OOP GROUP ASSIGNMENT # 04

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=====================================================
             LIBRARY MANAGEMENT SYSTEM
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      Credit Goes To : Sir Malik Junaid Aziz


Grateful for Sir Junaid Aziz's exceptional guidance and teaching in the OOP
(Object-Oriented Programming) course in C++. His expertise has been invaluable to our learning journey.

     ************** Developer Team **************

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University Name: University of Central Punjab
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Instructor Name:

Sir Junaid Aziz

Group Members:

Rameez Ali (L1F22BSCS0374)

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Program Functionality

Classes in OOP:

 - Utilized classes Encapsulated data and behavior for code modularity and reusability.

Access Specifiers:

 - Managed encapsulation by specifying public, private, or protected members.

Constructors:

 - Default constructor for object creation without specific parameters.

 - Parametrized constructor for customized object initialization.

File Handling Integration:

 - Encapsulated reading and writing to files for modularity and reusability and also for backup of data.

User Interface:

 - Menu-based program for library management.

 - Options for issuing and depositing books.

 - **Administrator menu** for adding, removing, modifying, and deleting student and book data.

Error Handling:

 - Proper handling if student or book is not found or any Invalid Input

Exit Feature:-

Program ends when the user chooses to exit.

Below, I have attached some screenshots of output. Input Format should be followed for testing.

```
================================================================
                        MAIN MENU
================================================================
1. Book Issue
2. Book Deposit
3. Administrator Menu
4. Exit
Please Select your Option (1-4): 1
Enter admission Number: 001
Enter Book Number: b002
============================================================
Student Id: 001
Book Id: b002
Book Name: C++
Book Author:   Bjarne Stroustrup
============================================================
Book Issued!
```

```
================================================================
                        MAIN MENU
================================================================
1.  Book Issue
2.  Book Deposit
3.  Administrator Menu
4.  Exit
Please Select your Option (1-4): 2
Enter admission Number: 001
Enter Book Number: b002
Book returned in days: 15
Fine: 50
```

```
=================================================
                Administrator Menu
=================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice _
```

```
=================================================
                Administrator Menu
=================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 1
Enter Student ID: 004
Enter Student Name: Malik Hashir
Enter Your University: UCP
Do you want to add more (y/n) : N
 Student Added Successfully
Press any key to continue . . .
```

After, This New Student Will be Stored in File

Display All Students (Option 2)

```
==================================================
Id    Student Name    University    Book Issued
==================================================
001     Rameez Malik     UCP     1
009     Numan Alvi       UCP     0
002     Saad Sultan      UCP     0
Press any key to continue . . . _
```

Searching Student

```
==================================================
            Administrator Menu
==================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 3
Enter Student Id: 001
===================================
Student Id: 001
Name is: Rameez Malik
University:  UCP
===================================
Press any key to continue . . . _
```
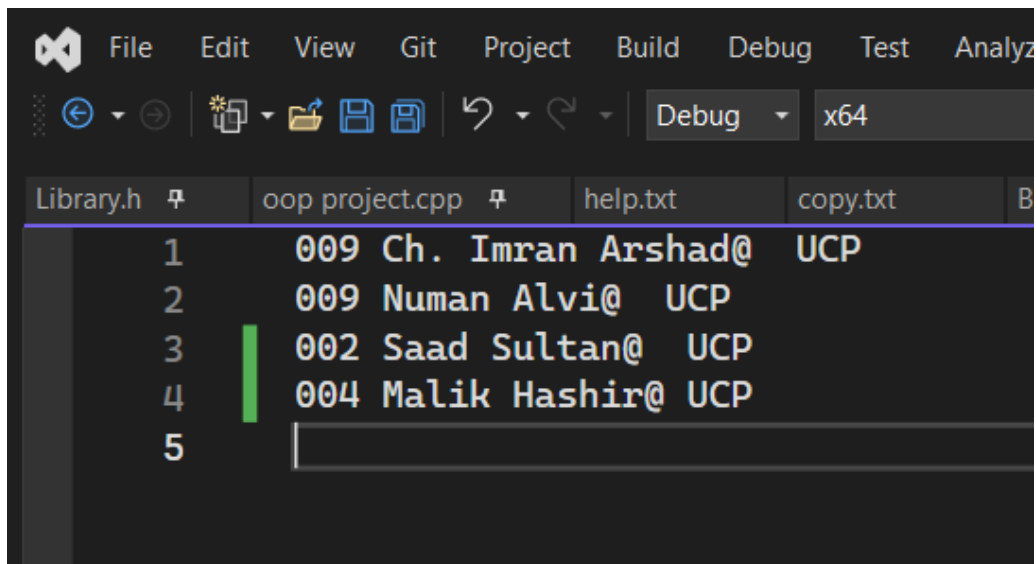
After Modifying Student Record it will update file


```
C:\Users\Rameez Malik\source\repos\Project138\x64\Debug\OOP Project.exe

==================================================
              Administrator Menu
==================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 4
Enter Student Id: 001
Enter New Name: Ch. Imran Arshad
Enter New Id: 009
Student Data Modified!
Press any key to continue . . .
```
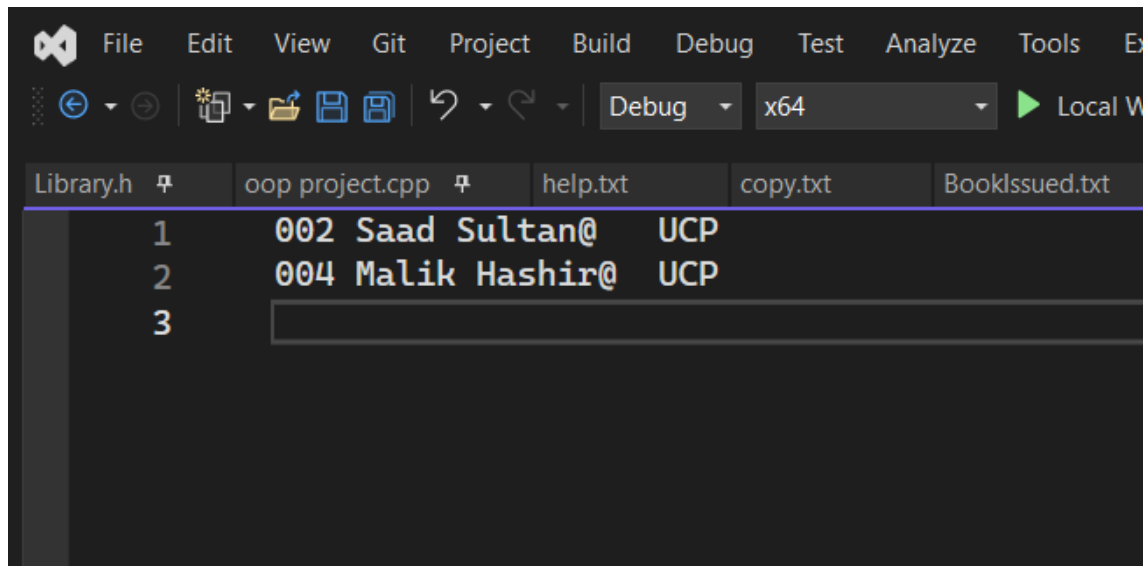
Updated File


```
009 Ch. Imran Arshad@  UCP
009 Numan Alvi@  UCP
002 Saad Sultan@  UCP
004 Malik Hashir@ UCP
```

Delete Student Data

C:\Users\Rameez Malik\source\repos\Project138\x64\Debug\OOP Project.exe

```
=====================================================
                Administrator Menu
=====================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 5
Enter Student Id: 009
Student Data Removed!
Press any key to continue . . .
```

Student have removed from file!


```
File   Edit   View   Git   Project   Build   Debug   Test   Analyze   Tools   Ex

Debug    x64            Local W

Library.h    oop project.cpp    help.txt    copy.txt    BookIssued.txt

     1      002 Saad Sultan@    UCP
     2      004 Malik Hashir@   UCP
     3
```

```
=================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 8
Enter Book Number: b003

=============================================
Book Id              Book Name              Author
=============================================

b003     Midnight                 SalmanRushdie
```

Same For Library Books Management

```
=================================================
Book Id             Book Name              Author
=================================================
b001     Mine        R.K. Narayan
b002     C++        Bjarne Stroustrup
b003     Midnight       SalmanRushdie
b004     Brave       AldousHuxley
b005     TGreat        F.ScottFitzgerald
b006     ToKill        HarperLee
b007     1984        GeorgeOrwell
b008     Hobbit       J.R.R.Tolkien
b009     Solitude       GabrielGarcφaMßrquez
b010     Catcher       J.D.Salinger
Press any key to continue . . . _
```

Finally, User can Leave administrator portal by choosing option 11

C:\Users\Rameez Malik\source\repos\Project138\x64\Debug\OOP Project.exe

```
================================================
              Administrator Menu
================================================
1. Create Student Record
2. Display All Records
3. Display Specific Student Record
4. Modify Student Record
5. Delete Student Record
6. Create Book
7. Display All Books
8. Display Specific Book
9. Modify Book
10. Delete Book
11. Back to Main Menu
Enter Your Choice 11
```

I have used system("CLS") so after clearing screen

C:\Users\Rameez Malik\source\repos\Project138\x64\Debug\OOP Project.exe

```
================================================
                 MAIN MENU
================================================
1. Book Issue
2. Book Deposit
3. Administrator Menu
4. Exit
Please Select your Option (1-4): _
```

```
========================================================
                    MAIN MENU
========================================================
1. Book Issue
2. Book Deposit
3. Administrator Menu
4. Exit
Please Select your Option (1-4): 4
========================================================
      Special Thanks to Sir Junaid Aziz
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```