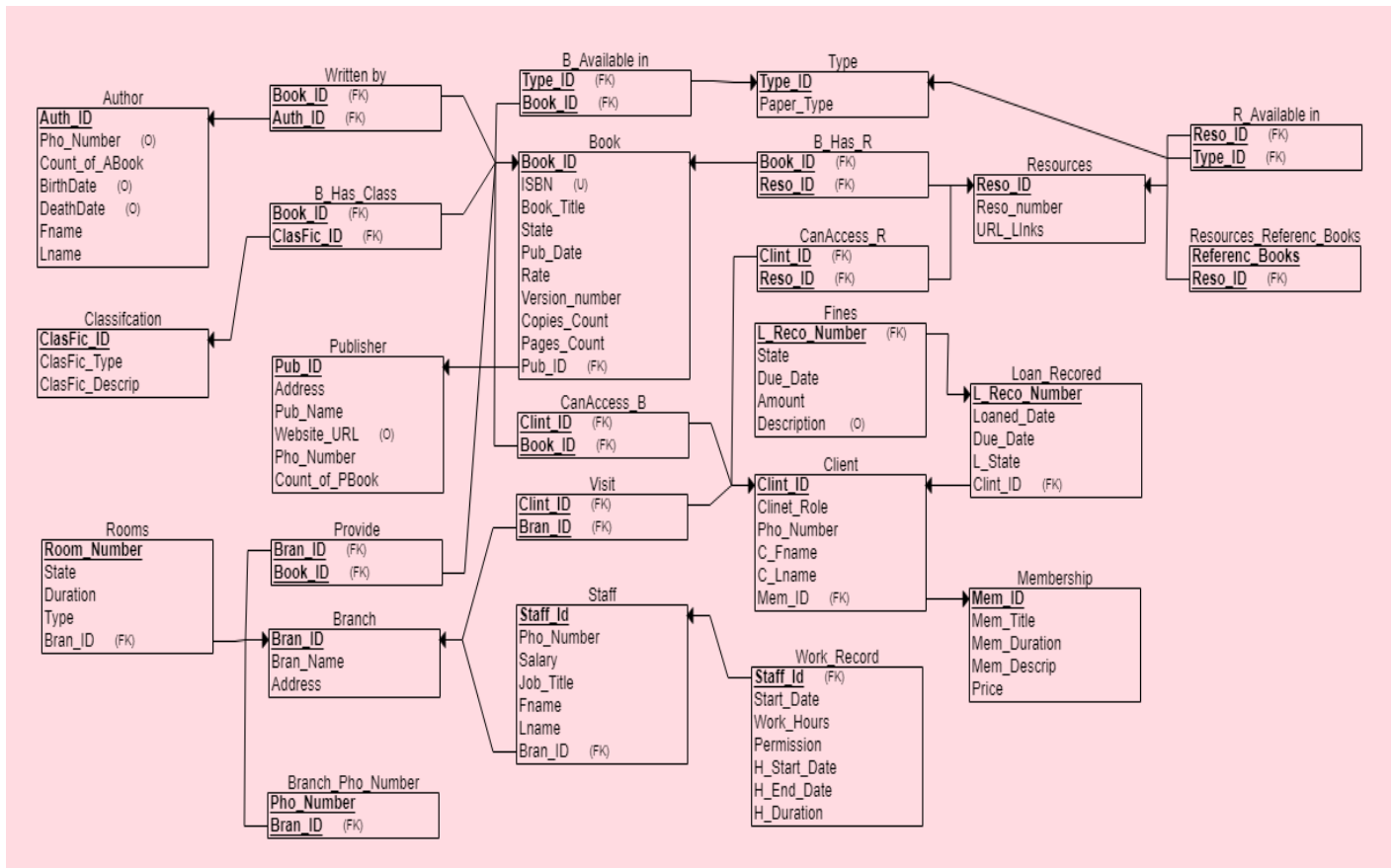
• Data Queries:

- List the ISSN/ISBN of books.
- List all book where is available in soft-copy type.
- List all books of the same author.
- List names and ID of each client.
- List name and ID of each staff with associated salary.
- List the details of each branch.
- List the number of classifications in the library.
- List resources for a specific book.
- List all previously loaned book by a specific client.
- List all members names who gets fine.



Relational Mapping & Normalization

Relational Schema Model



Normalization:

The library relational schema above is has been designed according to the four gridlines of the normalised structures of databases. However each normal form stage has been examined and checked as following:

- Normal Form1 : Does each semantic of our attributes has a single clear value ? Yes,
So the NF1 conditions has been met correctly. ☒
- Normal Form2 : Is there any partial dependency values in the whole schema ? No,
So the NF2 conditions has been met correctly. ☒
- Normal Form3 : Is there any transitive dependency values in the whole schema? No,
So the NF3 conditions has been met correctly. ☒

Now we can confidently say that our database design is well-normalized.

Attached Files (Part4 – Part5)

The following files has been created as instructed by the course instructor and attached within the submitted files along with the main project report.

1. createDB Asmaa-Kholoud-Ruba-Shaden.sql
2. create DataAcsses Asmaa-Kholoud-Ruba-Shaden.sql
3. create vBookStatus Asmaa-Kholoud-Ruba-Shaden.sql
4. test_View Asmaa-Kholoud-Ruba-Shaden.sql

However the following, also attached archive file contains all the files associated with our website. Additionally, the create statements and insert that we have used in managing the database online is also appended with the webpage name (DBProject-QUOnlineLibrary-Asmaa-Kholoud-Ruba-Shaden) archive file.

5. DBProject-QUOnlineLibrary- Asmaa-Kholoud-Ruba-Shaden
 - a. PHP files
 - b. HTML files
 - c. CSS files
 - d. JS files
 - e. Other-website-development-related-files
 - f. Create and insert.sql (for rabid importing of database)

Main Page:



QU Online Library

Login to continue

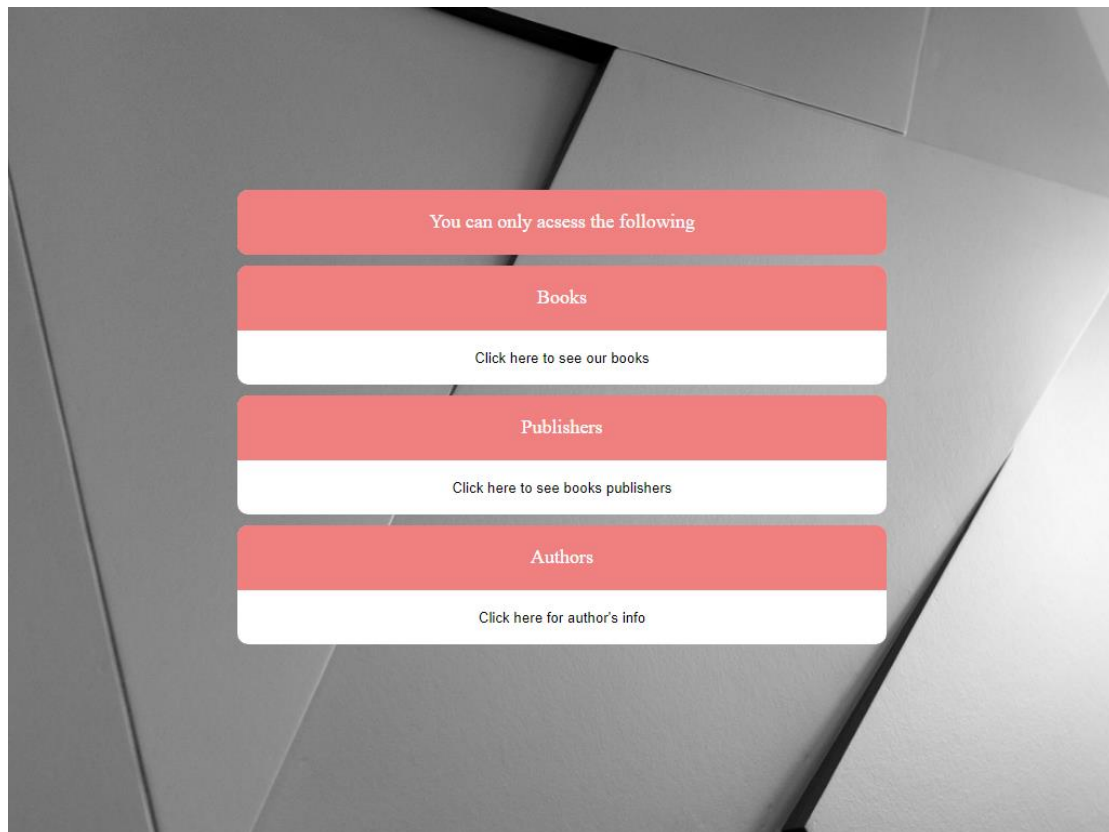
ID

ClinentID

Password

LOGIN

Selectin Page:

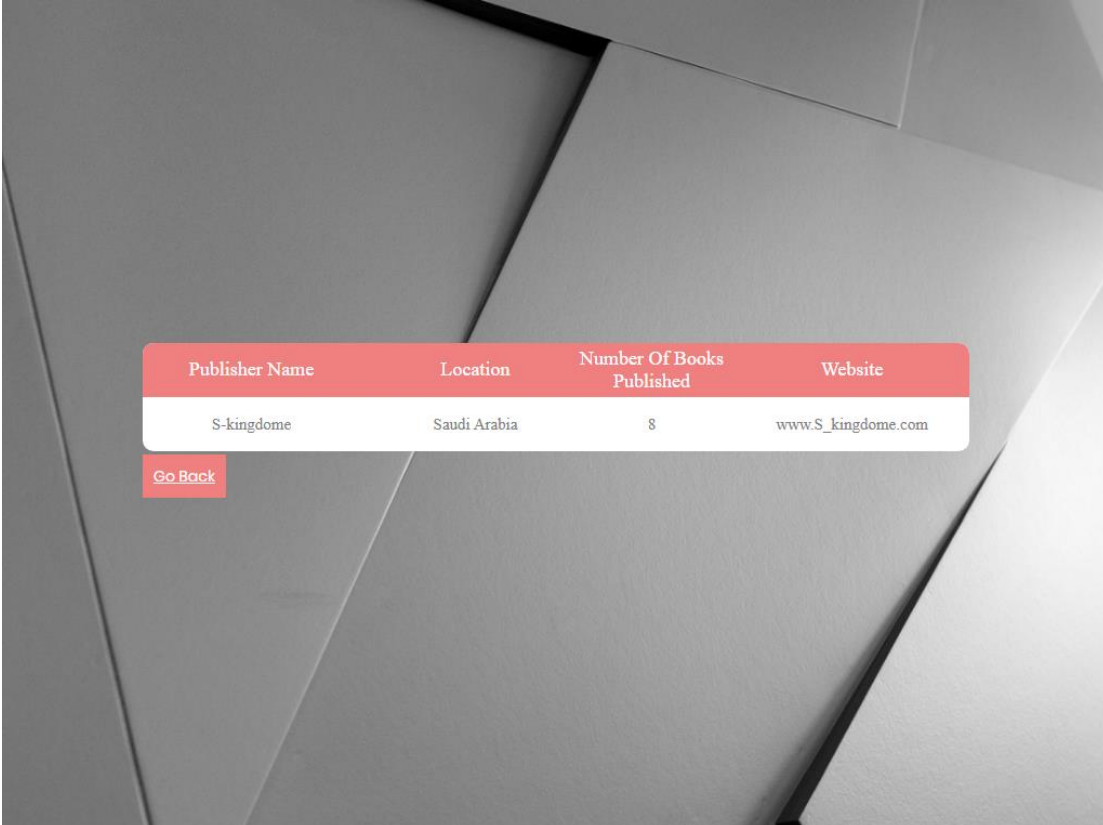


Book-Query Page:

ISBN	Book Title	State	Publisher ID
978-8501-03-1	fear	Available	105
978-1-60819-046-1	the scar of david	Available	108
0-684-87058-4	Malignant Sadness: The Anatomy Of Depression	Available	107
0-385-50420-9	The Davinci code	Available	107
978-0805-07-974-0	Through the Language Glass	Available	104

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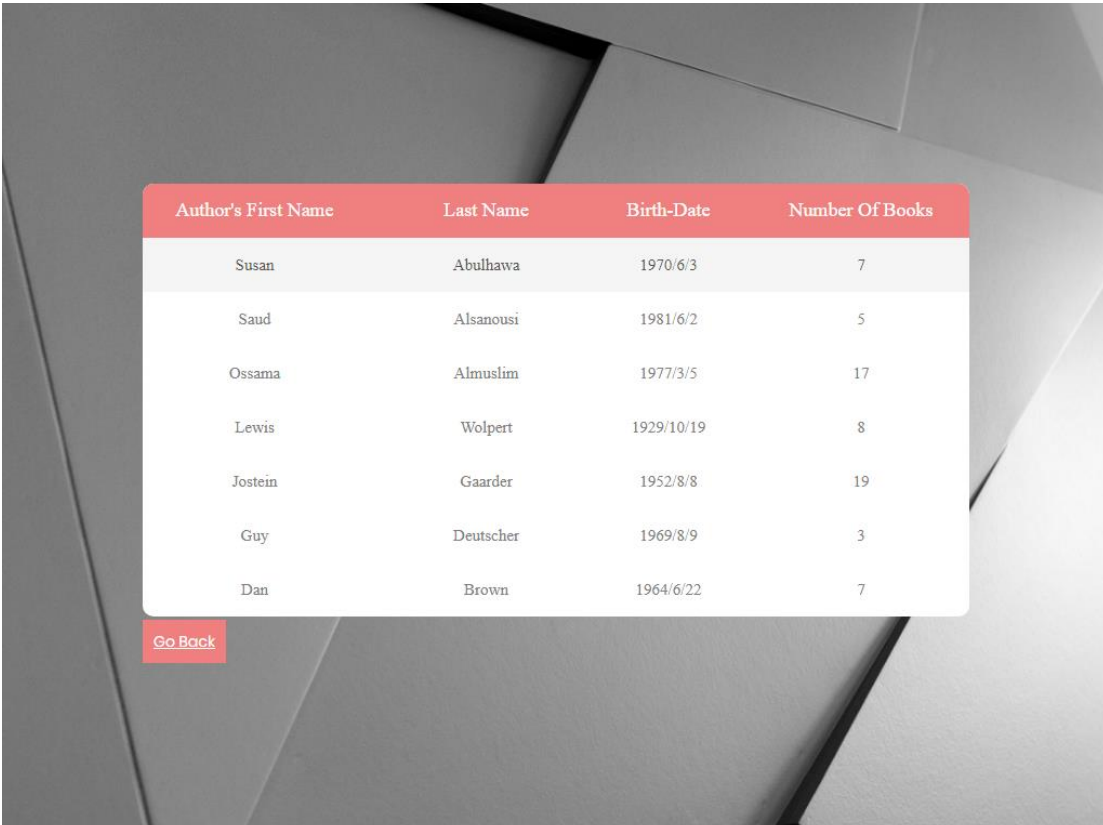
Publishers-Query Page:



Publisher Name	Location	Number Of Books Published	Website
S-kingdome	Saudi Arabia	8	www.S_kingdome.com

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Authors-Query Page:



Author's First Name	Last Name	Birth-Date	Number Of Books
Susan	Abulhawa	1970/6/3	7
Saud	Alsanousi	1981/6/2	5
Ossama	Almuslim	1977/3/5	17
Lewis	Wolpert	1929/10/19	8
Jostein	Gaarder	1952/8/8	19
Guy	Deutscher	1969/8/9	3
Dan	Brown	1964/6/22	7

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Peer-assessment

Part	Student Name:	Contribution:	p.c:
1	Asmaa Abdullah Moallim	<ul style="list-style-type: none"> Audit and general organization. 	10%
	Kholoud Mohammad Alwadia	<ul style="list-style-type: none"> General Review. 	2.5%
	Ruba Adel Eltanani	<ul style="list-style-type: none"> General Review. 	2.5%
	Shaden Saleh Alrasheed	<ul style="list-style-type: none"> Studying the requirements. Full creation of the document. 	75%
2	Asmaa Abdullah Moallim	<ul style="list-style-type: none"> Creating the full ERD as required. 	80%
	Kholoud Mohammad Alwadia	<ul style="list-style-type: none"> General Review. 	2.5%
	Ruba Adel Eltanani	<ul style="list-style-type: none"> General Review. 	2.5%
	Shaden Saleh Alrasheed	<ul style="list-style-type: none"> Modifications and detail additions. 	15%
3	Asmaa Abdullah Moallim	<ul style="list-style-type: none"> Applying CAD to create the relational schema General Review and organization. 	25%
	Kholoud Mohammad Alwadia	<ul style="list-style-type: none"> General Review of mapping steps. Checking Normalization gridlines. 	30%
	Ruba Adel Eltanani	<ul style="list-style-type: none"> General Review of mapping steps. Checking Normalization gridlines. preparing the normalization section in the final report. 	30%
	Shaden Saleh Alrasheed	<ul style="list-style-type: none"> General Review and examination if requirements are correctly met in the relational schema. 	15%
4	Asmaa Abdullah Moallim	<ul style="list-style-type: none"> Applying CAD for create statements. General Review. 	3.5%
	Kholoud Mohammad Alwadia	<ul style="list-style-type: none"> reviewing sql create statements. Co-implementation of insertion sql code. Implementation of the view. Co-preparing data-access sql. 	47%
	Ruba Adel Eltanani	<ul style="list-style-type: none"> Implementation of sql create statements. Co-implementation of insertion sql code. Co-preparing the view sql. Implementation of data-access sql. 	47%
	Shaden Saleh Alrasheed	<ul style="list-style-type: none"> General Review. 	2.5%
5	Asmaa Abdullah Moallim	<ul style="list-style-type: none"> Coding HTML Coding CSS Coding PHP 	25%
	Kholoud Mohammad Alwadia	<ul style="list-style-type: none"> Coding PHP 	25%
	Ruba Adel Eltanani	<ul style="list-style-type: none"> Coding CSS Coding PHP 	25%
	Shaden Saleh Alrasheed	<ul style="list-style-type: none"> Coding HTML Coding PHP 	25%