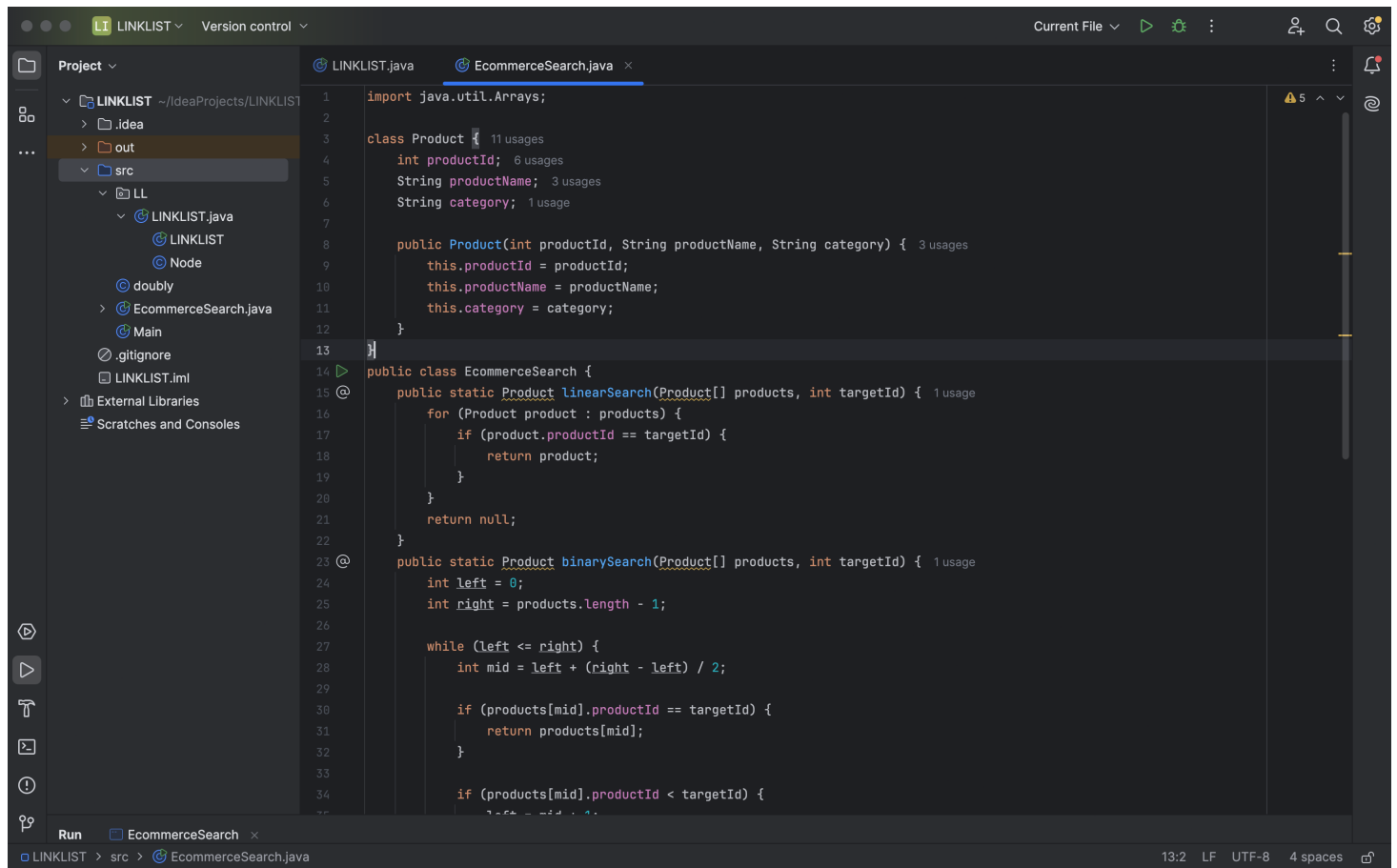
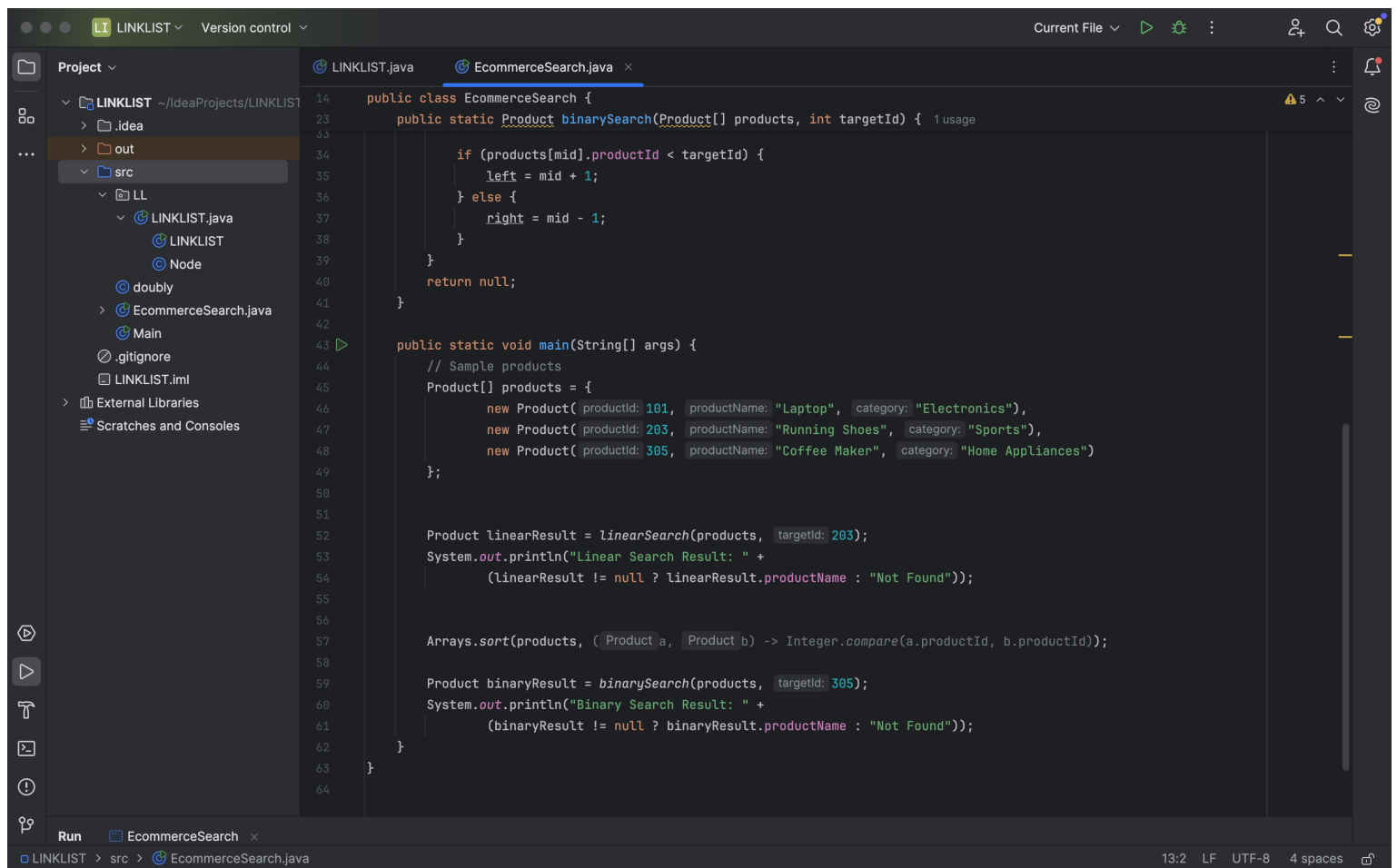


