

# **BookBiz Desktop Application Report**

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Desktop Development

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### Abstract

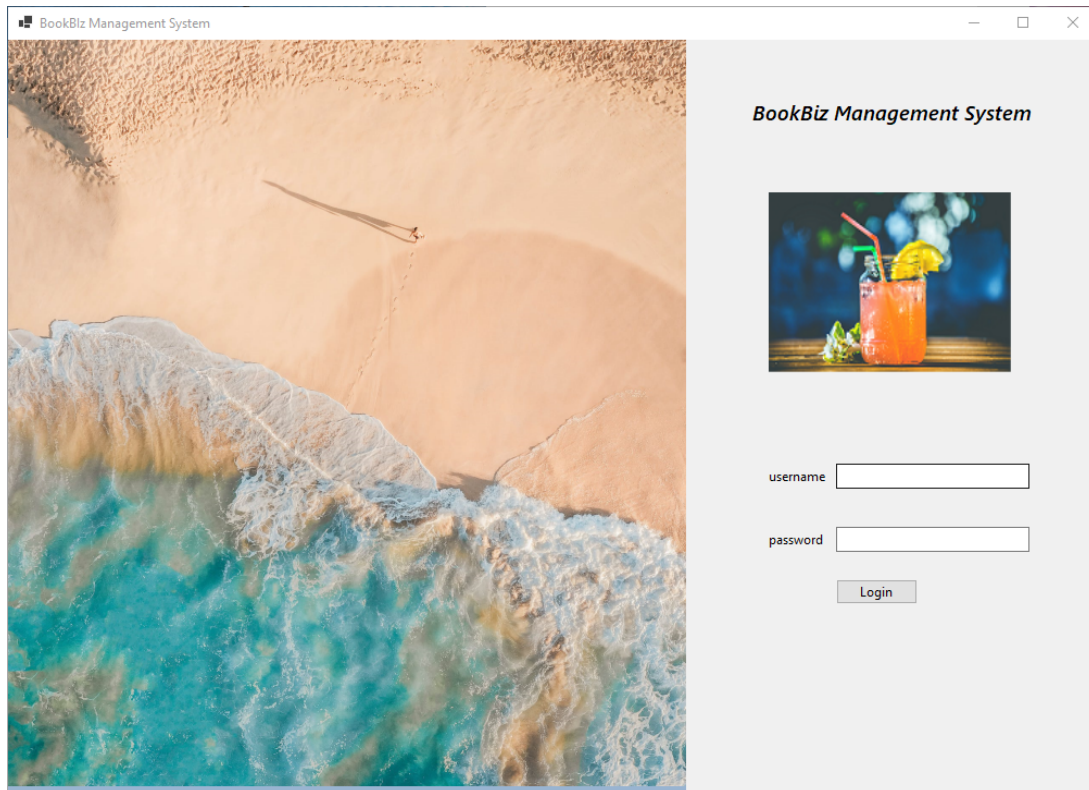
This project is the final project for the Desktop Development course. It is a simple book store management system and includes four user groups and different workflows and functions for them. Its user interface is designed by winForm and programming by C#. It basically implements add/search/list functions of user group/employee/client/book/order.

*Keywords:* book store, Management system, desktop application, c#

## Project Description

### 1. UI design

Login page: summer theme with beach and nice cocktail wine to bring a refresh and relax feeling to user



After Login with different username and password, UI will redirect to different page according to the user group which the user belongs to

#### 1.1 MIS manager

This page has two tabs for different management functions: user group and employee. Different buttons with different background colors to emphasize the functions.

## User Group Management

Employee Management

User Group Management

Employee Management

User Group Info

Group ID

Group Name

Description

Add

Clear

User List

User Group Name

Search

	GroupId	GroupName	Description
▶	0	MIS Manager	Add user information;Search/List user info...
	1	Sales Manager	Add client information;Search/List client in...
	2	Inventory Controller	Add/Search/list book information and rela...
	3	Order Clerks	Add/Cancel clients' orders;Search/List clie...

