

# Library Management System

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Online Library Management System is a system which maintains the information about the books present in the library, their authors, the members of library to whom books are issued, library staff and all. This is very difficult to organize manually. Maintenance of all this information manually is a very complex task. Owing to the advancement of technology, organization of an Online Library becomes much simple. The Online Library Management has been designed to computerize and automate the operations performed over the information about the members, book issues and returns and all other operations. This computerization of library helps in many instances of its maintenances. It reduces the workload of management as most of the manual work done is reduced.

The problem occurred before having computerized system includes:

- File lost -> When computerized system is not implemented file is always lost because of human environment. Sometimes due to some human error there may be a loss of records.
- File damaged -> When a computerized system is not there, file is always lost due to some accident like spilling of water by some member on file accidentally. Besides some natural disaster like floods or fires may also damage the files.
- Difficult to search record -> When there is no computerized system there is always a difficulty in searching of records if the records are large in number.
- Space consuming -> After the number of records become large the space for physical storage of file and records also increases if no computerized system is implemented.
- Cost consuming -> As there is no computerized system the to add each record paper will be needed which will increase the cost for the management of library.

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**CODE SNIPPETS ->**

asach.cpp - Code::Blocks 17.12

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoryBlocks Settings Help

global

Management

Start here

asach.cpp

```
17
18 class Book
19 {
20 public:
21
22     vector<string> title;
23     vector<string> author;
24     vector<string> genre;
25     vector<int> id;
26     vector<int> pages;
27     vector<float> price;
28     vector<int> quantity;
29
30 public:
31
32     Book()
33     {
34         title.push_back("Harry Potter and the Prisoner of Azkaban");
35         title.push_back("Design of Machine Elements");
36         title.push_back("A textbook of Thermodynamics");
37         title.push_back("Object Oriented Programming");
38         title.push_back("Raavan: Orphan of Ayayarka");
39
40         author.push_back("JK Rowling");
41         author.push_back("VS Bhandari");
42         author.push_back("Cengel and Boyle");
43         author.push_back("Balagurusamy");
44         author.push_back("Amish Tripathi");
45
46         genre.push_back("Fiction");
47         genre.push_back("Mechanical Engineering");
48         genre.push_back("Mechanical Engineering");
49     }
50 }
```

Logs & others

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File Line Message

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asach.cpp - Code::Blocks 17.12

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global

Management

Start here

asach.cpp

```
83
84 string adminName;
85 string adminPassword;
86
87 vector<string> admins;
88 vector<string> passwords;
89
90 string bookName;
91 string authorName;
92 string genreName;
93 int bookid;
94 int bookpages;
95 //int booklength;
96 float bookprice;
97
98 string bkname; // name of the book
99 string domain; // genre of the book
100 string writer; // name of the author
101
102 int inserting;
103
104
105 public:
106
107 int naddy;
108 int bookquantity;
109 //int inserting;
110
111 Librarian()
112 {
113     admins.push_back("Niranjan Dhokarika");
114     admins.push_back("Shrutish Gadakh");
115 }
```

Logs & others

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Libraries: adminDetails() : int

Management: Start here asach.cpp

```
124 int adminDetails(); // user login for the librarian
125 void AddBook(); // adding new books
126 void view(); // viewing all the books
127 void DeleteBook(); // deleting the book when issued
128 int issuebook(); // issue a book if it is there
129
130
131 };
132
133 int Librarian :: adminDetails()
134 {
135     int i;
136     int a = 0;
137     cin.ignore();
138
139     cout<<endl<<"Admin Name: ";
140     cin>>adminName;
141
142     cout<<endl<<"Password: ";
143     cin>>adminPassword;
144
145     for(i = 0; i<admins.size(); i++)
146     {
147         if((adminName.compare(admins[i])) == 0 && (adminPassword.compare(passwords[i])) == 0)
148         {
149             a = 1;
150             return(a);
151         }
152     }
153
154     return(0);
155 }
```

Logs & others

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asach.cpp - Code::Blocks 17.12

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Libraries: AddBook() : void

Management: Start here asach.cpp

```
158 void Librarian :: AddBook()
159 {
160     Book b1;
161     int i;
162     int number;
163     cout<<endl<<"Number of Books to be added: ";
164     cin>>number;
165     cout<<endl<<endl;
166
167     for(i=0; i<number; i++)
168     {
169         cout<<endl<<"Enter the Book Details to be added: "<<endl;
170         cout<<"Name: ";
171         cin>>bookName;
172         title.push_back(bookName);
173
174         cout<<endl<<"Author: ";
175         cin>>authorName;
176         author.push_back(authorName);
177
178         cout<<endl<<"Genre: ";
179         cin>>genreName;
180         genre.push_back(genreName);
181
182         cout<<endl<<"Book ID: ";
183         cin>>bookid;
184         id.push_back(bookid);
185
186         cout<<endl<<"Pages: ";
187         cin>>bookpages;
188         pages.push_back(bookpages);
189     }
190 }
```

Logs & others

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asach.cpp - Code::Blocks 17.12

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Libraries: issuebook() : int

Management X Start here X asach.cpp X

Projects Workspace

```
201
202
203 void Librarian::view()
204 {
205     int i;
206     cout<<"Available Books: "<<endl<<endl;
207     for(i=0;i<title.size();i++)
208     {
209         cout<<"Book "<<i<<": "<<endl;
210         cout<<title[i]<<", Author: "<<author[i]<<", Genre: "<<genre[i]<<", ID: "<<id[i]<<", Number of Pages: "<<pages[i]<<", Price: "<<price[i]<<"Rs ,";
211         cout<<"Total Number of Books "<<quantity[i]<<","<<endl;
212     }
213 }
214
215
216 int Librarian::issuebook()
217 {
218     int a,b;//inserting;
219     fflush(stdin);
220
221     cout<<endl<<"Genre of the Book: ";
222     cin>>domain;
223     cout<<endl<<"Name of the Author: ";
224     cin>>writer;
225     cout<<endl<<"Name of the Book: ";
226     cin>>bname;
227
228     cin.ignore();
229
230
231     for(int i = 0;i<title.size();i++)
232     {
```

Logs & others

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asach.cpp - Code::Blocks 17.12

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Libraries: issuebook() : int

Management X Start here X asach.cpp X

Projects Workspace

```
244
245 inserting = --noddy;
246 quantity[a] = inserting;
247
248 int i;
249 cout<<"Available Books: "<<endl<<endl;
250 for(i=0;i<title.size();i++)
251 {
252     cout<<"Book "<<i<<": "<<endl;
253     cout<<title[i]<<", Author: "<<author[i]<<", Genre: "<<genre[i]<<", ID: "<<id[i]<<", Number of Pages: "<<pages[i]<<", Price: "<<price[i]<<"Rs ,";
254     cout<<"Total Number of Books "<<quantity[i]<<","<<endl;
255 }
256
257
258 return(b);
259
260
261 void Librarian::DeleteBook()
262 {
263
264     vector<string>::iterator noddyl = find(genre.begin(), genre.end(), domain);
265     vector<string>::iterator noddyl2 = find(author.begin(), author.end(), writer);
266     vector<string>::iterator noddyl3 = find(title.begin(), title.end(), bname);
267
268     if (noddyl == genre.end() && noddyl2 == author.end() && noddyl3 == title.end())
269     {
270         cout << "That Book is not in there!" << endl;
271     }
272     else
273     {
274         genre.erase(noddyl);
275     }
```

Logs & others

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Libraries: issuabook().int

Management: Start here asach.cpp

```
317 cout<<"*****";
318 cout<<endl<<endl;
319 }
320
321 void Member::records(Librarian& is2)
322 {
323     int yr, month, day;
324     time_t t = time(NULL);
325     struct tm tm = *localtime(&t);
326     yr = tm.tm_year + 1900;
327     month = tm.tm_mon + 1;
328     day = tm.tm_mday;
329
330     cout<<"Details of the Borrower -> "<<endl;
331     cout<<"Name: "<<name;
332     cout<<endl<<"User ID: "<<userId;
333     cout<<endl<<"Stream/Branch: "<<stream;
334     cout<<endl<<"Division: "<<division;
335     cout<<endl<<"Year: "<<year;
336     cout<<endl<<"Genre of the book: "<<is2.domain;
337     cout<<endl<<"Name of the Book: "<<is2.bkname;
338     cout<<endl<<"Author of the Book: "<<is2.writer;
339     cout<<endl<<"Issue Date: "<<day<<"/"<<month<<"/"<<yr;
340
341     ofstream myFile;
342     myFile.open("Results_book.csv");
343
344     //for(int i=0;i<100;i++)
345     //{
346         myFile<<name<<","<<userId<<","<<stream<<","<<division<<","<<year<<","<<is2.domain<<","<<is2.bkname<<","<<is2.writer;
347     //}
348 }
```

Logs & others

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File Line Message

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asach.cpp - Code::Blocks 17.12

File Edit View Search Project Build Debug Fortran wxSmith Tools Tools+ Plugins DoryBlocks Settings Help

Libraries: issuabook().int

Management: Start here asach.cpp

```
357 cout<<endl<<endl;
358 cout<<"Name of the student: ";
359 cin>>nm;
360
361 if((nm.compare(name)) == 0)
362 {
363     cout<<"Details of the book issued: ";
364     cout<<endl<<"Genre of the book: "<<is2.domain;
365     cout<<endl<<"Name of the Book: "<<is2.bkname;
366     cout<<endl<<"Author of the Book: "<<is2.writer;
367
368     for(i = 0; i<is2.title.size(); i++)
369     {
370         if((is2.domain.compare(is2.genre[i])) == 0 && (is2.writer.compare(is2.author[i])) == 0 && (is2.bkname.compare(is2.title[i])) == 0)
371         {
372             c = i;
373         }
374     }
375
376     int q = is2.inserting;
377     is2.quantity[c] = ++q;
378
379     cout<<endl<<endl<<"Available Books: "<<endl<<endl;
380     for(i=0; i<is2.title.size(); i++)
381     {
382         cout<<"Book "<<i+1<<": "<<endl;
383         cout<<is2.title[i]<<", Author: "<<is2.author[i]<<", Genre: "<<is2.genre[i]<<", ID: "<<is2.id[i]<<", Number of Pages: "<<is2.pages[i]<<", Price: "<<
384         cout<<"Total Number of Books "<<is2.quantity[i]<<","<<endl;
385     }
386     cout<<endl;
387 }
```

Logs & others

Code::Blocks Search results Cocc Build log Build messages CppCheck/Ver++ CppCheck/Ver++ messages Cscope Debugger DoryBlocks Fortran info Closed files list Three

File Line Message

Search only inside selected text C/C++ Windows (CR+LF) WINDOWS-1252 Line 223, Col 40, Pos 5288 Insert Modified Read/Write default

```
475 if(choice == 1)
476 {
477     cout<<"Welcome Admin..Have a Good Day!!"<<endl<<endl;
478     //Libraryman l1;
479     BookIssued b1;
480     Member m2;
481
482     result = l1.adminDetails();
483     if(result == 1)
484     {
485         while(true)
486         {
487             cout<<endl<<endl<<"=====Menu===== "<<endl<<endl;
488             cout<<"1. Add New Book"<<endl<<"2. View Existing Book Records"<<endl<<"3. Issue a Book"<<endl<<"4. Student Records: "<<endl<<"5. Return Book
489             cout<<endl<<"Choice -> ";
490             cin>>option;
491             cout<<endl<<endl<<"===== "<<endl<<endl;
492
493             switch(option)
494             {
495                 case 1:
496                     l1.view();
497                     l1.AddBook();
498                     l2 = l1;
499                     break;
500
501                 case 2:
502                     l1.view();
503                     break;
504
505                 case 3:
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```

