

```
package LibraryItem;
```

```
public class LibraryItem {
```

```
    private String title;
```

```
    private String author;
```

```
    private int itemID;
```

```
    public LibraryItem(String title, String author, int itemID) {
```

```
        this.title = title;
```

```
        this.author = author;
```

```
        this.itemID = itemID;
```

```
    }
```

```
    public String getTitle() { return title; }
```

```
    public String getAuthor() { return author; }
```

```
    public int getItemID() { return itemID; }
```

```
@Override
```

```
public String toString() {  
  
    return "ID: " + itemID + ", Title: " + title + ", Author: " + author;  
  
}  
  
}
```

```
package LibraryItem;
```

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

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

```
public class GenericCatalog<T> {  
  
    List<T> items = new ArrayList<>();  
  
  
    public void addItem(T item) {  
  
        items.add(item);  
  
        System.out.println("Item added: " + item);  
  
    }
```

```
public void removeItem(T item) {  
  
    if (items.contains(item)) {  
  
        items.remove(item);  
  
        System.out.println("Item removed: " + item);  
  
    } else {  
  
        System.out.println("Item not found!");  
  
    }  
  
}
```

```
public void displayItems() {  
  
    if (items.isEmpty()) {  
  
        System.out.println("Catalog is empty.");  
  
    } else {  
  
        for (T item : items) {  
  
            System.out.println(item);  
  
        }  
  
    }  
  
}
```

```
}  
  
}  
  
package LibraryItem;  
  
import java.util.Scanner;  
  
public class LibraryApp {  
  
    public static void main(String[] args) {  
  
        GenericCatalog<LibraryItem> catalog = new GenericCatalog<>();  
  
        Scanner scanner = new Scanner(System.in);  
  
        while (true) {  
  
            System.out.println("\nLibrary Catalog Menu:");  
  
            System.out.println("1. Add Item");  
  
            System.out.println("2. Remove Item");  
  
            System.out.println("3. View Catalog");  
  
            System.out.println("4. Exit");  

```

```
System.out.print("Choose an option: ");
```

```
int choice = scanner.nextInt();
```

```
scanner.nextLine(); // Consume newline
```

```
switch (choice) {
```

```
    case 1:
```

```
        System.out.print("Enter Title: ");
```

```
        String title = scanner.nextLine();
```

```
        System.out.print("Enter Author: ");
```

```
        String author = scanner.nextLine();
```

```
        System.out.print("Enter Item ID: ");
```

```
        int id = scanner.nextInt();
```

```
        scanner.nextLine();
```

```
        catalog.addItem(new LibraryItem(title, author, id));
```

```
        break;
```

```
    case 2:
```

```
        System.out.print("Enter Item ID to Remove: ");
```

```
int removeId = scanner.nextInt();

scanner.nextLine();

LibraryItem itemToRemove = null;

for (LibraryItem item : catalog.items) {

    if (item.getItemID() == removeId) {

        itemToRemove = item;

        break;

    }

}

if (itemToRemove != null) {

    catalog.removeItem(itemToRemove);

} else {

    System.out.println("Item not found!");

}

break;

case 3:

    catalog.displayItems();

    break;
```

case 4:

```
System.out.println("Exiting...");
```

```
scanner.close();
```

```
return;
```

default:

```
System.out.println("Invalid choice. Try again.");
```

```
}
```

```
}
```

```
}
```

```
}
```

- > clock.java
- > ClockApplication
- > ecommerce
- LibraryCatalogProject
  - > JRE System Library [JavaSE-23]
  - src
    - LibraryItem
      - GenericCatalog.java
      - LibraryApp.java
      - LibraryItem.java
    - module-info.java

```
1 package LibraryItem;
2
3 public class LibraryItem {
4     private String title;
5     private String author;
6     private int itemID;
7
8     public LibraryItem(String title, String author, int itemID) {
9         this.title = title;
10        this.author = author;
11        this.itemID = itemID;
12    }
13
14    public String getTitle() { return title; }
15    public String getAuthor() { return author; }
16    public int getItemID() { return itemID; }
17
18    @Override
19    public String toString() {
20        return "ID: " + itemID + ", Title: " + title + ", Author: " + author;
21    }
22 }
23
```



