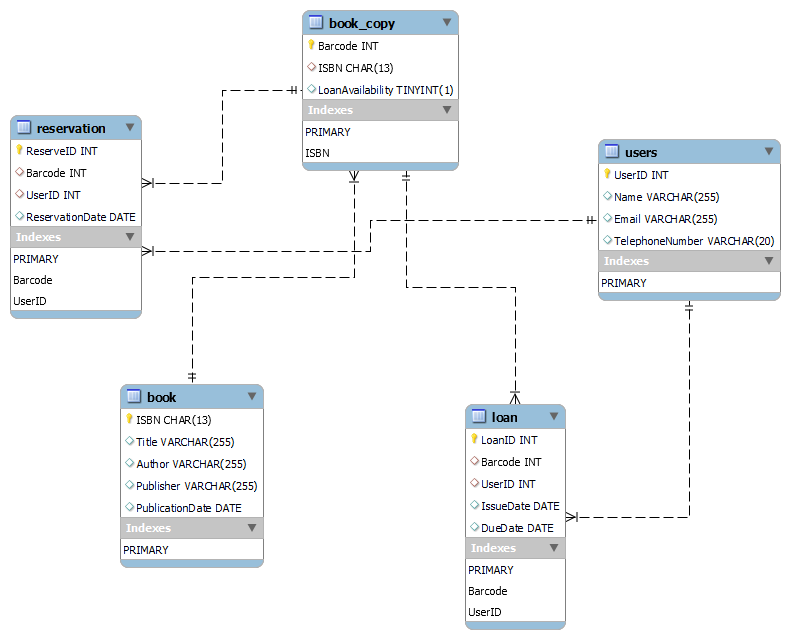
**1. Design of the Database using an ER Diagram**



**2. Relational Database Schema**

**Tables and Keys:**

1. **Book**

* ***ISBN*** (varchar(13)) PRIMARY KEY
* Title (varchar(255))
* Author (varchar(255))
* Publisher (varchar(255))
* Date\_of\_Publication (date)

1. **Copy\_of\_Book**

* ***Bar\_Code*** (varchar(20)) PRIMARY KEY
* ISBN (varchar(13)) FOREIGN KEY REFERENCES Book(ISBN)
* Loan\_Availability (boolean)

1. **User**

* ***User\_ID*** (varchar(8)) PRIMARY KEY
* Name (varchar(255))
* Email\_Address (varchar(255))
* Telephone\_Number (varchar(15))

1. **Loan**

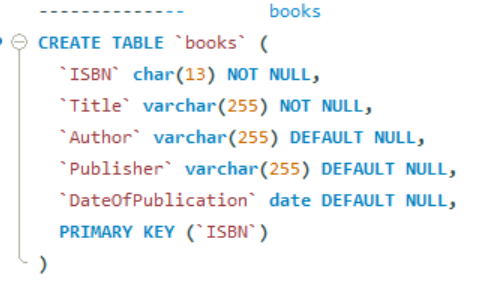
* ***Loan\_ID*** (int) PRIMARY KEY
* User\_ID (varchar(8)) FOREIGN KEY REFERENCES User(User\_ID)
* Bar\_Code (varchar(20)) FOREIGN KEY REFERENCES Copy\_of\_Book(Bar\_Code)
* Issue\_Date (date)
* Overdue\_Date (date)

1. **Reservation**

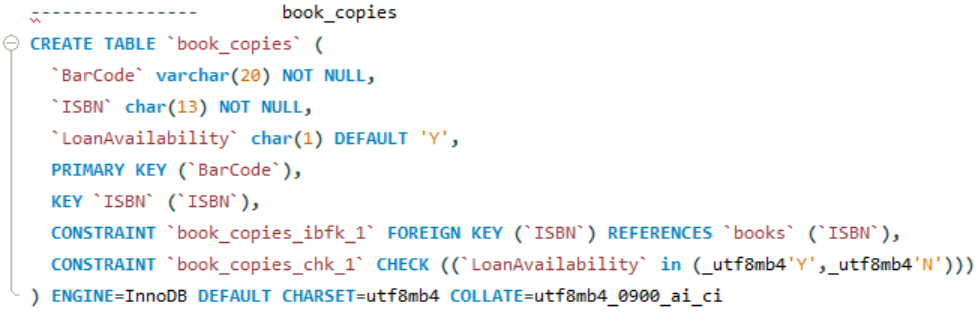
* ***Reservation\_ID*** (int) PRIMARY KEY
* User\_ID (varchar(8)) FOREIGN KEY REFERENCES User(User\_ID)
* Bar\_Code (varchar(20)) FOREIGN KEY REFERENCES Copy\_of\_Book(Bar\_Code)
* Date\_of\_Reservation (date)

**3. Implementation of Database**

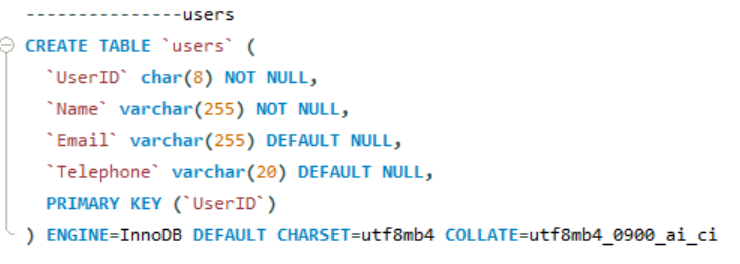
* **Books**



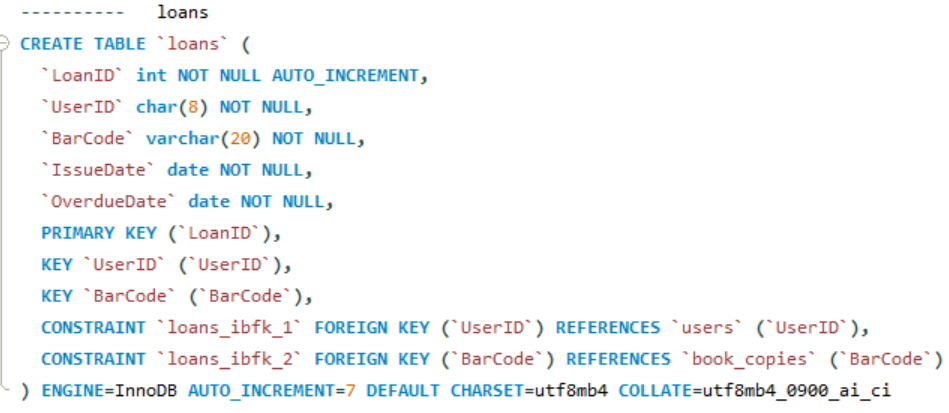
* **Book\_copies**



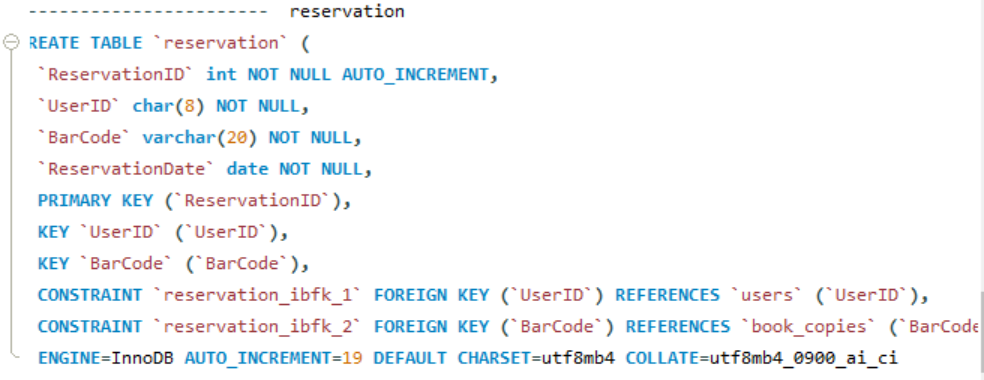
* **Users**



* **Loans**



* **Reservation**

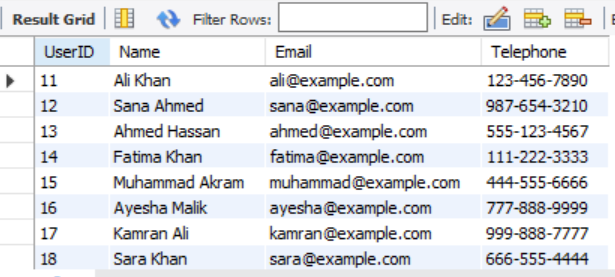


**Insert some records**

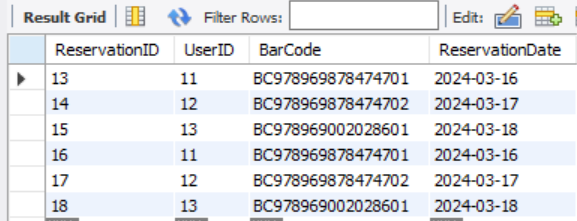
**Books Table**



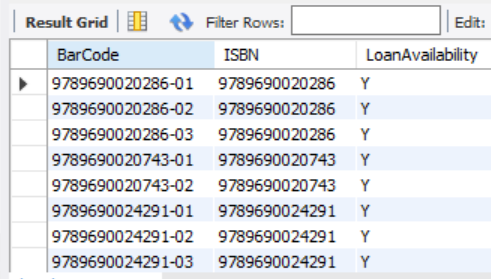
**Users table**



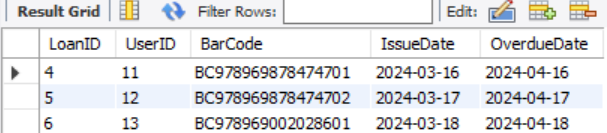
**Reservation Table**



**Book\_copies Table**



**Loans Table**

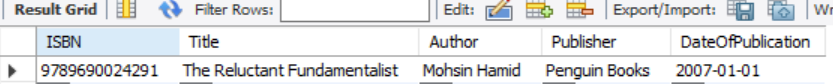


**4. SQL statements and results screenshot**

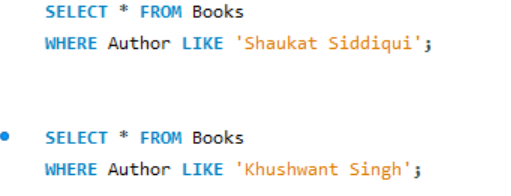
