

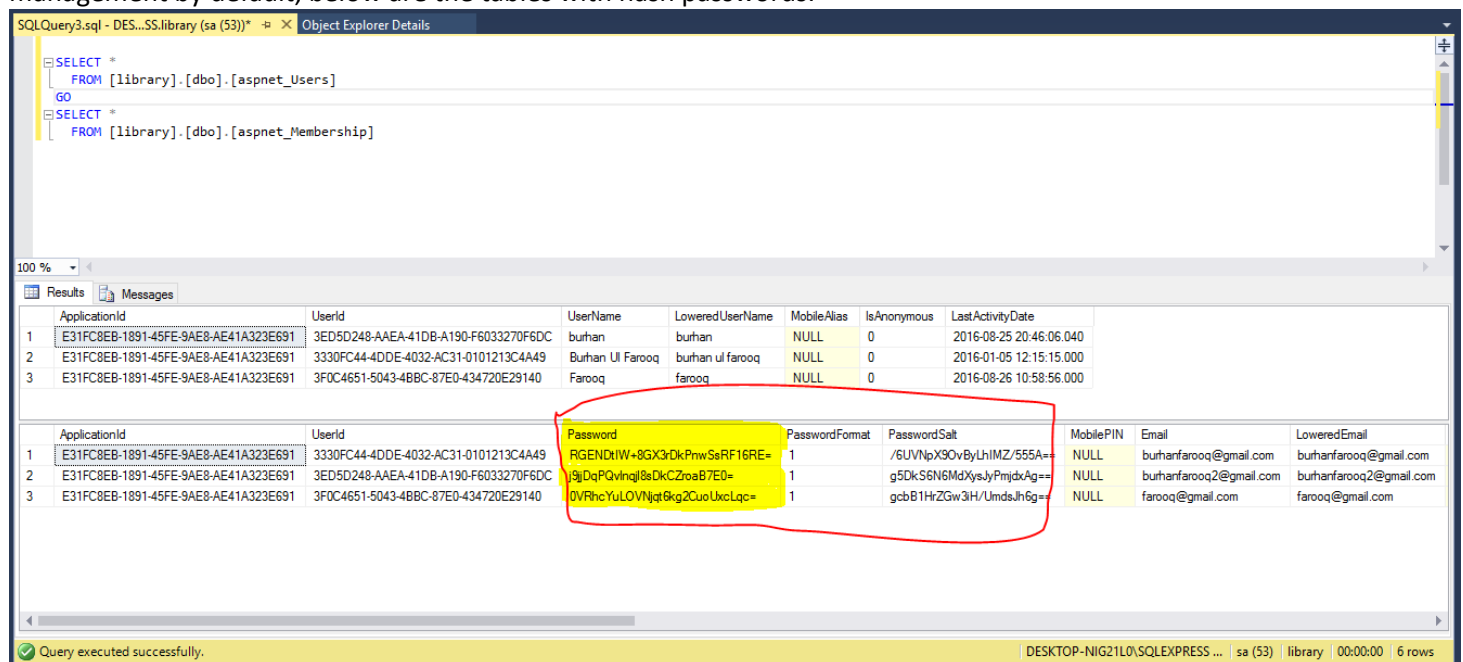
Below are the answers to the information asked in last email:

- Login functionality not implemented at all.
- Details page functionality not implemented at all.
- Check out history missing on check out page.
- Penalty calculation is incorrect on Check in page
- Check in page does not save to database i.e. a book can be checked out but cannot be checked in.

## ANSWERS:

### Login functionality not implemented at all:

I have used asp.net membership provider, which provides user management by default, below are the tables with hash passwords.

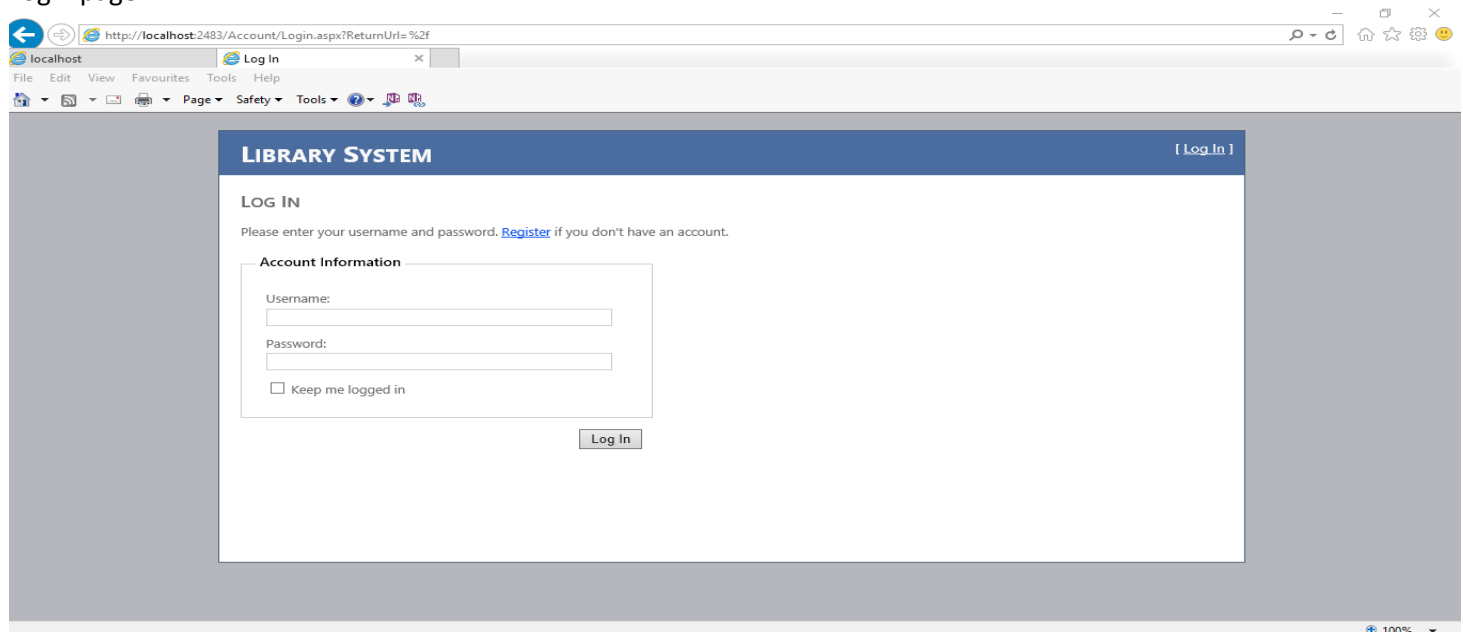


```
SELECT *
FROM [library].[dbo].[aspnet_Users]
GO
SELECT *
FROM [library].[dbo].[aspnet_Membership]
```

ApplicationId	UserId	UserName	LoweredUserName	MobileAlias	IsAnonymous	LastActivityDate
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3ED5D248-AAEA-41DB-A190-F6033270F6DC	burhan	burhan	NULL	0	2016-08-25 20:46:06.040
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3330FC44-DDDE-4032-AC31-0101213C4A49	Burhan Ul Farooq	burhan ul farooq	NULL	0	2016-01-05 12:15:15.000
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3F0C4651-5043-4BBC-87E0-434720E29140	Farooq	farooq	NULL	0	2016-08-26 10:58:56.000

ApplicationId	UserId	Password	PasswordFormat	PasswordSalt	MobilePIN	Email	LoweredEmail
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3330FC44-DDDE-4032-AC31-0101213C4A49	RGENDiIW+8GX3rDkPnwSsRF16RE=	1	/6UVNpX9OvByLhIMZ/555A=	NULL	burhanfarooq@gmail.com	burhanfarooq@gmail.com
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3ED5D248-AAEA-41DB-A190-F6033270F6DC	j9DqPQvIngl8sDkCZoaB7E0=	1	g5DkS6N6MdXysJyPmjdxAg=	NULL	burhanfarooq2@gmail.com	burhanfarooq2@gmail.com
E31FC8EB-1891-45FE-9AE8-AE41A323E691	3F0C4651-5043-4BBC-87E0-434720E29140	0VRheYuLOVNgt6kg2CuoUxcLqc=	1	gcbB1HzGw3H/UmdsJh6g=	NULL	farooq@gmail.com	farooq@gmail.com

### Login page:



http://localhost:2483/Account/Login.aspx?ReturnUrl=%2F

LIBRARY SYSTEM [ Log In ]

LOG IN

Please enter your username and password. [Register](#) if you don't have an account.

