```
//library administrator

// Importing required classes
import java.util.Scanner;

// CLass
public class books {

        // Class data members
        book theBooks[] = new book[50];
        public static int count;

        Scanner input = new Scanner(System.in);

        // Method 1
        // To compare books
        public int compareBookObjects(book b1, book b2)
        {

                // If book name matches
                if (b1.bookName.equalsIgnoreCase(b2.bookName)) {

                        // Printing book exists
                        System.out.println(
                                "Book of this Name Already Exists.");
                        return 0;
                }

                // if book serial matches
                if (b1.sNo == b2.sNo) {

                        // Print book exists
                        System.out.println(
                                "Book of this Serial No Already Exists.");

                        return 0;
                }
                return 1;
        }

        // Method 2
        // To add book
        public void addBook(book b)
        {

                for (int i = 0; i < count; i++) {

                        if (this.compareBookObjects(b, this.theBooks[i])
                                == 0)
                                return;
                }

                if (count < 50) {

                        theBooks[count] = b;
                        count++;
                }
                else {

                        System.out.println(
                                "No Space to Add More Books.");
                }
        }
```

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	// Method 3
	// To search book by serial number
	public void searchBySno()
	{

		// Display message
		System.out.println(
			"\t\t\t\tSEARCH BY SERIAL NUMBER\n");

		// Class data members
		int sNo;
		System.out.println("Enter Serial No of Book:");
		sNo = input.nextInt();

		int flag = 0;
		System.out.println(
			"S.No\t\tName\t\tAuthor\t\tAvailable Qty\t\tTotal Qty");

		for (int i = 0; i < count; i++) {
			if (sNo == theBooks[i].sNo) {
				System.out.println(
					theBooks[i].sNo + "\t\t"
					+ theBooks[i].bookName + "\t\t"
					+ theBooks[i].authorName + "\t\t"
					+ theBooks[i].bookQtyCopy + "\t\t"
					+ theBooks[i].bookQty);
				flag++;
				return;
			}
		}
		if (flag == 0)
			System.out.println("No Book for Serial No "
											+ sNo + " Found.");
	}

	// Method 4
	// To search author by name
	public void searchByAuthorName()
	{

		// Display message
		System.out.println(
			"\t\t\t\tSEARCH BY AUTHOR'S NAME");

		input.nextLine();

		System.out.println("Enter Author Name:");
		String authorName = input.nextLine();

		int flag = 0;

		System.out.println(
			"S.No\t\tName\t\tAuthor\t\tAvailable Qty\t\tTotal Qty");

		for (int i = 0; i < count; i++) {

			// if author matches any of its book
			if (authorName.equalsIgnoreCase(
					theBooks[i].authorName)) {

				// Print below corresponding credentials
				System.out.println(
					theBooks[i].sNo + "\t\t"
					+ theBooks[i].bookName + "\t\t"
					+ theBooks[i].authorName + "\t\t"
```

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                                + theBooks[i].bookQtyCopy + "\t\t"
                                + theBooks[i].bookQty);
                        flag++;
                }
        }

        // Else no book matches for author
        if (flag == 0)
                System.out.println("No Books of " + authorName
                                                + " Found.");
}

// Method 5
// To display all books
public void showAllBooks()
{

        System.out.println("\t\t\t\tSHOWING ALL BOOKS\n");
        System.out.println(
                "S.No\t\tName\t\tAuthor\t\tAvailable Qty\t\tTotal Qty");

        for (int i = 0; i < count; i++) {

                System.out.println(
                        theBooks[i].sNo + "\t\t"
                        + theBooks[i].bookName + "\t\t"
                        + theBooks[i].authorName + "\t\t"
                        + theBooks[i].bookQtyCopy + "\t\t"
                        + theBooks[i].bookQty);
        }
}

// Method 6
// To edit the book
public void upgradeBookQty()
{

        System.out.println(
                "\t\t\t\tUPGRADE QUANTITY OF A BOOK\n");
        System.out.println("Enter Serial No of Book");

        int sNo = input.nextInt();

        for (int i = 0; i < count; i++) {

                if (sNo == theBooks[i].sNo) {

                        // Display message
                        System.out.println(
                                "Enter No of Books to be Added:");

                        int addingQty = input.nextInt();
                        theBooks[i].bookQty += addingQty;
                        theBooks[i].bookQtyCopy += addingQty;

                        return;
                }
        }
}

// Method 7
// To create menu
public void dispMenu()
{
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                // Displaying menu
                System.out.println(
                        "------------------------------------------------------------------------------
  ------------------------------");
                System.out.println("Press 1 to Add new Book.");
                System.out.println("Press 0 to Exit Application.");
                System.out.println(
                        "Press 2 to Upgrade Quantity of a Book.");
                System.out.println("Press 3 to Search a Book.");
                System.out.println("Press 4 to Show All Books.");
                System.out.println("Press 5 to Register Student.");
                System.out.println(
                        "Press 6 to Show All Registered Students.");
                System.out.println("Press 7 to Check Out Book. ");
                System.out.println("Press 8 to Check In Book");
                System.out.println(
                        "------------------------------------------------------------------------------
  ----------------------------");
        }

        // Method 8
        // To search the library
        public int isAvailable(int sNo)
        {

                for (int i = 0; i < count; i++) {
                        if (sNo == theBooks[i].sNo) {
                                if (theBooks[i].bookQtyCopy > 0) {

                                        System.out.println(
                                                "Book is Available.");
                                        return i;
                                }
                                System.out.println("Book is Unavailable");
                                return -1;
                        }
                }

                System.out.println("No Book of Serial Number "
                                                + " Available in Library.");
                return -1;
        }

        // Method 9
        // To remove the book from the library
        public book checkOutBook()
        {

                System.out.println(
                        "Enter Serial No of Book to be Checked Out.");
                int sNo = input.nextInt();

                int bookIndex = isAvailable(sNo);

                if (bookIndex != -1) {
                        theBooks[bookIndex].bookQtyCopy--;
                        return theBooks[bookIndex];
                }
                return null;
        }

        // Method 10
        // To add the Book to the Library
        public void checkInBook(book b)
        {
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```
                for (int i = 0; i < count; i++) {
                        if (b.equals(theBooks[i])) {
                                theBooks[i].bookQtyCopy++;
                                return;
                        }
                }
        }
}
```