## PROBLEM 2 -> DSA. ECOMMERCE.SEARCH WITH LINEARSEARCH AND BINARYSEARCH



The screenshot shows the IntelliJ IDEA IDE with the project 'LINKLIST' open. The file 'EcommerceSearch.java' is selected, showing the following code:

```
1 import java.util.Arrays;
2
3 class Product {
4     int productId;
5     String productName;
6     String category;
7
8     public Product(int productId, String productName, String category) {
9         this.productId = productId;
10        this.productName = productName;
11        this.category = category;
12    }
13 }
14
15 public class EcommerceSearch {
16     public static Product linearSearch(Product[] products, int targetId) {
17         for (Product product : products) {
18             if (product.productId == targetId) {
19                 return product;
20             }
21         }
22         return null;
23     }
24
25     public static Product binarySearch(Product[] products, int targetId) {
26         int left = 0;
27         int right = products.length - 1;
28
29         while (left <= right) {
30             int mid = left + (right - left) / 2;
31
32             if (products[mid].productId == targetId) {
33                 return products[mid];
34             }
35
36             if (products[mid].productId < targetId) {
37                 left = mid + 1;
38             }
39             else {
40                 right = mid - 1;
41             }
42         }
43         return null;
44     }
45 }
```



The screenshot shows the IntelliJ IDEA IDE with the project 'LINKLIST' open. The file 'EcommerceSearch.java' is selected, showing the following code:

```
14 public class EcommerceSearch {
15     public static Product linearSearch(Product[] products, int targetId) {
16         for (Product product : products) {
17             if (product.productId == targetId) {
18                 return product;
19             }
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24     public static Product binarySearch(Product[] products, int targetId) {
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27
28         while (left <= right) {
29             int mid = left + (right - left) / 2;
30
31             if (products[mid].productId == targetId) {
32                 return products[mid];
33             }
34
35             if (products[mid].productId < targetId) {
36                 left = mid + 1;
37             }
38             else {
39                 right = mid - 1;
40             }
41         }
42         return null;
43     }
44
45     public static void main(String[] args) {
46         // Sample products
47         Product[] products = {
48             new Product(101, "Laptop", "Electronics"),
49             new Product(203, "Running Shoes", "Sports"),
50             new Product(305, "Coffee Maker", "Home Appliances")
51         };
52
53         Product linearResult = linearSearch(products, 203);
54         System.out.println("Linear Search Result: " +
55             (linearResult != null ? linearResult.productName : "Not Found"));
56
57         Arrays.sort(products, (Product a, Product b) -> Integer.compare(a.productId, b.productId));
58
59         Product binaryResult = binarySearch(products, 305);
60         System.out.println("Binary Search Result: " +
61             (binaryResult != null ? binaryResult.productName : "Not Found"));
62     }
63 }
64 }
```

## OUTPUT -->>

```
/Library/Java/JavaVirtualMachines/jdk-23.jdk/Contents/Home/bin/java -javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar
Linear Search Result: Running Shoes
Binary Search Result: Coffee Maker

Process finished with exit code 0
|
```