Account Information

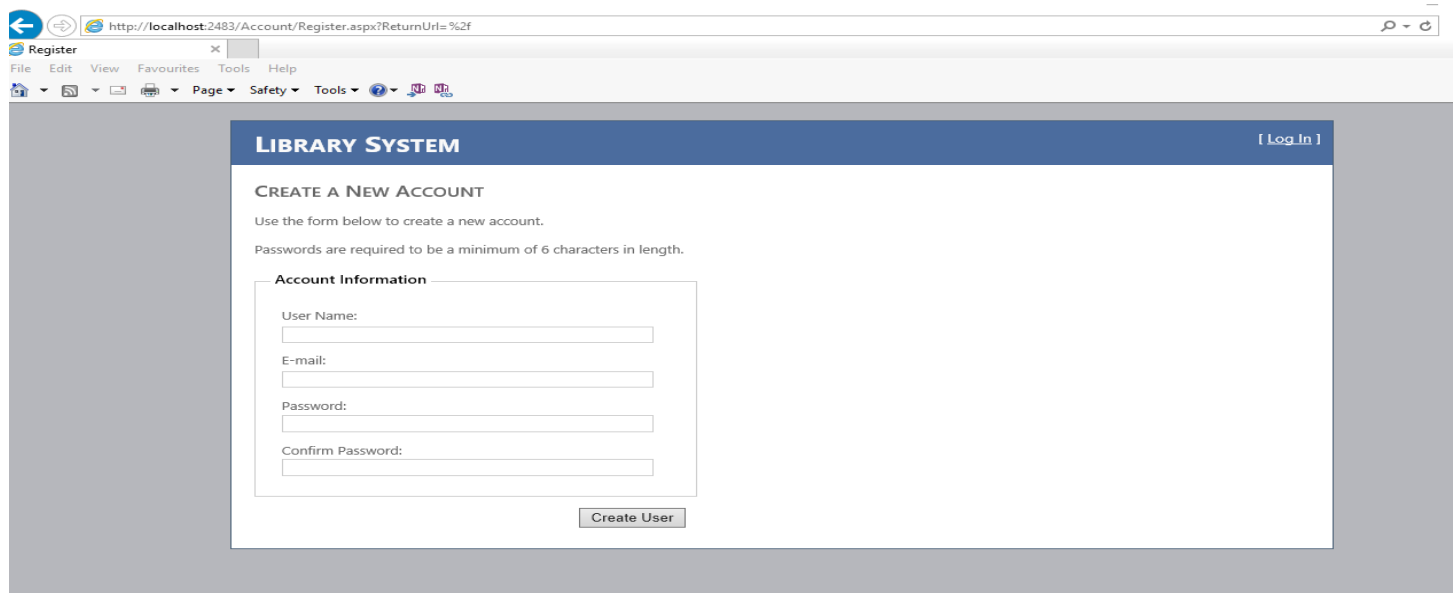
Username:

Password:

☐ Keep me logged in

Log In

Register User Page: simple step to register user then login.



**LIBRARY SYSTEM** [ Log In ]

### CREATE A NEW ACCOUNT

Use the form below to create a new account.  
Passwords are required to be a minimum of 6 characters in length.

**Account Information**

User Name:

