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## Assesement 1 : Shopping App

Source Code :

```
eclipse-workspace - ShoppingApp/src/com/wipro/shoppingapp/CustomerService.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

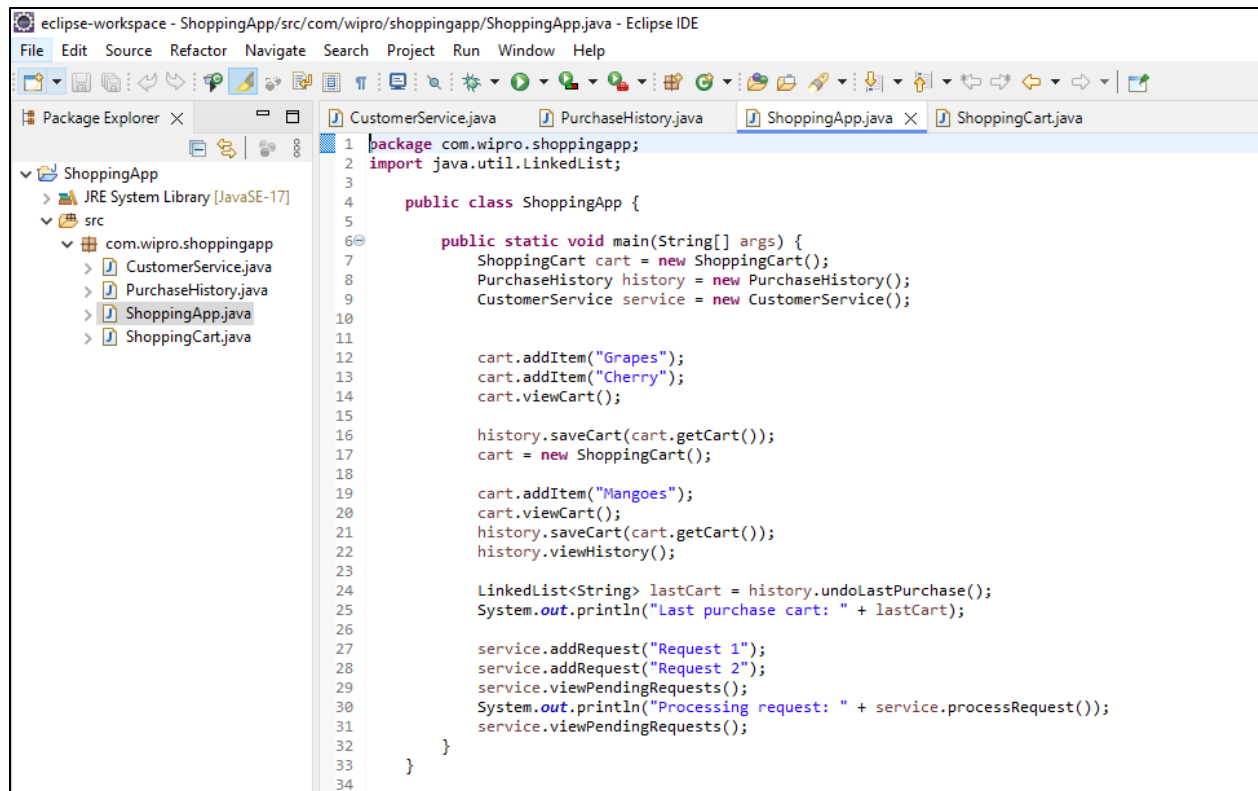
Package Explorer
ShoppingApp
  JRE System Library [JavaSE-17]
  src
    com.wipro.shoppingapp
      CustomerService.java
      PurchaseHistory.java
      ShoppingApp.java
      ShoppingCart.java

1 package com.wipro.shoppingapp;
2
3 import java.util.LinkedList;
4
5 public class CustomerService {
6     private Queue<String> serviceRequests;
7
8     public CustomerService() {
9         serviceRequests = new LinkedList<>();
10    }
11
12    public void addRequest(String request) {
13        serviceRequests.add(request);
14    }
15
16    public String processRequest() {
17        return serviceRequests.poll();
18    }
19
20    public void viewPendingRequests() {
21        System.out.println("Pending requests: " + serviceRequests);
22    }
23 }
24
25
26
27
```

```