- > clock.java
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```
1 package LibraryItem;
2
3 import java.util.ArrayList;
4 import java.util.List;
5
6 public class GenericCatalog<T> {
7     List<T> items = new ArrayList<>();
8
9     public void addItem(T item) {
10         items.add(item);
11         System.out.println("Item added: " + item);
12     }
13
14     public void removeItem(T item) {
15         if (items.contains(item)) {
16             items.remove(item);
17             System.out.println("Item removed: " + item);
18         } else {
19             System.out.println("Item not found!");
20         }
21     }
22
23     public void displayItems() {
24         if (items.isEmpty()) {
25             System.out.println("Catalog is empty.");
26         } else {
27             for (T item : items) {
28                 System.out.println(item);
29             }
30         }
31     }
32 }
33
```

```
1 package LibraryItem;
2
3 import java.util.Scanner;
4
5 public class LibraryApp {
6     public static void main(String[] args) {
7         GenericCatalog<LibraryItem> catalog = new GenericCatalog<>();
8         Scanner scanner = new Scanner(System.in);
9
10        while (true) {
11            System.out.println("\nLibrary Catalog Menu:");
12            System.out.println("1. Add Item");
13            System.out.println("2. Remove Item");
14            System.out.println("3. View Catalog");
15            System.out.println("4. Exit");
16            System.out.print("Choose an option: ");
17
18            int choice = scanner.nextInt();
19            scanner.nextLine(); // Consume newline
20
21            switch (choice) {
22                case 1:
23                    System.out.print("Enter Title: ");
24                    String title = scanner.nextLine();
25                    System.out.print("Enter Author: ");
26                    String author = scanner.nextLine();
27                    System.out.print("Enter Item ID: ");
28                    int id = scanner.nextInt();
29                    scanner.nextLine();
30                    catalog.addItem(new LibraryItem(title, author, id));
31                    break;
32                case 2:
33                    System.out.print("Enter Item ID to Remove: ");
34                    int removeId = scanner.nextInt();
35                    scanner.nextLine();
36                    LibraryItem itemToRemove = null;
37                    for (LibraryItem item : catalog.items) {
38                        if (item.getItemID() == removeId) {
39                            itemToRemove = item;
40                            break;
41                        }
42                    }
43                    if (itemToRemove != null) {
44                        catalog.removeItem(itemToRemove);
45                    } else {
46                        System.out.println("Item not found!");
47                    }
48                    break;
49                case 3:
50                    catalog.displayItems();
51                    break;
52                case 4:
53                    System.out.println("Exiting...");
```

```

42     }
43     if (itemToRemove != null) {
44         catalog.removeItem(itemToRemove);
45     } else {
46         System.out.println("Item not found!");
47     }
48     break;
49 case 3:
50     catalog.displayItems();
51     break;
52 case 4:
53     System.out.println("Exiting...");
54     scanner.close();
55     return;
56 default:
57     System.out.println("Invalid choice. Try again.");
58 }
59 }
60 }
61 }
62

```

Problems Javadoc Declaration Console Coverage

LibraryApp [Java Application] C:\Users\Yahya\.p2\pool\plugins\org.eclipse.justj.openjdk.hotspot.jre.full.win32.x86\_64\_23.0.2.v20250131-0604\jre\bin\javaw.exe (Mar 6, 2025, 7:45:57 a.m. elapsed: 0:01:56) [pid: 4260]

Library Catalog Menu:

1. Add Item
2. Remove Item
3. View Catalog
4. Exit

Choose an option: 1

Enter Title: book

Enter Author: sana

Enter Item ID: 100022

Item added: ID: 100022, Title: book, Author: sana

Library Catalog Menu:

1. Add Item
2. Remove Item
3. View Catalog
4. Exit

Choose an option: