

Java :

```
import java.util.*;
class Books{
    int id;

    String title ,author;
    Boolean available = true;
    Books(int id,String title,String author){
        this.id=id;
        this.title=title;
        this.author=author;
    }
}
class User{
    int id;
    String name;
    Books[] borrowedBooks = new Books[10];
    int borrowedCount =0;

    User(int id ,String name){
        this.id=id;
        this.name=name;
    }
    void borrow(Books book){
        borrowedBooks[borrowedCount++]=book;
    }
    void returnBook(Books book){
        for(int i=0;i<borrowedCount; i++){
            if(borrowedBooks[i] == book){
                for(int j=i;j<=borrowedCount - 1;j++){
                    borrowedBooks[j]=borrowedBooks[j +1];
                }
                borrowedBooks[--borrowedCount]=null;
                break;
            }
        }
    }
    void showBorrowedBooks(){
        System.out.println("book borrowed by" +name + ":");
        for(int i=0;i<borrowedCount;i++){
            System.out.println(borrowedBooks[i].title);
        }
    }
}

public class LibrarySystem{
    Books[] book = new Books[10];
    User[] user = new User[10];
    int bookCount = 0 ,userCount = 0;
```

```

void addBook(Books book){
    book[bookCount++]= book;
}
void addUser(User user){
    user[userCount++]=user;
}
void borroweBooks(int userId , int bookId){
    User user = findUser(userId);
    Books book = findBook(bookId);
    if(user!=null && book!=null && book.available){
        book.available=false;
        user.borrow(book);
        System.out.println(user.name+ "Borrowed"+book.title);
    }
}
void showAvailableBook(){
    System.out.println("Available book");
    for(int i=0;i< bookCount ; i++){
        if(book[i].available){
            System.out.println(book[i].id+book[i].title+book[i].author);
        }
    }
}

void showUserBook(int userId){
    User user = findUser(userId);
    if(user!=null){
        user.showBorrowedBooks();
    }
}

Books findBook(int id){
    for(int i=0;i<bookCount;i++){
        if(book[i].id==id)
            return book[i];
    }
    return null;
}
User findUser(int id){
    for(int i=0;i<userCount;i++){
        if(user[i].id == id){
            return user[i];
        }
    }
    return null;
}

}
public static void main(String[] args){
    LibrarySystem lib=new LibrarySystem();
    lib.addBook(new Books(1,"Vaishnavi Mahajan","Vishnu Patil"));
}

```

```

lib.addUser(new User(101,"vaibhavi"));

lib.showAvailableBook();
lib.borroweBooks(101,1);

lib.showUserBook(101);

lib.showAvailableBook();
}
}

```

=====

SQL:

```

CREATE TABLE users (
    id INT PRIMARY KEY,
    name VARCHAR(50)
);

```

```

CREATE TABLE books (
    book_id INT PRIMARY KEY,
    title VARCHAR(100),
    author VARCHAR(100)
);

```

```

CREATE TABLE borrowings (
    user_id INT,
    book_id INT,
    borrow_date DATE,
    return_date DATE,
    FOREIGN KEY (user_id) REFERENCES users(id),
    FOREIGN KEY (book_id) REFERENCES books(book_id)
);

```

//List all users and the books they have currently borrowed (i.e., not yet returned).

```

select u.name,b.title
from borrowings br
JOIN users u ON br.user_id = u.user_id;
JOIN Books b ON br.book_id = b.book_id
where br.return_date is null;
//Find all books by a specific author.

```

```

select *FROM BOOKS
WHERE author = 'J.K.ROWLING';

```

//List users who have borrowed more than 2 books.

```
select u.name,count(*)as total_books  
from borrowings br  
join users u on br.user_id = u.user_id  
join users u on br.user_id =u.user_id  
group by u.user_id,u.name  
having count(*)>2;
```

//Show number of times each book has been borrowed.

```
select b.title,count(*) AS borroe_count  
from borrowings br  
join books b on br.book_id = b.book_id  
group by b.book_id,b.title;
```

//Get the names of users who haven't borrowed any books.

```
select u.name  
from user u  
left join borrowings br on u.user_id = br.user_id  
where br.user_id is null;
```

//List books that have never been borrowed.

```
select b.title  
from books b  
left join borrowings br on b.book_id = book_id  
where br.book_id is null;
```