## Employee Management

Employee Management

User Group Management Employee Management

Employee Info

Employee ID  Username  Password

First Name  Last Name  User Group MIS Manager

Add Clear

Employee List

Search by ID  Search

	Eid	Username	Password	FirstName	LastName	GroupId
▶	1	marybrown	maryb	Mary	Brown	3
	2	jenniferbouchard	jenniferb	Jennifer	Bouchard	3
	3	henrybrown	henryb	Henry	Brown	0
	4	thomasmooore	thomasm	Thomas	Moore	1
	5	peterwang	peterw	Peter	Wang	2

### 1.2 Sales Manager

The main function of Sales manager is to manage client. So the main function is add/search/list function of client. Search criteria can be client ID, client name, phone number and fax number

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Client Management

Client Information

Client ID

Client Name

Bank Account

Phone Number

Fax Number

Email

Address

Postal Code

Credit Limit

Add

Clear

Client List

Search by

ID

Search

	ClientId	ClientName	Address	PostalCode	PhoneNumbe	FaxNumber	BankAccount	CreditLimit	Email
▶	1	Vanier college	821 Avenue ...	H4L 3X9	514-744-7500	514-123-1234	12345 001 12...	10000	info@vanier...
	2	Dawson Coll...	3040 Sherbr...	H3Z 1A4	514-112-1234	514-111-1345	12345 002 12...	10000	info@dawso...

### 1.3 Inventory controller

Main function of this user group is to add/search/list the book and related information. So beside the basic add/clear/search function, two new function: “Search Author” and “Add publisher” is added and will show different child forms once button is click

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**Book Information**

ISBN:  Title:  Category:

Publish Year:  Unit Price:  QOH:

Authors:  Please search author at first

Publisher:  Premier Press

**Book List**

Search by:  ISBN

	ISBN	Title	UnitPrice	QOH	Category	PublishYear	PublisherName
▶	9781119680451	Java all-in-one ...	15.8	1	Programming	2020	Hoboken
	9781840788730	Java in easy steps	19.95	3	Programming	2019	Leamington Spa
	9781119867180	Cybersecurity f...	18.99	3	CyberSecurity	2020	Hoboken
	9781681881751	The cyber attac...	19.95	3	CyberSecurity	2017	Weldon Owen
	9781840788778	JavaScript in ea...	21.95	4	Programming	2020	Leamington Spa

### 1.3.1 Search Author

In this form, you can search the author from the list, once the author is found, click the “Add To Book” to add the author to BookAuthor.dat file and also the author list on the book page. If the author is not found, a new author can be added to the Author.dat file and also the author list on the book page.

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Author Information

Author ID

First Name

Last Name

Email

Add

Author List

Search By

First Name

Search

	AuthorId	FirstName	LastName	Email
▶	1	Shelly	Moore	shelly.m
	2	Jody	Houser	jody.ho
	3	Shawn	Huang	shawn.h

Add To Book

### 1.3.2 Add Publisher page

If a publisher can't be found in the combobox of the publisher, a new publisher can be added to the publisher.dat file and also shown on the book page.



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	PublisherId	PublisherName
▶	1	Premier Press
	2	Wrox
	3	Murach
	4	Prentice Hall5
	5	Hoboken

Publisher ID  Publisher Name

### 1.4 Order Management

The operation of order clerk is add/cancel and search/list order. So here a new “Add Items” function is added.

