

SPRING AU 2022

DATABASE ASSIGNMENT

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Problem Statement

The first assignment for you is to design a schema for a library management system. The library management system manages books and users and allows users to borrow books from the library and track the returns. Please design the schema to ensure that the following queries can be done

1. List of all books issued by a user
2. List all books overdue
3. List all books overdue by a user

Entities and Attributes

1. User – UserID , FirstName, LastName, PhoneNumber, Email
2. Book – BookID , Title , Author , Publication
3. Ledger – LedgerNumber ,UserID, BookID , IssuedDate , ReturnDate

Database Schema

User		Ledger		Book	
UserId	int	LedgerNumber	int	BookId	int
FirstName	varchar	UserId	int	Title	varchar
LastName	varchar	BookId	int	Author	varchar
PhoneNumber	int	IssueDate	date	Publication	varchar
Email	varchar	ReturnDate	date		

Creating Tables

The screenshot shows the MySQL Workbench interface with a query editor titled "Query 1". The code entered is:

```
1   create database library;
2 •  use library;
3 •  create table user(
4      userId int primary key,
5      firstName varchar(20) not null,
6      lastName varchar(20),
7      phnNumber int,
8      email varchar(20));
9 •  desc user;
```

Below the query editor is a "Result Grid" showing the table structure:

Field	Type	Null	Key	Default	Extra
userId	int	NO	PRI	NULL	
firstName	varchar(20)	NO		NULL	
lastName	varchar(20)	YES		NULL	
phnNumber	int	YES		NULL	
email	varchar(20)	YES		NULL	

User Table

The screenshot shows the MySQL Workbench interface with a query editor titled "Query 1". The code entered is:

```
1 •  create table book(
2     bookId int primary key,
3     title varchar(20) not null,
4     author varchar(20),
5     publication varchar(20));
6 •  desc book;
```

The screenshot shows the MySQL Workbench interface with a "Result Grid" showing the table structure:

Field	Type	Null	Key	Default	Extra
bookId	int	NO	PRI	NULL	
title	varchar(20)	NO		NULL	
author	varchar(20)	YES		NULL	
publication	varchar(20)	YES		NULL	

Book Table

Query 1

```

1
2 • create table ledger(
3     ledgerNo int primary key,
4     userId int not null,
5     bookId int not null,
6     issueDate date,
7     returnDate date);
8
9 • desc ledger;

```

	Field	Type	Null	Key	Default	Extra
▶	ledgerNo	int	NO	PRI	NULL	
	userId	int	NO		NULL	
	bookId	int	NO		NULL	
	issueDate	date	YES		NULL	
	returnDate	date	YES		NULL	

Ledger Table

Inserting Data values into Tables and Displaying

```

1 • insert into user values(3513,'charles','vick',761087573,'ch1213@gmail.com'),
2     (4451,'kevin','adams',921087573,'kevinn@gmail.com'),
3     (1913,'michael','jordan',651087573,'michaeljj@gmail.com'),
4     (7535,'lewis','carol',911087573,'lewicarol@gmail.com'),
5     (8881,'sara','kem',511087573,'srakk@gmail.com'),
6     (6541,'shae','hove',911087573,'shavehov@gmail.com'),
7     (910,'john','snow',768927573,'johnnn@gmail.com');
8 • select * from user;

```

	userId	firstName	lastName	phnNumber	email
▶	910	john	snow	768927573	johnnn@gmail.com
	1913	michael	jordan	651087573	michaeljj@gmail.com
	3513	charles	vick	761087573	ch1213@gmail.com
	4451	kevin	adams	921087573	kevinn@gmail.com
	6541	shae	hove	911087573	shavehov@gmail.com
	7535	lewis	carol	911087573	lewicarol@gmail.com
	8881	sara	kem	511087573	srakk@gmail.com
*	NULL	NULL	NULL	NULL	NULL

```

1 •  insert into book values(4671,'In Search Time','marcel p','westland'),
2      (9112,'The Great Gatsby','leo tosby','apk publication'),
3      (8724,'War and Peace','Herman Melville','Hachette India'),
4      (6259,'Persuasion','Jane Austen','wordsworth classics'),
5      (8394,'The Day','Kazuo Ishiguro','howards end'),
6      (3711,'Howards End','EM Forster','hogarth press'),
7      (6528,'The Waves','Virginia Woolf','the new yorker'),
8      (2791,'Atonement','Ian McEwan','ring case'));
9 •  select * from book;

```

Result Grid				
	bookId	title	author	publication
▶	2791	Atonement	Ian McEwan	ring case
	3711	Howards End	EM Forster	hogarth press
	4671	In Search Time	marcel p	westland
	6259	Persuasion	Jane Austen	wordsworth classics
	6528	The Waves	Virginia Woolf	the new yorker
	8394	The Day	Kazuo Ishiguro	howards end
	8724	War and Peace	Herman Melville	Hachette India
	9112	The Great Gatsby	leo tosby	apk publication
*	NULL	NULL	NULL	NULL

```

1 •  insert into ledger values(1,910,3711,'2022-10-14','2022-11-08'),
2      (2,3513,4671,'2022-08-07','2022-11-18'),
3      (3,910,6528,'2021-02-19','2021-08-16'),
4      (4,1913,8394,'2022-10-26','2022-11-10'),
5      (5,910,4671,'2020-02-27','2020-03-22'),
6      (6,7535,4671,'2022-01-08','2022-01-20'),
7      (7,8881,6259,'2022-10-08','2022-11-30');
8
9 •  select * from ledger;
10

```

Result Grid					
	ledgerNo	userId	bookId	issueDate	returnDate
▶	1	910	3711	2022-10-14	2022-11-08
	2	3513	4671	2022-08-07	2022-11-18
	3	910	6528	2021-02-19	2021-08-16
	4	1913	8394	2022-10-26	2022-11-10
	5	910	4671	2020-02-27	2020-03-22
	6	7535	4671	2022-01-08	2022-01-20
	7	8881	6259	2022-10-08	2022-11-30
*	NULL	NULL	NULL	NULL	NULL

Queries

1. List all books issued by a user.

The screenshot shows a MySQL query editor window titled "Query 1". The query is:

```
1 •  select b.bookId,b.title from book b,ledger l where l.bookId = b.bookId  
2     and l.userId=910;  
3
```

The toolbar includes standard database navigation icons like back, forward, and search, along with a "Limit to 1000 rows" dropdown.

The screenshot shows the results of the query in a "Result Grid". The columns are "bookId" and "title". The data is:

bookId	title
3711	Howards End
6528	The Waves
4671	In Search Time

2. List all book overdue

The screenshot shows a MySQL query editor window titled "Query 1". The query is:

```
1 •  select b.bookId,b.title from book b,ledger l where l.bookId = b.bookId  
2     and datediff(l.returnDate,l.issueDate)>15;  
3
```

The toolbar includes standard database navigation icons like back, forward, and search, along with a "Limit to 1000 rows" dropdown.

The screenshot shows the results of the query in a "Result Grid". The columns are "bookId" and "title". The data is:

bookId	title
3711	Howards End
4671	In Search Time
6528	The Waves
4671	In Search Time
6259	Persuasion

Note: 15 Days is considered as overdue period.

3. List all books overdue by a user

The screenshot shows a MySQL Workbench interface. The top bar is titled "Query 1" and includes various toolbar icons. A dropdown menu says "Limit to 1000 rows". The main area contains the following SQL code:

```
1 •  select b.bookId,b.title from book b,ledger l where l.bookId = b.bookId  
2      and l.returnDate-l.issueDate>15 and l.userId=910;  
3
```

Below the code is a "Result Grid" table with two columns: "bookId" and "title". The data is as follows:

bookId	title
3711	Howards End
6528	The Waves
4671	In Search Time