

SPRING AU 2022

DATABASE ASSIGNMENT

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Problem Statement

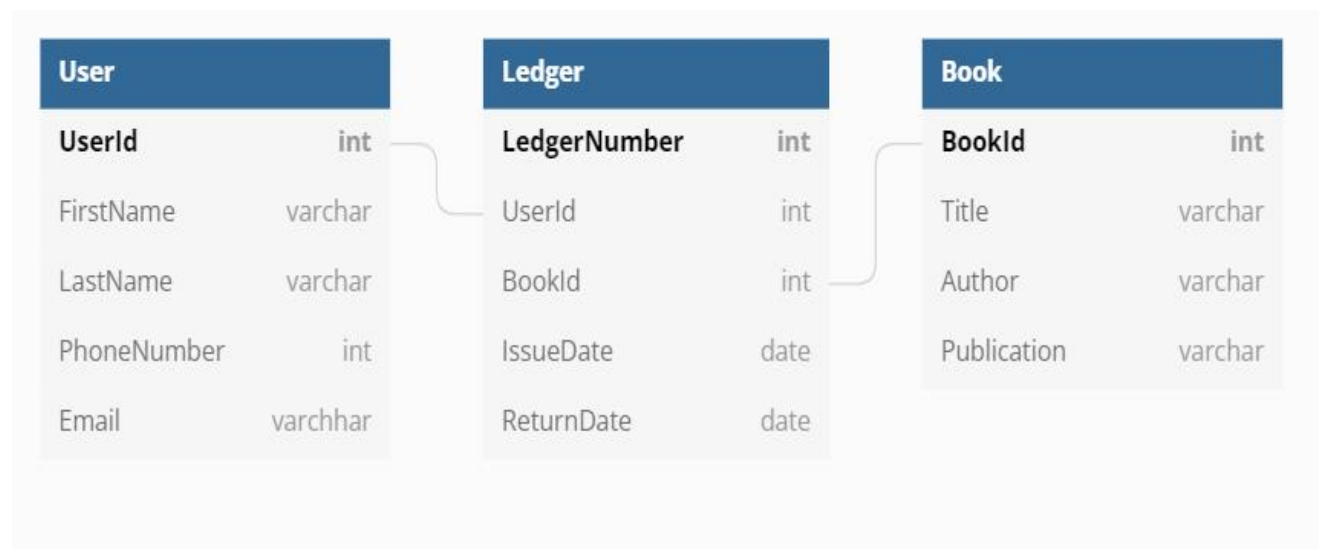
The first assignment for you is to design a schema for a library management system. The library management system manages books and users and allows users to borrow books from the library and track the returns. Please design the schema to ensure that the following queries can be done

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

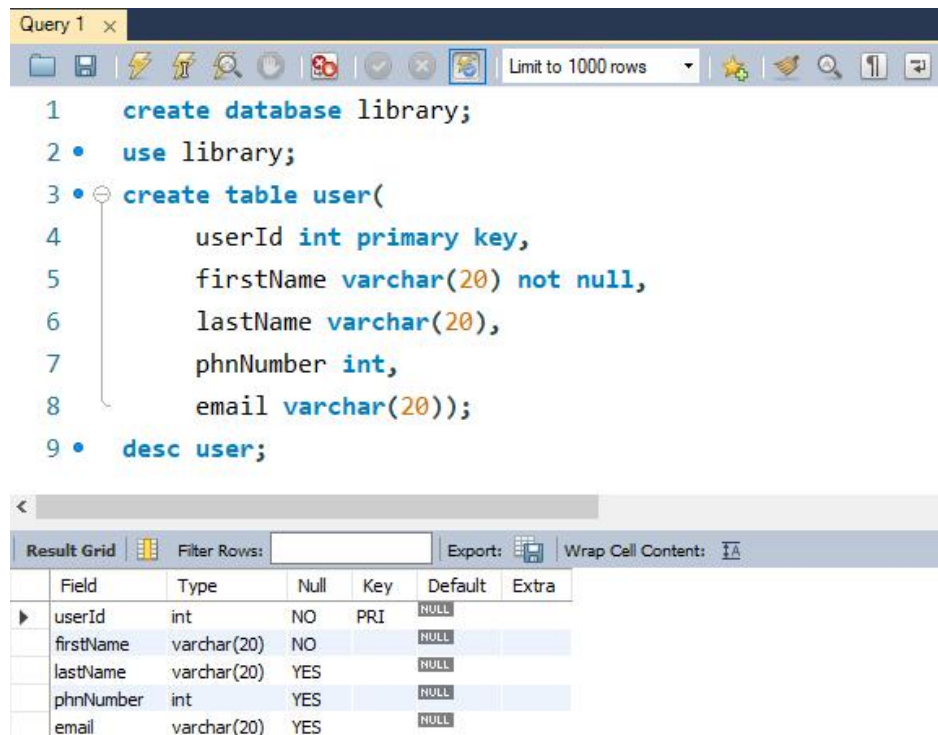
Entities and Attributes

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

Database Schema



Creating Tables



Query 1 x

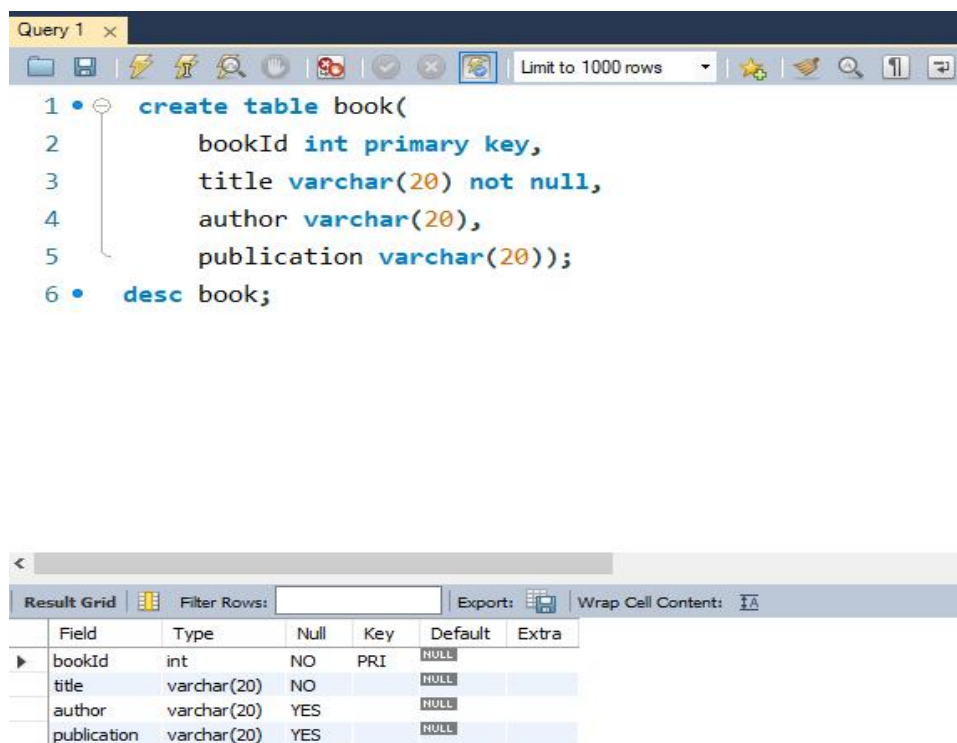
```
1 create database library;
2 • use library;
3 • create table user(
4     userId int primary key,
5     firstName varchar(20) not null,
6     lastName varchar(20),
7     phnNumber int,
8     email varchar(20));
9 • desc user;
```

Limit to 1000 rows

Result Grid

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



Query 1 x

```
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;
```

Limit to 1000 rows

Result Grid

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 x
Limit to 1000 rows

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,'kevin@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	kevin@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 tosky','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;

```

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 tosky	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

```

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 database query interface. The query editor displays the following SQL query:

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

The results are displayed in a table with columns 'bookId' and 'title'.

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

2. List all book overdue

The screenshot shows a database query interface. The query editor displays the following SQL query:

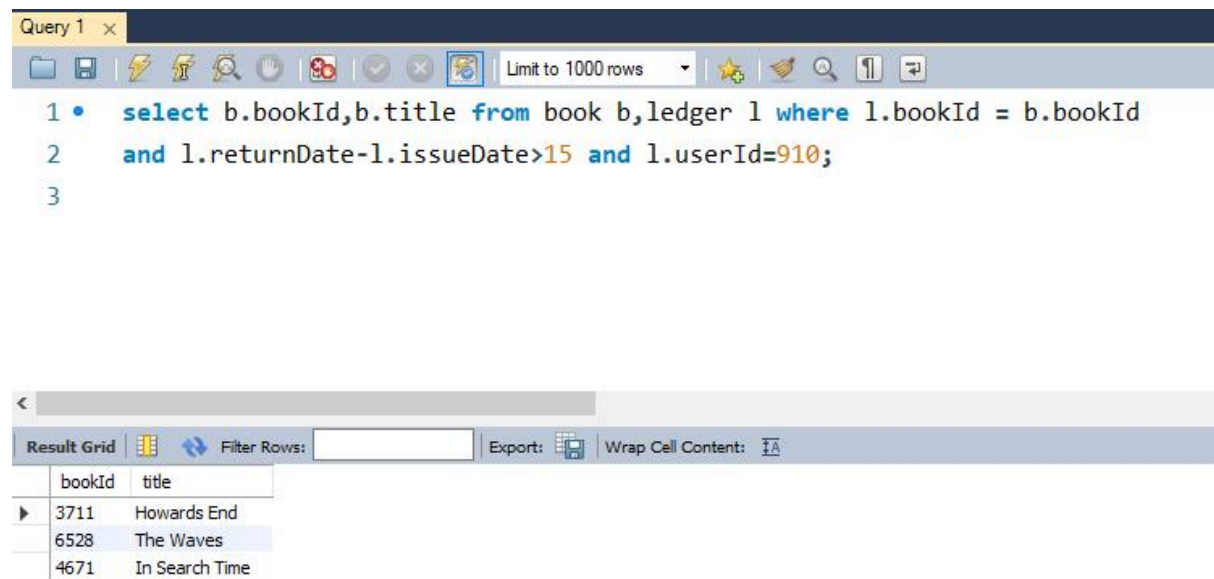
```
1 • select b.bookId,b.title from book b,ledger l where l.bookId = b.bookId
2 and datediff(l.returnDate,l.issueDate)>15;
3
```

The results are displayed in a table with columns 'bookId' and 'title'.

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 database query editor window titled "Query 1". The query is as follows:

```
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 query editor, the "Result Grid" is displayed, showing the results of the query. The grid has two columns: "bookId" and "title". The results are:

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