```
493 switch(option)
494 {
495     case 1:
496         l1.view();
497         l1.AddBook();
498         l2 = l1;
499         break;
500
501     case 2:
502         l1.view();
503         break;
504
505     case 3:
506
507         cout<<"Details of the book to be issued: ";
508         result2 = l1.issuebook();
509         if(result2 == 1)
510         {
511             cout<<endl;
512             //m2.getDetails();
513             //cout<<endl;
514             b1.l.issuebook(l1);
515             cout<<endl<<endl;
516             //l1.view();
517             cout<<endl<<endl;
518             //l1.DeleteBook();
519             cout<<endl<<endl;
520             //l1.view();
521
522         }
523     else
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998
999
1000
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OUTPUT SNIPPETS ->

```
"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOp\asachev"
Welcome...Library Management System
=====
1. Librarian
2. Member:
-> Choice: 1
=====
Welcome Admin..Have a Good Day!!
Admin Name: Niranjan_Dhokarkar
Password: noddy0903

-----Menu-----
1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book
Choice -> 1

=====
Available Books:
Book 1:
Harry Potter and the Prisoner of Azkaban , Author: JK Rowling , Genre: Fiction , ID: 1 , Number of Pages: 100 , Price: 1000Rs ,Total Number of Books 10.
Book 2:
Design of Machine Elements , Author: VB Bhandari , Genre: Mechanical Engineering , ID: 2 , Number of Pages: 200 , Price: 1000Rs ,Total Number of Books 20.
Book 3:
A textbook of Thermodynamics , Author: Cengel and Boyle , Genre: Mechanical Engineering , ID: 3 , Number of Pages: 300 , Price: 1000Rs ,Total Number of Books 30.
Book 4:
Object Oriented Programming , Author: Balaguruswamy , Genre: Computer Sciences , ID: 4 , Number of Pages: 400 , Price: 1000Rs ,Total Number of Books 40.
Book 5:
Raavan: Orphan of Aryavarta , Author: Amish Tripathi , Genre: Fiction , ID: 5 , Number of Pages: 500 , Price: 1000Rs ,Total Number of Books 50.
Number of Books to be added: 1
```

```
"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOp\asachev"
Enter the Book Details to be added:
Name: noddy
Author: niranjan
Genre: fiction
Book ID: 12
Pages: 234
Price: 450
Quantity: 5

-----Menu-----
1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book
Choice -> 2

=====
Available Books:
Book 1:
Harry Potter and the Prisoner of Azkaban , Author: JK Rowling , Genre: Fiction , ID: 1 , Number of Pages: 100 , Price: 1000Rs ,Total Number of Books 10.
Book 2:
Design of Machine Elements , Author: VB Bhandari , Genre: Mechanical Engineering , ID: 2 , Number of Pages: 200 , Price: 1000Rs ,Total Number of Books 20.
Book 3:
A textbook of Thermodynamics , Author: Cengel and Boyle , Genre: Mechanical Engineering , ID: 3 , Number of Pages: 300 , Price: 1000Rs ,Total Number of Books 30.
Book 4:
Object Oriented Programming , Author: Balaguruswamy , Genre: Computer Sciences , ID: 4 , Number of Pages: 400 , Price: 1000Rs ,Total Number of Books 40.
Book 5:
Raavan: Orphan of Aryavarta , Author: Amish Tripathi , Genre: Fiction , ID: 5 , Number of Pages: 500 , Price: 1000Rs ,Total Number of Books 50.
Book 6:
noddy , Author: niranjan , Genre: fiction , ID: 12 , Number of Pages: 234 , Price: 450Rs ,Total Number of Books 5.
```

"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOP\asach.exe"

-----Menu-----

1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book

Choice -> 3

-----

Details of the book to be issued:

Genre of the Book: fiction

Name of the Author: niranjan

Name of the Book: noddy

Book Found.....!!!!!!

Available Books:

Book 1:

Harry Potter and the Prisoner of Azkaban , Author: JK Rowling , Genre: Fiction , ID: 1 , Number of Pages: 100 , Price: 1000Rs ,Total Number of Books 10.

Book 2:

Design of Machine Elements , Author: VB Bhandari , Genre: Mechanical Engineering , ID: 2 , Number of Pages: 200 , Price: 1000Rs ,Total Number of Books 20.

Book 3:

A textbook of Thermodynamics , Author: Cengel and Boyle , Genre: Mechanical Engineering , ID: 3 , Number of Pages: 300 , Price: 1000Rs ,Total Number of Books 30.

Book 4:

Object Oriented Programming , Author: Balagurusamy , Genre: Computer Sciences , ID: 4 , Number of Pages: 400 , Price: 1000Rs ,Total Number of Books 40.

Book 5:

Raavan: Orphan of Aryavarta , Author: Amish Tripathi , Genre: Fiction , ID: 5 , Number of Pages: 500 , Price: 1000Rs ,Total Number of Books 50.

Book 6:

noddy , Author: niranjan , Genre: fiction , ID: 12 , Number of Pages: 234 , Price: 450Rs ,Total Number of Books 4.

The details are as follows:

Genre of the book: fiction

Name of the Book: noddy

Author of the Book: niranjan

"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOP\asach.exe"

-----Menu-----

1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book

Choice -> 4

-----

Name: Shrutish

User ID: 1191008612

Stream: Mechanical

Division: a

Year: 2

-----

Details of the Borrower ->

Name: Shrutish

User ID: 1191008612

Stream/Branch: Mechanical

Division: a

Year: 2

Genre of the book: fiction

Name of the Book: noddy

Author of the Book: niranjan

Issue Date: 30/5/2021

-----Menu-----

1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book

Choice -> 5

-----

Name of the student: Shrutish



```
"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOp\asache.exe"
Choice -> 4

=====
Name: Niranjan
User ID: 11
Stream: mech
Division: a
Year: 2

-----
Details of the Borrower ->
Name: Niranjan
User ID: 11
Stream/Branch: mech
Division: a
Year: 2
Genre of the book: fiction
Name of the Book: noddy
Author of the Book: niranjan
Issue Date: 30/5/2021

=====Menu=====
1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book

Choice -> 5

=====
Name of the student: Niranjan
Details of the book issued:
Genre of the book: fiction
Name of the Book: noddy
Author of the Book: niranjan

Available Books:
Book 1:
Harry Potter and the Prisoner of Azkaban , Author: JK Rowling , Genre: Fiction , ID: 1 , Number of Pages: 100 , Price: 1000Rs ,Total Number of Books 10.
```

```
"E:\MASE AND AE LABS\Niranjan Dhokarkar 65 Submissions\OOPS LAB SUBMISSIONS\Final Course project OOp\asache.exe"

=====Menu=====
1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
5. Return Book

Choice -> 5

=====
Name of the student: Niranjan
Details of the book issued:
Genre of the book: fiction
Name of the Book: noddy
Author of the Book: niranjan

Available Books:
Book 1:
Harry Potter and the Prisoner of Azkaban , Author: JK Rowling , Genre: Fiction , ID: 1 , Number of Pages: 100 , Price: 1000Rs ,Total Number of Books 10.
Book 2:
Design of Machine Elements , Author: VB Bhandari , Genre: Mechanical Engineering , ID: 2 , Number of Pages: 200 , Price: 1000Rs ,Total Number of Books 20.
Book 3:
A Textbook of Thermodynamics , Author: Cengel and Boyle , Genre: Mechanical Engineering , ID: 3 , Number of Pages: 300 , Price: 1000Rs ,Total Number of Books 30.
Book 4:
Object Oriented Programming , Author: Balagurusamy , Genre: Computer Sciences , ID: 4 , Number of Pages: 400 , Price: 1000Rs ,Total Number of Books 40.
Book 5:
Raavan: Orphan of Aryavarta , Author: Amish Tripathi , Genre: Fiction , ID: 5 , Number of Pages: 500 , Price: 1000Rs ,Total Number of Books 50.
Book 6:
noddy , Author: niranjan , Genre: fiction , ID: 12 , Number of Pages: 234 , Price: 450Rs ,Total Number of Books 4.

=====Menu=====
1. Add New Book
2. View Existing Book Records
3. Issue a Book
4. Student Records:
```

## CLASS DIAGRAM ->

The class diagram is the main building block of object-oriented modelling. It is used for general conceptual modelling of the structure of the application, and for detailed modelling, translating the models into programming code. Class diagrams can also be used for data modelling.