Order management

Order Information

Order No.  Client Name  Order method

Bank Account  Phone Number  Fax Number

Email  Order Items

Order List

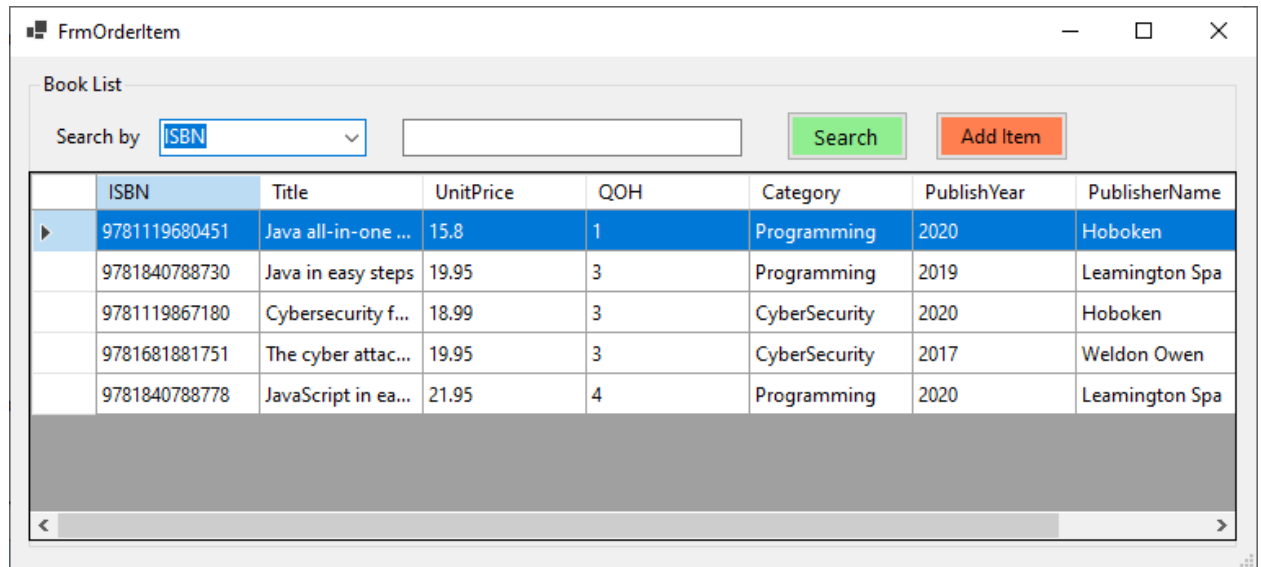
Search by

	OrderId	ClientName	OrderMethod	OrderItems
▶	PO00001	Vanier college	By Phone	The cyber attack survival manu...

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### 1.4.1 Add Items page

Books can be searched by ISBN, Title, author, and click “Add Item” to add items to the list. The multi-line of items can be chosen. Here I should add quantity for each item but I don't have time to finish it and it will be done later.



The screenshot shows a desktop application window titled "FrmOrderItem". Inside, there is a section labeled "Book List". At the top of this section, there is a "Search by" dropdown menu currently set to "ISBN", followed by a text input field. To the right of the input field are two buttons: a green "Search" button and an orange "Add Item" button. Below these controls is a table with the following data:

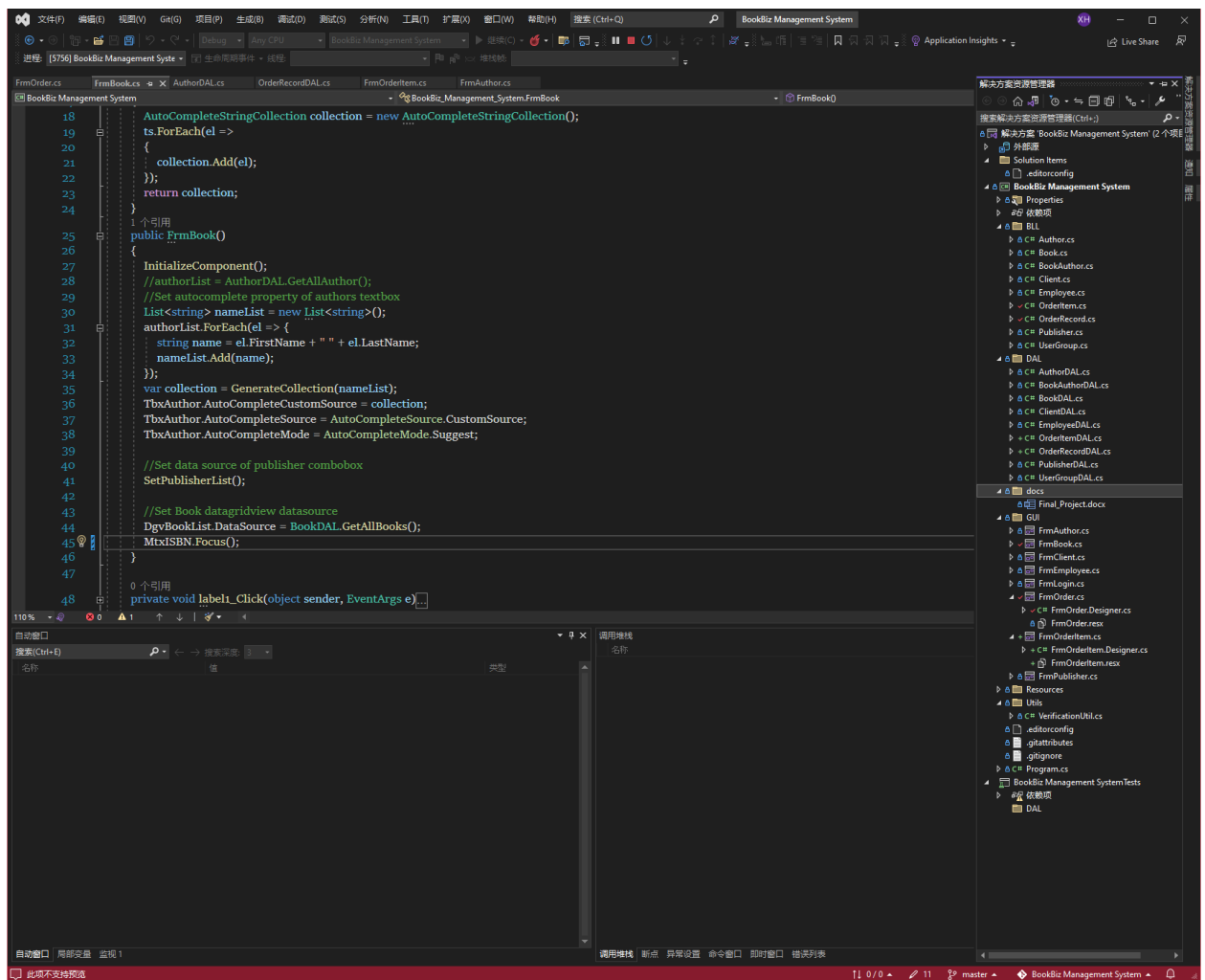
	ISBN	Title	UnitPrice	QOH	Category	PublishYear	PublisherName
▶	9781119680451	Java all-in-one ...	15.8	1	Programming	2020	Hoboken
	9781840788730	Java in easy steps	19.95	3	Programming	2019	Leamington Spa
	9781119867180	Cybersecurity f...	18.99	3	CyberSecurity	2020	Hoboken
	9781681881751	The cyber attac...	19.95	3	CyberSecurity	2017	Weldon Owen
	9781840788778	JavaScript in ea...	21.95	4	Programming	2020	Leamington Spa

Below the table is a greyed-out area, likely for selecting items and adding quantities. At the bottom of the window, there is a horizontal scrollbar.

## 2. Code design

The programming language is C# and software architecture is MVC. There are three layers created: BLL for entity class, DAL for the manipulation of data, and GUI for the business logic and user interface. There are 9 entity classes designed, including 7 data entities and 2 middle entities corresponding to many-to-many relationships. Each data entity have their corresponding DAL implementation class.

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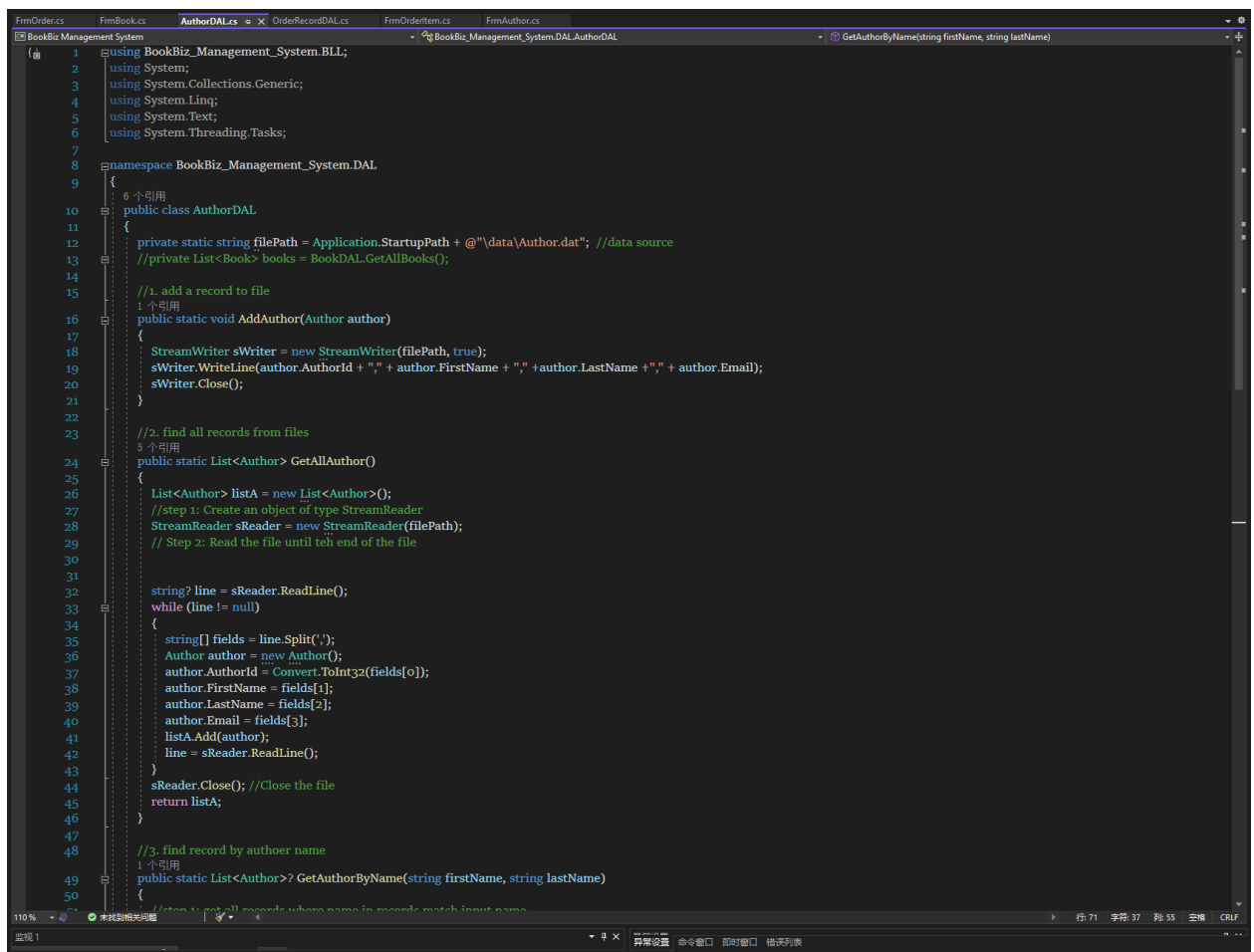


### 3. Implementation

#### 3.1 DAL class

In each DAL class, the basic Add, Get all, and get entity by different search criteria dynamically. It's all about the manipulation of data, any processing of data will be done in the GUI layer.

