

Assignment 01

♦ Student Details

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Section: C
Subject Code: CS23312
Subject Name: Object Oriented Programming
Assignment No.: Assignment 1

1. Aim

To implement a method in the Library Management System that sorts the list of books by their titles using Java.

2. Algorithm

1. ****Start****
2. Define a `Book` class with attributes: `title`, `author`, and `available`.
3. Define a `Library` class that maintains a list of `Book` objects.
4. Add a method `sortBooksByTitle()` in the `Library` class.
5. Use `Collections.sort()` with a custom `Comparator` to sort books by `title`.
6. In the `main()` method:
 - Create `Book` objects.
 - Add them to the `Library`.
 - Call `sortBooksByTitle()`.
 - Display the sorted list of books.
7. ****End****

3. Java Code

```
java
import java.util.;
```

```

class Book {
    String title;
    String author;
    boolean available = true;

    Book(String title, String author) {
        this.title = title;
        this.author = author;
    }

    @Override
    public String toString() {
        return title + " by " + author;
    }
}

class Library {
    List<Book> books = new ArrayList<>();

    void addBook(Book book) {
        books.add(book);
    }

    void sortBooksByTitle() {
        Collections.sort(books, new Comparator<Book>() {
            public int compare(Book b1, Book b2) {
                return b1.title.compareToIgnoreCase(b2.title);
            }
        });
    }

    void displayBooks() {
        for (Book b : books) {
            System.out.println(b);
        }
    }
}

public class LibraryMain {
    public static void main(String[] args) {
        Library lib = new Library();

        lib.addBook(new Book("Java Programming", "James Gosling"));
    }
}

```

```
lib.addBook(new Book("C Programming", "Dennis Ritchie"));
lib.addBook(new Book("Python Basics", "Guido van Rossum"));

System.out.println("Before Sorting:");
lib.displayBooks();

lib.sortBooksByTitle();

System.out.println("\nAfter Sorting by Title:");
lib.displayBooks();
}
}
```

4. Output

Before Sorting:

Java Programming by James Gosling
C Programming by Dennis Ritchie
Python Basics by Guido van Rossum

After Sorting by Title:

C Programming by Dennis Ritchie
Java Programming by James Gosling
Python Basics by Guido van Rossum
...

5. Screenshots

6. GitHub Repository Link