1. **Search for a book by key words in book title and display all details of the book**



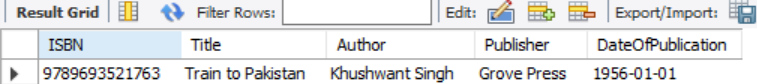
**Output**



1. **Search for a book by author and display all details of the book**



**Output**

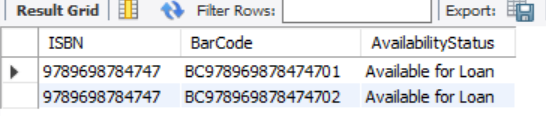




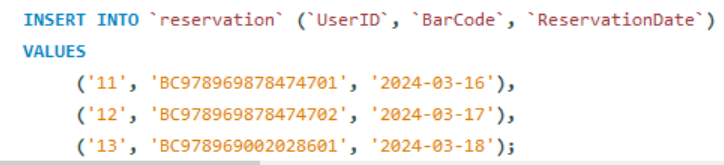
1. **Search for a book by ISBN and display if it is available for loans.**



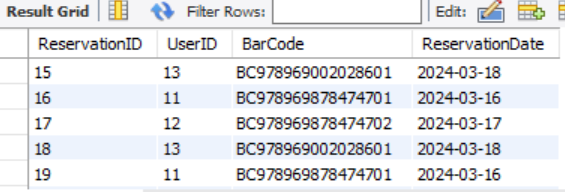
**Output**



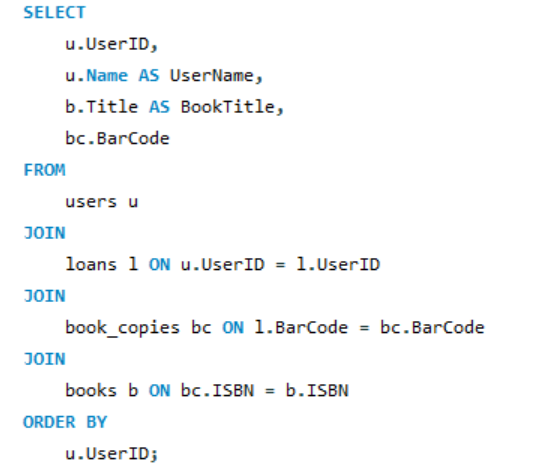
**d) Make a reservation for a book**



**Output**



1. **Produce a list of loans to users: display user name, user ID, book title and bar codes for those books on loan.**



**Output**