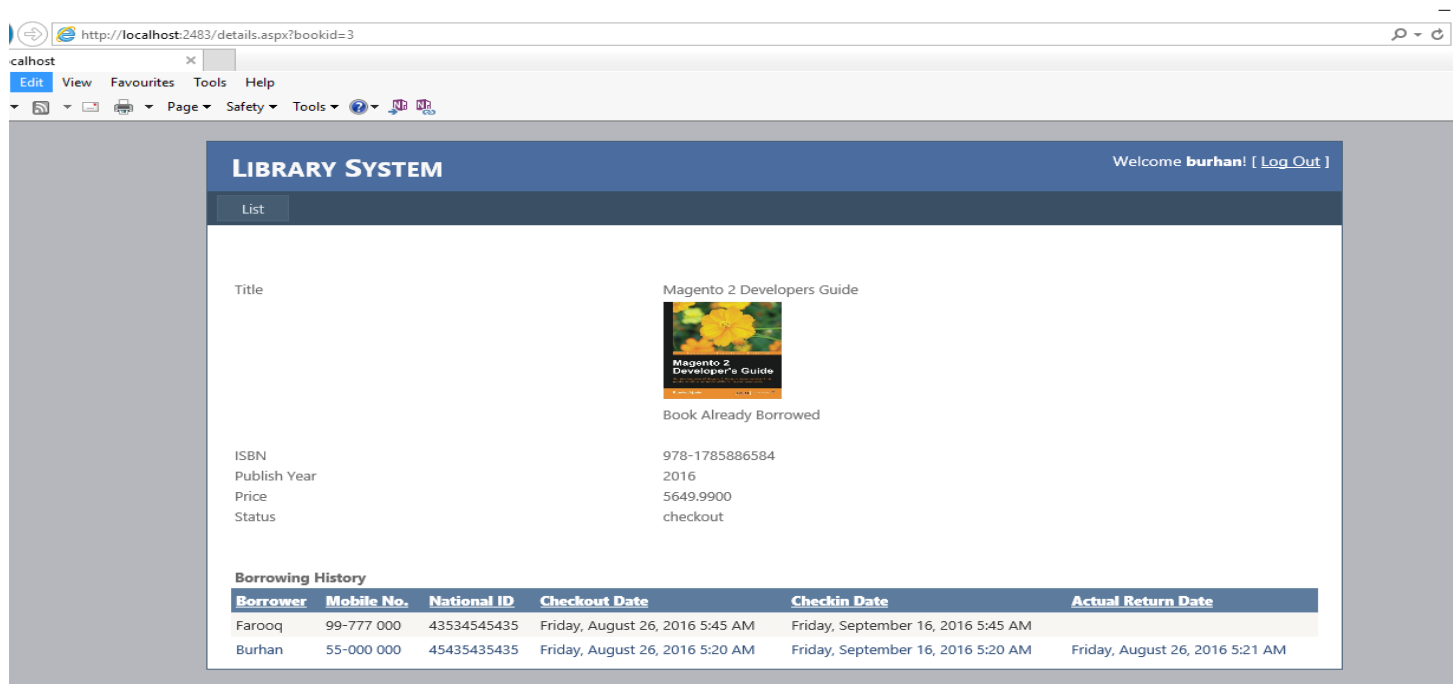
E-mail:

Password:

Confirm Password:

Details page functionality not implemented at all:


Have a look:



**LIBRARY SYSTEM** Welcome burhan! [ Log Out ]

List

Title: Magento 2 Developers Guide



Book Already Borrowed

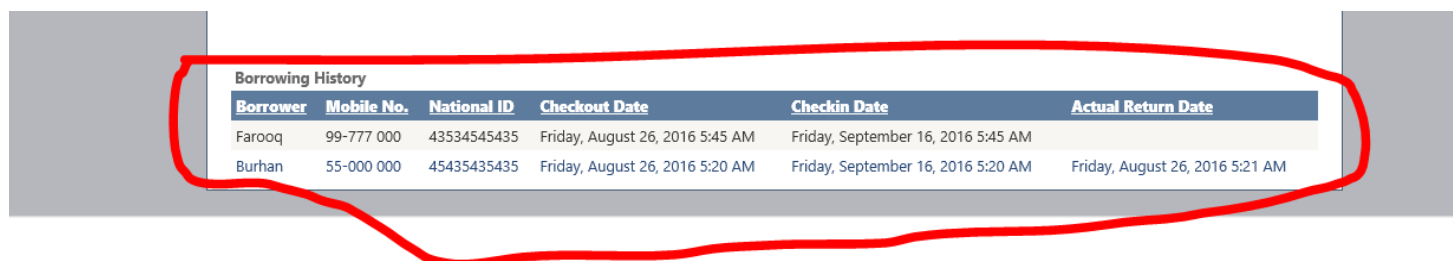
ISBN: 978-1785886584  
Publish Year: 2016  
Price: 5649.9900  
Status: checkout

**Borrowing History**

Borrower	Mobile No.	National ID	Checkout Date	Checkin Date	Actual Return Date
Farooq	99-777 000	43534545435	Friday, August 26, 2016 5:45 AM	Friday, September 16, 2016 5:45 AM	
Burhan	55-000 000	45435435435	Friday, August 26, 2016 5:20 AM	Friday, September 16, 2016 5:20 AM	Friday, August 26, 2016 5:21 AM

Check out history missing on check out page:

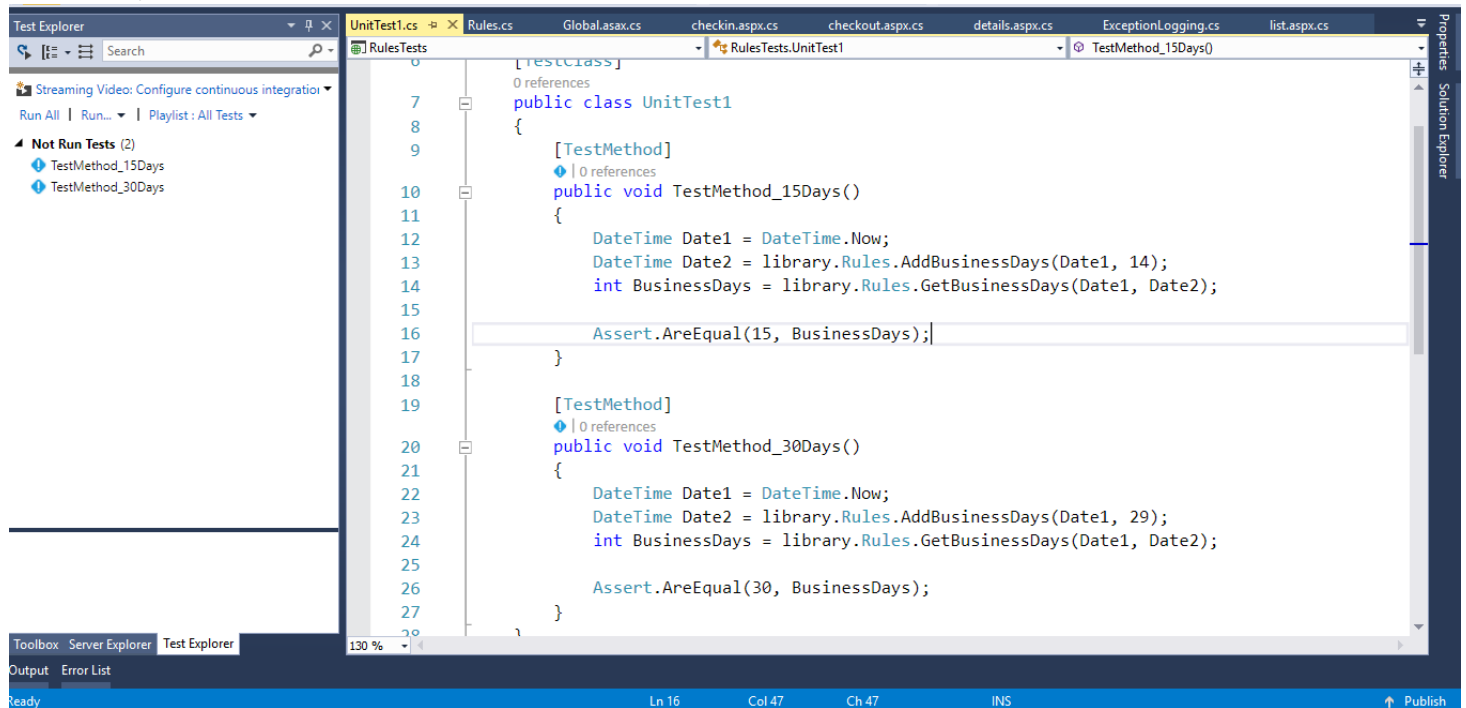
I have created a user control that driven by query string variable of [bookid], can be thrown at any place it will start showing book borrowing history with last check out on top of the list.



Borrowing History					
Borrower	Mobile No.	National ID	Checkout Date	Checkin Date	Actual Return Date
Farooq	99-777 000	43534545435	Friday, August 26, 2016 5:45 AM	Friday, September 16, 2016 5:45 AM	
Burhan	55-000 000	45435435435	Friday, August 26, 2016 5:20 AM	Friday, September 16, 2016 5:20 AM	Friday, August 26, 2016 5:21 AM

## Penalty calculation is incorrect on Check in page:

I have added TDD approach as unit test project to back by penalty calculation, have look at them:



The screenshot shows the Visual Studio IDE with a solution explorer on the left and a code editor on the right. The solution explorer shows a project named 'RulesTests' with two test methods: 'TestMethod\_15Days' and 'TestMethod\_30Days'. The code editor shows the implementation of these tests. The 'TestMethod\_15Days' test adds 14 business days to the current date and asserts that the result is 15 business days. The 'TestMethod\_30Days' test adds 29 business days to the current date and asserts that the result is 30 business days.

```
[TestClass]
0 references
public class UnitTest1
{
    [TestMethod]
    0 references
    public void TestMethod_15Days()
    {
        DateTime Date1 = DateTime.Now;
        DateTime Date2 = library.Rules.AddBusinessDays(Date1, 14);
        int BusinessDays = library.Rules.GetBusinessDays(Date1, Date2);

        Assert.AreEqual(15, BusinessDays);
    }

    [TestMethod]
    0 references
    public void TestMethod_30Days()
    {
        DateTime Date1 = DateTime.Now;
        DateTime Date2 = library.Rules.AddBusinessDays(Date1, 29);
        int BusinessDays = library.Rules.GetBusinessDays(Date1, Date2);

        Assert.AreEqual(30, BusinessDays);
    }
}
```

Furthermore the Business Days calculation I re-check on the website page:

<http://www.timeanddate.com/date/workdays.html>

From and including: **Friday, 26 August 2016**  
To, but **not** including **Friday, 16 September 2016**  
Excluding Weekends  
in Pakistan – Nationwide. [Change country / Change state](#)

21 calendar days – **6 days skipped:**  
Excluded 3 Saturdays  
Excluded 3 Sundays

**Result: 15 days**

◀ Make adjustment and calculate again

Start Again ▶

August 2016						
4 days included						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

September 2016						
11 days included						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

can be verified on the link above.

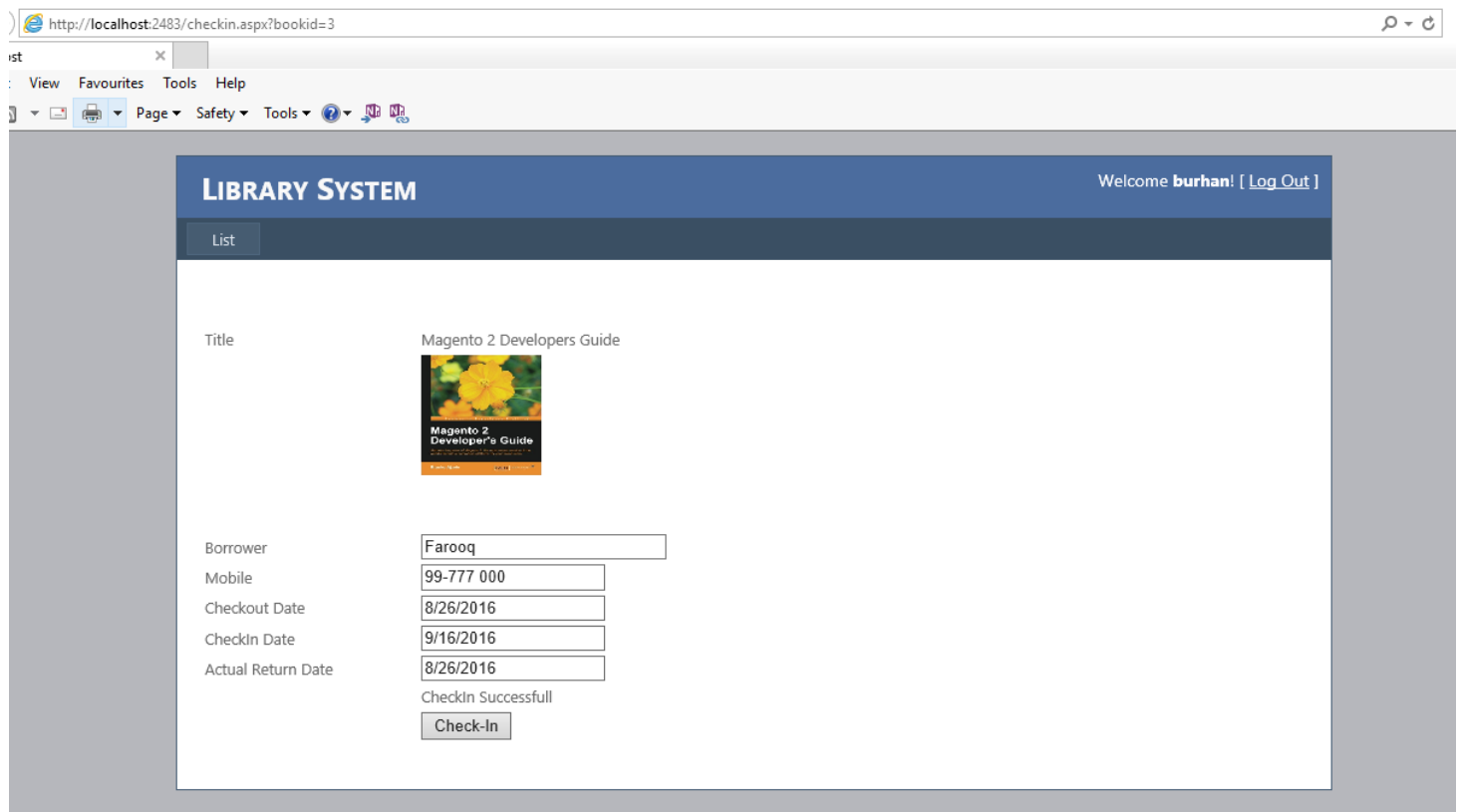
Inside code the logic is simple at the time of check-in the current date minus the checkout date gives business days. And if the days are more than 15 then for the over days we penalty 5Dhs each day. See below in code:

```

UnitTest1.cs Rules.cs Global.aspx.cs checkin.aspx.cs checkout.aspx.cs details.aspx.cs ExceptionLogging.cs list.aspx.cs Login.aspx.cs Login.aspx.designer.cs
library
23 borrowHistory objBorrowHistory = db.borrowHistories.OrderByDescending(u => u.id).FirstOrDefault(); // get
    the last borrower from history.
24 if (objBorrowHistory != null && book.status == "checkout")
25 {
26     this.txtCheckOutDate.Text = objBorrowHistory.checkout_date.ToShortDateString();
27     this.txtCheckInDate.Text = objBorrowHistory.checkin_date.ToShortDateString();
28     this.txtReturnDate.Text = DateTime.Now.ToShortDateString();
29     this.txtBorrower.Text = objBorrowHistory.borrower;
30     this.txtMobile.Text = objBorrowHistory.mobile;
31     int bDays = Rules.GetBusinessDays(objBorrowHistory.checkout_date, DateTime.Now);
32     if (bDays > 15)
33     {
34         this.lblMessage.Text = "Penalty of 5 Dhs will be charged for over days." + "\n" + "You need to pay: ?"
            + Math.Abs(bDays - 15) * 5 + " Dhs";
35     }
36 }
37 else
38 {
39     this.lblMessage.Text = "Book Information Not Found.";
40     this.btnCheckIn.Enabled = false;
41 }
42 }
43 }
44 }
45

```

Check in page does not save to database i.e. a book can be checked out but cannot be checked in: Its working now.



## Note:

For the book locking feature, I currently used database locking which can be further used in transactions inside stored procedure. I still believe that this functionality should be handled outside in some windows service as that will be scalable.

another approach will be to use singleton Queue with unique ISBN numbers for checkout books in this approach the data structure holds in-memory objects which are high on memory but much faster than dB latency.