eclipse-workspace - ShoppingApp/src/com/wipro/shoppingapp/PurchaseHistory.java - Eclipse IDE
File Edit Source Refactor Navigate Search Project Run Window Help

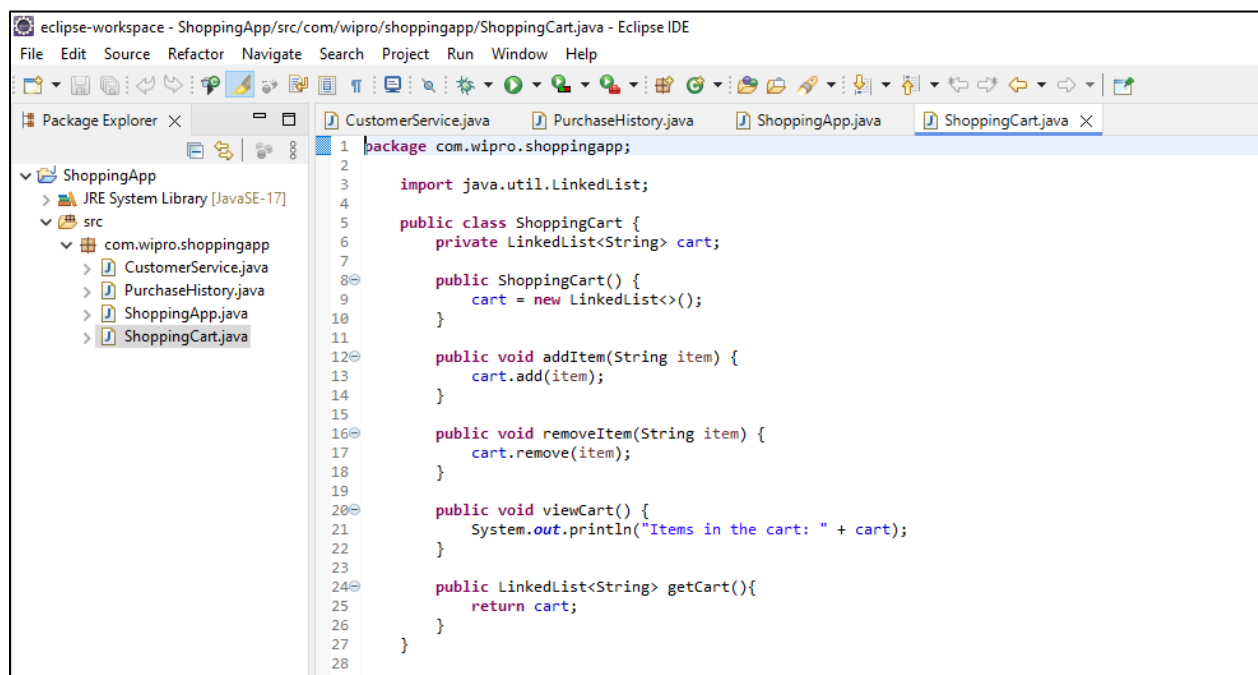
Package Explorer
ShoppingApp
  JRE System Library [JavaSE-17]
  src
    com.wipro.shoppingapp
      CustomerService.java
      PurchaseHistory.java
      ShoppingApp.java
      ShoppingCart.java

1 package com.wipro.shoppingapp;
2
3 import java.util.LinkedList;
4
5 public class PurchaseHistory {
6     private Stack<LinkedList<String>> history;
7
8     public PurchaseHistory() {
9         history = new Stack<>();
10    }
11
12    public void saveCart(LinkedList<String> cart) {
13        history.push(new LinkedList<>(cart));
14    }
15
16    public LinkedList<String> undoLastPurchase() {
17        if (!history.isEmpty()) {
18            return history.pop();
19        }
20        return null;
21    }
22
23    public void viewHistory() {
24        System.out.println("Purchase history: " + history);
25    }
26 }
27
28
29
30
31
32
```



The screenshot shows the Eclipse IDE with the file ShoppingApp.java open. The Package Explorer on the left shows the project structure: ShoppingApp > src > com.wipro.shoppingapp. The main editor displays the code for ShoppingApp.java, which includes imports for java.util.LinkedList, a public class ShoppingApp, and a main method. The main method initializes a ShoppingCart, a PurchaseHistory object, and a CustomerService object. It then performs several actions: adding 'Grapes' and 'Cherry' to the cart, viewing the cart, saving the cart to history, adding 'Mangoes' to the cart, viewing the cart again, saving it to history, undoing the last purchase, and printing the last purchase. Finally, it adds two requests to the service, views pending requests, and prints the processing request.

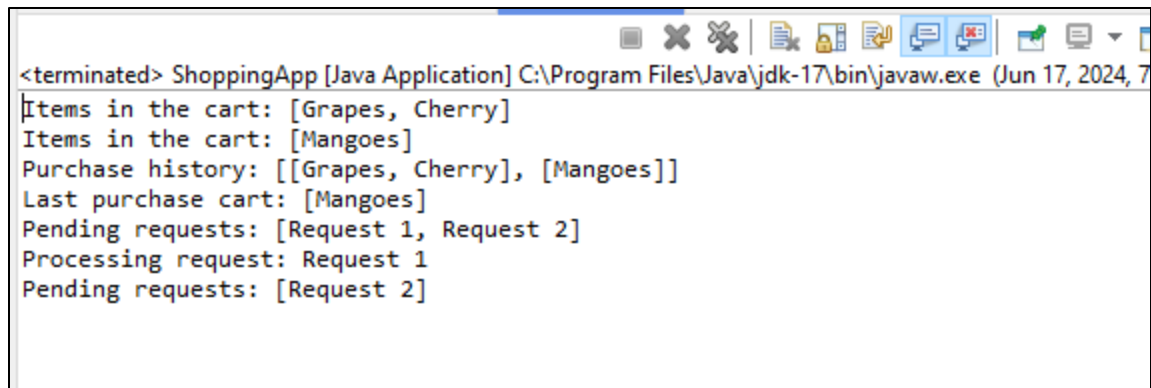
```
1 package com.wipro.shoppingapp;
2 import java.util.LinkedList;
3
4 public class ShoppingApp {
5
6     public static void main(String[] args) {
7         ShoppingCart cart = new ShoppingCart();
8         PurchaseHistory history = new PurchaseHistory();
9         CustomerService service = new CustomerService();
10
11
12         cart.addItem("Grapes");
13         cart.addItem("Cherry");
14         cart.viewCart();
15
16         history.saveCart(cart.getCart());
17         cart = new ShoppingCart();
18
19         cart.addItem("Mangoes");
20         cart.viewCart();
21         history.saveCart(cart.getCart());
22         history.viewHistory();
23
24         LinkedList<String> lastCart = history.undoLastPurchase();
25         System.out.println("Last purchase cart: " + lastCart);
26
27         service.addRequest("Request 1");
28         service.addRequest("Request 2");
29         service.viewPendingRequests();
30         System.out.println("Processing request: " + service.processRequest());
31         service.viewPendingRequests();
32     }
33 }
34
```



The screenshot shows the Eclipse IDE with the file ShoppingCart.java open. The Package Explorer on the left shows the project structure: ShoppingApp > src > com.wipro.shoppingapp. The main editor displays the code for ShoppingCart.java, which includes imports for java.util.LinkedList, a public class ShoppingCart, and several methods: a constructor that initializes a private LinkedList cart, an addItem method that adds an item to the cart, a removeItem method that removes an item from the cart, a viewCart method that prints the items in the cart, and a getCart method that returns the cart.

```
1 package com.wipro.shoppingapp;
2
3 import java.util.LinkedList;
4
5 public class ShoppingCart {
6     private LinkedList<String> cart;
7
8     public ShoppingCart() {
9         cart = new LinkedList<>();
10     }
11
12     public void addItem(String item) {
13         cart.add(item);
14     }
15
16     public void removeItem(String item) {
17         cart.remove(item);
18     }
19
20     public void viewCart() {
21         System.out.println("Items in the cart: " + cart);
22     }
23
24     public LinkedList<String> getCart(){
25         return cart;
26     }
27 }
28
```

**Output:**



```
<terminated> ShoppingApp [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Jun 17, 2024, 7
Items in the cart: [Grapes, Cherry]
Items in the cart: [Mangoes]
Purchase history: [[Grapes, Cherry], [Mangoes]]
Last purchase cart: [Mangoes]
Pending requests: [Request 1, Request 2]
Processing request: Request 1
Pending requests: [Request 2]
```

## Assesement 2 : Library Management System

Source Code:

### 1 Class Book

```
package com.wipro.library;

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 + '\'' +
        '}';
}
}

```

## 2 class 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);
    }
}
}

```

### 3 Class LibraryManagementSystem

```

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();

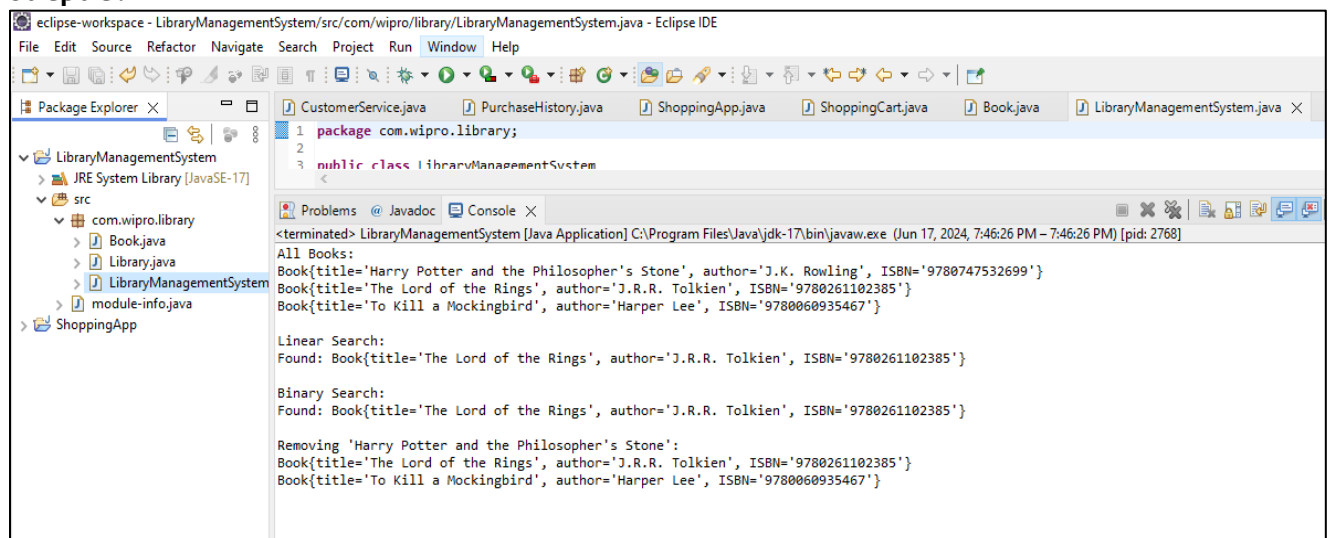
        String searchTitle = "The Lord of the Rings";
        System.out.println("\nLinear Search:");
        Book foundBookLinear = library.linearSearch(searchTitle);
        System.out.println(foundBookLinear != null ? "Found: " +
foundBookLinear : "Book not found");

        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();
    }
}

```

**Output:**



The screenshot shows the Eclipse IDE interface. The Package Explorer on the left displays the project structure: LibraryManagementSystem (JRE System Library [JavaSE-17]) containing src, com.wipro.library, and ShoppingApp. The main editor shows the LibraryManagementSystem.java file with the following code:

```

1 package com.wipro.library;
2
3 public class LibraryManagementSystem
4 {
5
6 }
7
8 }

```

The Console window at the bottom shows the output of the program:

```

<terminated> LibraryManagementSystem [Java Application] C:\Program Files\Java\jdk-17\bin\javaw.exe (Jun 17, 2024, 7:46:26 PM - 7:46:26 PM) [pid: 2768]
All Books:
Book{title='Harry Potter and the Philosopher's Stone', author='J.K. Rowling', ISBN='9780747532699'}
Book{title='The Lord of the Rings', author='J.R.R. Tolkien', ISBN='9780261102385'}
Book{title='To Kill a Mockingbird', author='Harper Lee', ISBN='9780060935467'}

Linear Search:
Found: Book{title='The Lord of the Rings', author='J.R.R. Tolkien', ISBN='9780261102385'}

Binary Search:
Found: Book{title='The Lord of the Rings', author='J.R.R. Tolkien', ISBN='9780261102385'}

Removing 'Harry Potter and the Philosopher's Stone':
Book{title='The Lord of the Rings', author='J.R.R. Tolkien', ISBN='9780261102385'}
Book{title='To Kill a Mockingbird', author='Harper Lee', ISBN='9780060935467'}

```