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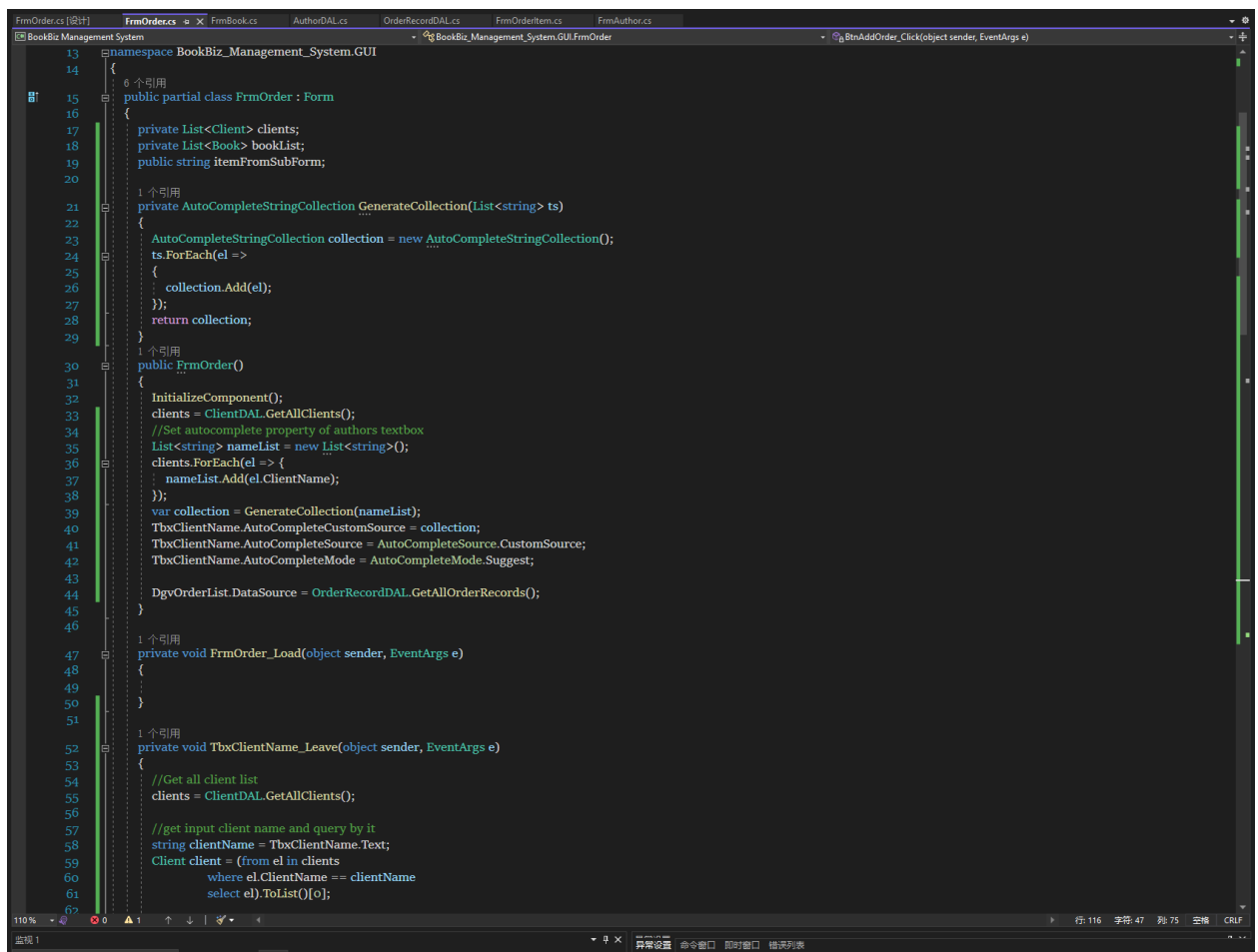


```
1 using BookBiz_Management_System.BLL;
2 using System;
3 using System.Collections.Generic;
4 using System.Linq;
5 using System.Text;
6 using System.Threading.Tasks;
7
8 namespace BookBiz_Management_System.DAL
9 {
10     6 个引用
11     public class AuthorDAL
12     {
13         private static string filePath = Application.StartupPath + @"data\Author.dat"; //data source
14         //private List<Book> books = BookDAL.GetAllBooks();
15
16         //1. add a record to file
17         1 个引用
18         public static void AddAuthor(Author author)
19         {
20             StreamWriter sWriter = new StreamWriter(filePath, true);
21             sWriter.WriteLine(author.AuthorId + "," + author.FirstName + "," + author.LastName + "," + author.Email);
22             sWriter.Close();
23         }
24
25         //2. find all records from files
26         5 个引用
27         public static List<Author> GetAllAuthor()
28         {
29             List<Author> listA = new List<Author>();
30             //step 1: Create an object of type StreamReader
31             StreamReader sReader = new StreamReader(filePath);
32             // Step 2: Read the file until teh end of the file
33
34             string? line = sReader.ReadLine();
35             while (line != null)
36             {
37                 string[] fields = line.Split(',');
38                 Author author = new Author();
39                 author.AuthorId = Convert.ToInt32(fields[0]);
40                 author.FirstName = fields[1];
41                 author.LastName = fields[2];
42                 author.Email = fields[3];
43                 listA.Add(author);
44                 line = sReader.ReadLine();
45             }
46             sReader.Close(); //Close the file
47             return listA;
48         }
49
50         //3. find record by authoer name
51         1 个引用
52         public static List<Author>? GetAuthorByName(string firstName, string lastName)
53         {
54             //step 1: get all records whose name is records match input name
55         }
56     }
57 }
```

### 3.2 GUI layer

All business logic, including add/search/list function and user interaction are included in this layer. Some forms involve data passing between parent/child forms. I use the instance of parent form as a parameter of the child form's constructor and the public properties of parent form to pass the data, it works fine. Due to the limit of time and skill, I didn't implement the dynamic append of components, such as new textbox, listview items. I will try to do that later.

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```
13 namespace BookBiz_Management_System.GUI
14 {
15     public partial class FrmOrder : Form
16     {
17         private List<Client> clients;
18         private List<Book> bookList;
19         public string itemFromSubForm;
20
21         1 个引用
22         private AutoCompleteStringCollection GenerateCollection(List<string> ts)
23         {
24             AutoCompleteStringCollection collection = new AutoCompleteStringCollection();
25             ts.ForEach(el =>
26             {
27                 collection.Add(el);
28             });
29             return collection;
30
31         1 个引用
32         public FrmOrder()
33         {
34             InitializeComponent();
35             clients = ClientDAL.GetAllClients();
36             //Set autocomplete property of authors textbox
37             List<string> nameList = new List<string>();
38             clients.ForEach(el => {
39                 nameList.Add(el.ClientName);
40             });
41             var collection = GenerateCollection(nameList);
42             TbxClientName.AutoCompleteCustomSource = collection;
43             TbxClientName.AutoCompleteSource = AutoCompleteSource.CustomSource;
44             TbxClientName.AutoCompleteMode = AutoCompleteMode.Suggest;
45
46             DgvOrderList.DataSource = OrderRecordDAL.GetAllOrderRecords();
47
48         1 个引用
49         private void FrmOrder_Load(object sender, EventArgs e)
50         {
51
52         1 个引用
53         private void TbxClientName_Leave(object sender, EventArgs e)
54         {
55             //Get all client list
56             clients = ClientDAL.GetAllClients();
57
58             //get input client name and query by it
59             string clientName = TbxClientName.Text;
60             Client client = (from el in clients
61                             where el.ClientName == clientName
62                             select el).ToList()[0];
63         }
64     }
65 }
```

## Conclusion

This project is very good for practice of desktop application development. The MVC architecture and file as data source are applied in this project. Verification, regex, collection class and passing data between parent/child forms is also used. All basic requirements are met except some modifications need to be done later due to the limit of time. Through this project, I am more familiar with C# syntax, function, and the operation of VS. And It's very lucky to have Alex as our teacher for this course. He explain C# and the project clearly teaches us the

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application development hand-by-hand. And he is very knowledgeable and warm-heart, answering almost every question, even including the job-hunting question with his experience.