International Islamic University
Department of computer science

Assignment No. 3

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book.h

```
#pragma once
#include<iostream>
#include<string>
#include "student.h"
using namespace std;
class book
{
	int bookid, bid;
	string title;
	string status;
public:
	book()
	{
		bookid = 0;
		title = "";
		status = "";
		bid = 0;
	}
	book(int b, string t, string s, int i)
	{
		bookid = b;
		title = t;
		status = s;
		bid = i;
	}
	void setstatus(string s)
	{
		status = s;
	}
	int getbid()
	{
		return bid;
	}
	string gettitle()
	{
		return title;
```

```
	}
	string getstatus()
	{
		return status;
	}
	void get()
	{
		cout << "BS students can only issue 1 book but MS students can issue maximum 3
books" << endl;
		cout << "enter the book id: ";
		cin >> bookid;
		cout << "enter the title of the book: " ;
		getline(cin, title, '.');
		cout << "enter the status(reserved, issued, available) of book: ";
		getline(cin, status, '.');
		cout << "enter id of the person who issued a book: ";
		cin >> bid;
	}
	void display()
	{
		cout << "book id: " << bookid<<endl
			<< "title of the book: " << title << endl
			<< "status of your book: " << status << endl
			<< "Id of the person who issued a book: " << bid << endl;
	}
};
```

Student.h

```
#pragma once
#include<iostream>
#include<string>
#include "book.h"
using namespace std;
class student
{
	string name, program;
	int sid;
public:
	student()
	{
		name = "";
		program = "";
		sid = 0;
	}
	student(char n, char p, int i)
	{
		name = n;
		program = p;
		sid = i;
	}
	string getname()
	{
		return name;
	}
	string getprogram()
	{
		return program;
	}
	int getsid()
```

```
	{
		return sid;
	}
	void get()
	{
		cout << "enter your name: ";
		getline(cin, name, '.');
		cout << "enter the id: ";
		cin >> sid;
		cout << "enter your program(BS & MS): ";
		getline(cin, program, '.');
	}
};
```

List.h

```
#pragma once
#include<iostream>
#include<string>
#include "book.h"
#include "student.h"
using namespace std;
class list
{
	book b[25];
	student s[15];
public:
	void read()
	{
		for (int i = 1; i <= 25; i++)
			b[i].get();
		for (int i = 1; i <= 15; i++)
			s[i].get();
	}
	void show()
	{
		for (int i = 1; i <= 25; i++)
		{
			b[i].display();
		}
	}
	void issue()
	{
		int c=0,choice;
		string  t;
		cout << "enter the name of book: ";
		getline(cin, t, '.');
		cout << "1: to reserve book" << endl
			<< "2: to issue book" << endl
			<< "enter your choice" << endl;
			cin >> choice;
			for (int i = 1; i <= 25; i++)
			{
				if (t == b[i].gettitle())
				{
					if (b[i].getstatus() == ("available"))
					{
						if (choice == 1)
						{
							cout << "book reserved" << endl;
```

```
                                        b[i].setstatus("reserved");
                                }
                                else if (choice == 2)
                                {
                                        b[i].setstatus("issued");
                                        cout << "book issued" << endl;
                                }
                                c = 1;
                        }
                }
        }
        if (c == 0)
                cout << "book not found so enter valid book name" << endl;
}
void msbs()
{
        int count = 0;
        int t;
        cout << "enter your id " << endl;
        cin >> t;
                for (int j = 1; j <= 25; j++)
                {
                        if (t == b[j].getbid())
                                count++;
                }
                cout << t << " : this id has issued " << count << endl;
                for (int i = 1; i <= 25; i++)
                {
                        if (t == b[i].getbid())
                        {
                                if (s[i].getprogram() == "BS")
                                {
                                        if (count > 1)
                                                cout << "you have already issued your 1 book"
<< endl;
                                        else if (count == 0)
                                        {
                                                cout << "you can issue your 1 book" << endl;
                                                issue();
                                        }
                                }
                                else if (s[i].getprogram() == "MS")
                                {
                                        if (count > 3)
                                                cout << "you can issue maximum 3 book and you
already have issued them" << endl;
                                        else if (count == 2)
                                        {
                                                cout << "you can issue 1 more book" << endl;
                                                issue();
                                        }
                                        else if (count == 1)
                                        {
                                                cout << "you can issue 2 more book" << endl;
                                                issue();
                                        }
                                        else if (count == 0)
                                        {
                                                cout << "you can issue maximum 3 books" <<
endl;
```

```
                                        issue();
                                    }
                                }
                            }
                        }
    }
    void returnbook()
    {
            int c=0;
            string r;
            cout << "enter the name of book to return: ";
            cin >> r;
            for (int i = 1; i <= 25; i++)
            {
                    if (r == b[i].gettitle())
                    {
                            b[i].setstatus("available");
                            cout << "book received" << endl;
                            c = 1;
                    }
            }
            if(c==0)
                    cout << "book not available in record or enter correct name" << endl;
    }
    void find()
    {
            int choice,id,c1=0,c2=0;
            string n;
            cout << "1: find book issued by person by id" << endl
                    << "2: find book by title" << endl;
            cin >> choice;
            if (choice == 1)
            {
                    cout << "enter person id to find book: ";
                    cin >> id;
                    for (int i = 1; i <= 25; i++)
                    {
                            if (id == b[i].getbid())
                                    cout << "/tbook: " << b[i].gettitle();
                            c1 = 1;
                    }
                    if(c1==0)
                            cout << "student not availble or enter valid student " << endl;
            }
            else if (choice == 2)
            {
                    cout << "enter name of the book to search: ";
                    cin >> n;
                    for (int i = 1; i <= 25; i++)
                    {
                            if (n == b[i].gettitle())
                            {
                                    cout << "book available" << endl;
                                    cout << "status: " << b[i].getstatus() << endl;
                                    c2=1;
                            }
                    }
                    if (c2 == 0)
                            cout << "book not availble or enter valid book title " << endl;
            }
```

```
            else
                  cout << "enter valid choice to find" << endl;
      }
};
```

Test.cpp

```
#include "list.h"
#include<iostream>
#include<string>
using namespace std;
int main()
{
      list l;
      int c;
      cout << "1: Add" << endl
            << "\t- Add books record" << endl
            << "\t- Add students record" << endl
            << "2: Issue a book" << endl
            << "3: Return a book" << endl
            << "4: Find" << endl
            << "\t- Take ID of a person and display book titles that are issued to him" <<
endl
            << "\t- Find book by title" << endl
            << "5: Display information of all the reserved books" << endl
            << "6: Exit" << endl;
      do
      {
            cout << "enter your choice: ";
            cin >> c;
            switch (c)
            {
            case 1:
            {
                  l.read();
                  break;
            }
            case 2:
            {
                  l.msbs();
                  break;
            }
            case 3:
            {
                  l.returnbook();
                  break;
            }
            case 4:
            {
                  l.find();
                  break;
            }
            case 5:
            {
                  l.show();
                  break;
            }
            default:cout << "enter valid choice" << endl;
            }
```

```
	} while (c != 6);
	system("pause");
	return 0;
}
```

Results: