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Assesment 1: Shopping App

Source code:

Shopping App:

```
package com.wipro.ass1;
import java.util.LinkedList;

	public class ShoppingApp {

		public static void main(String[] args) {
			ShoppingCart cart = new ShoppingCart();
			PurchaseHistory history = new PurchaseHistory();
			CustomerService service = new CustomerService();


			cart.addItem("Grapes");
			cart.addItem("Cherry");
			cart.viewCart();

			history.saveCart(cart.getCart());
			cart = new ShoppingCart();

			cart.addItem("Mangoes");
			cart.viewCart();
			history.saveCart(cart.getCart());
			history.viewHistory();

			LinkedList<String> lastCart =
history.undoLastPurchase();
			System.out.println("Last purchase cart: " + lastCart);

			service.addRequest("Request 1");
			service.addRequest("Request 2");
			service.viewPendingRequests();
			System.out.println("Processing request: " +
service.processRequest());
			service.viewPendingRequests();
		}
	}
```

Shopping Cart:

```
package com.wipro.ass1;

	import java.util.LinkedList;

	public class ShoppingCart {
	    private LinkedList<String> cart;

	    public ShoppingCart() {
	        cart = new LinkedList<>();
	    }

	    public void addItem(String item) {
	        cart.add(item);
	    }

	    public void removeItem(String item) {
	        cart.remove(item);
	    }

	    public void viewCart() {
	        System.out.println("Items in the cart: " + cart);
	    }

	    public LinkedList<String> getCart(){
	     return cart;
	    }
	}
```

PurchaseHistory:

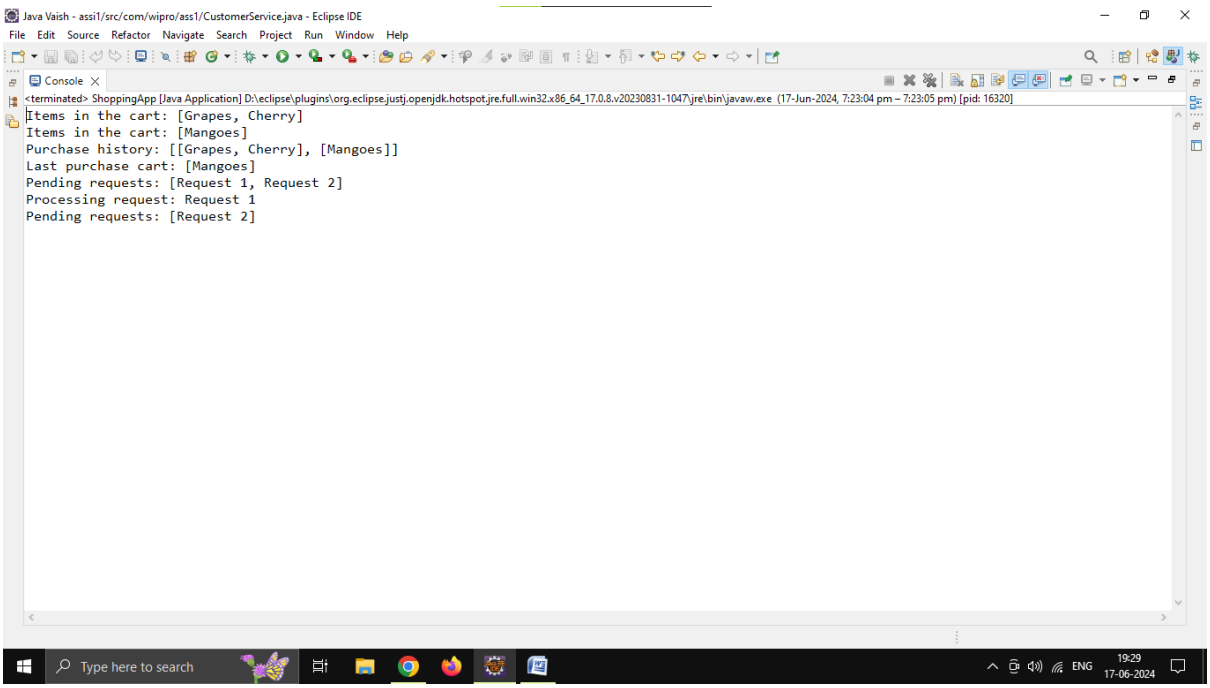
```
package com.wipro.ass1;

	import java.util.LinkedList;
	import java.util.Stack;

	public class PurchaseHistory {
	    private Stack<LinkedList<String>> history;

	    public PurchaseHistory() {
	        history = new Stack<>();
	    }
```

```
        public void saveCart(LinkedList<String> cart) {
            history.push(new LinkedList<>(cart));
        }

        public LinkedList<String> undoLastPurchase() {
            if (!history.isEmpty()) {
                return history.pop();
            }
            return null;
        }

        public void viewHistory() {
            System.out.println("Purchase history: " + history);
        }
    }
```

CustomerService:

```
package com.wipro.ass1;

    import java.util.LinkedList;
    import java.util.Queue;

    public class CustomerService {
        private Queue<String> serviceRequests;

        public CustomerService() {
            serviceRequests = new LinkedList<>();
        }

        public void addRequest(String request) {
            serviceRequests.add(request);
        }

        public String processRequest() {
            return serviceRequests.poll();
        }

        public void viewPendingRequests() {
            System.out.println("Pending requests: " +
serviceRequests);
        }
```

```
}
```



Assesment 2:

Source Code:

Library Management System:

```
package com.wipro.library;

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

        library.addBook(new Book("Harry Potter and the Philosopher's
Stone", "J.K. Rowling", "9780747532699"));
        library.addBook(new Book("The Lord of the Rings", "J.R.R.
Tolkien", "9780261102385"));
        library.addBook(new Book("To Kill a Mockingbird", "Harper
Lee", "9780060935467"));

        System.out.println("All Books:");
        library.displayAllBooks();
```

```
        String searchTitle = "The Lord of the Rings";
        System.out.println("\nLinear Search:");
        Book foundBookLinear = library.linearSearch(searchTitle);
        System.out.println(foundBookLinear != null ? "Found: " +
foundBookLinear : "Book not found");

        System.out.println("\nBinary Search:");
        Book foundBookBinary = library.binarySearch(searchTitle);
        System.out.println(foundBookBinary != null ? "Found: " +
foundBookBinary : "Book not found");

        System.out.println("\nRemoving 'Harry Potter and the
Philosopher's Stone':");
        library.removeBook("Harry Potter and the Philosopher's
Stone");
        library.displayAllBooks();
    }
}
```

Library:

```
package com.wipro.library;


import java.util.ArrayList;

import java.util.Collections;

import java.util.List;


public class Library {

   private List<Book> books;


   public Library() {

      this.books = new ArrayList<>();

   }
```

```
public void addBook(Book book) {
    books.add(book);
    Collections.sort(books);
}

public void removeBook(String title) {
    books.removeIf(book -> book.getTitle().equalsIgnoreCase(title));
}

public Book linearSearch(String title) {
    for (Book book : books) {
        if (book.getTitle().equalsIgnoreCase(title)) {
            return book;
        }
    }
    return null;
}

public Book binarySearch(String title) {
    int left = 0;
    int right = books.size() - 1;
```

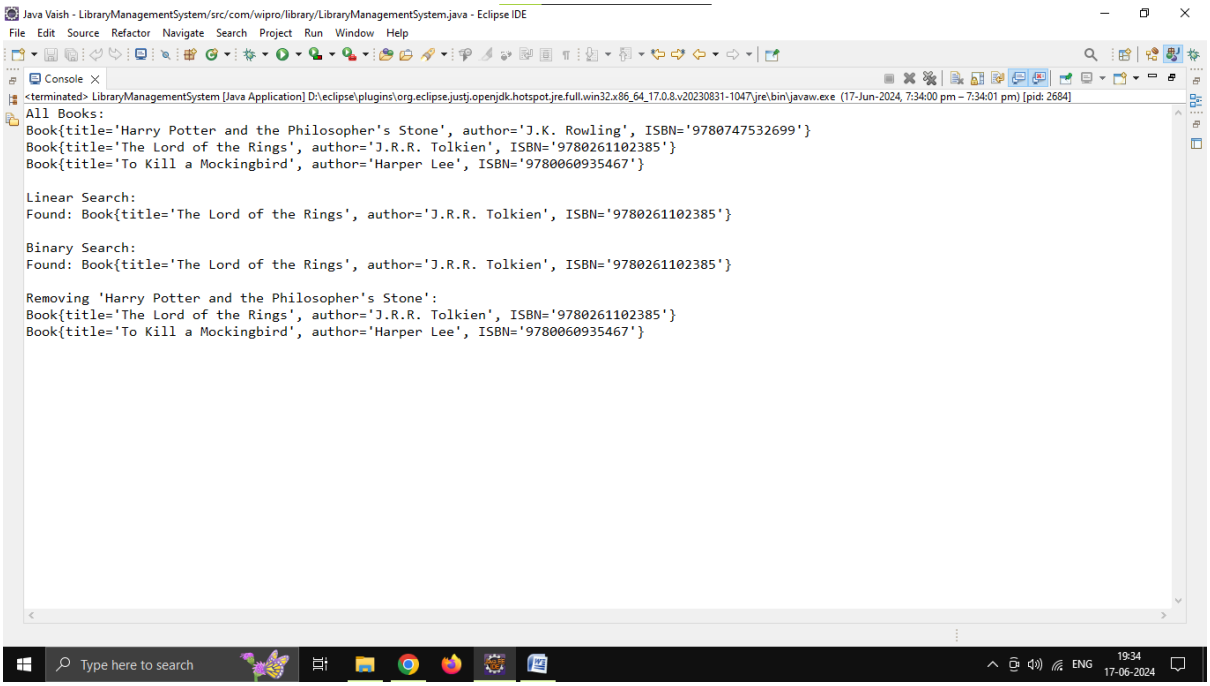
```
        while (left <= right) {
            int mid = left + (right - left) / 2;
            int comparison = books.get(mid).getTitle().compareToIgnoreCase(title);

            if (comparison == 0) {
                return books.get(mid);
            } else if (comparison < 0) {
                left = mid + 1;
            } else {
                right = mid - 1;
            }
        }
        return null;
    }

    public void displayAllBooks() {
        for (Book book : books) {
            System.out.println(book);
        }
    }
}
```

Book:

```
package com.wipro.library;
```

```java
public class Book implements Comparable<Book> {
    private String title;
    private String author;
    private String ISBN;

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

    public String getTitle() {
        return title;
    }

    public String getAuthor() {
        return author;
    }

    public String getISBN() {
        return ISBN;
    }

    @Override
    public int compareTo(Book other) {
        return this.title.compareTo(other.title);
    }

    @Override
    public String toString() {
        return "Book{" +
                "title='" + title + '\'' +
                ", author='" + author + '\'' +
                ", ISBN='" + ISBN + '\'' +
                '}';
    }
}
```

Output:


Java Vaish - LibraryManagementSystem/src/com/wipro/library/LibraryManagementSystem.java - Eclipse IDE
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Console
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