

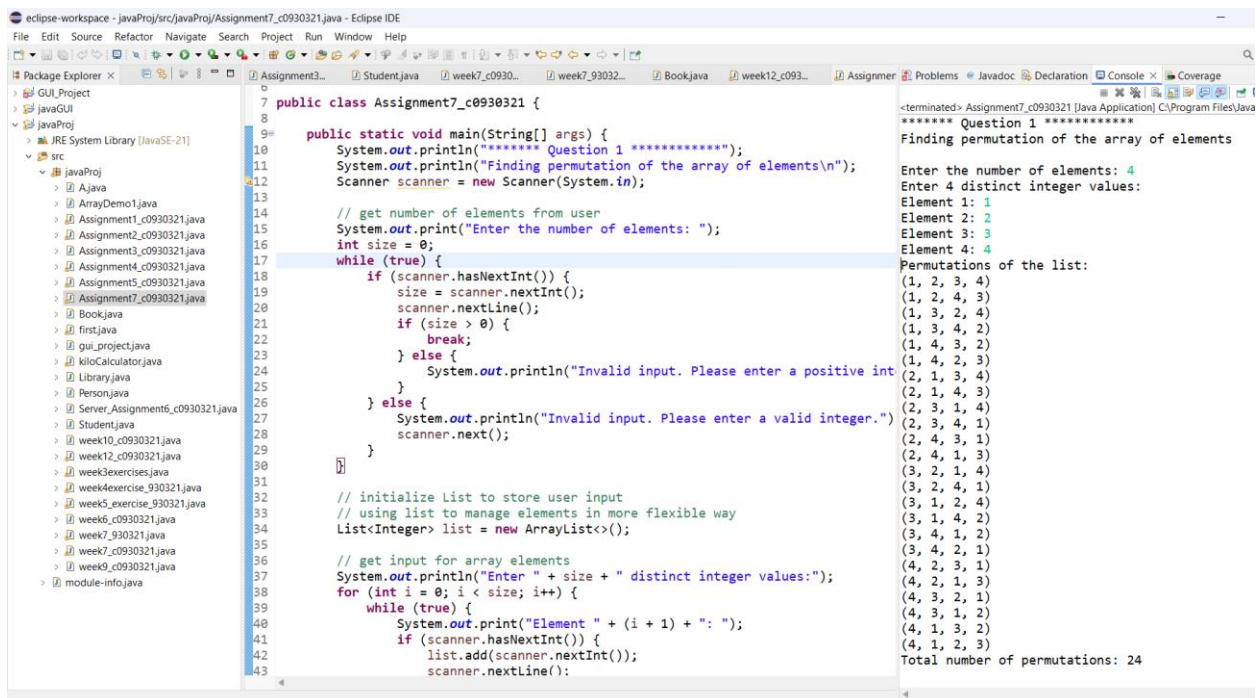
Assignment: 07

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Question 1: Finding permutations

output screenshot

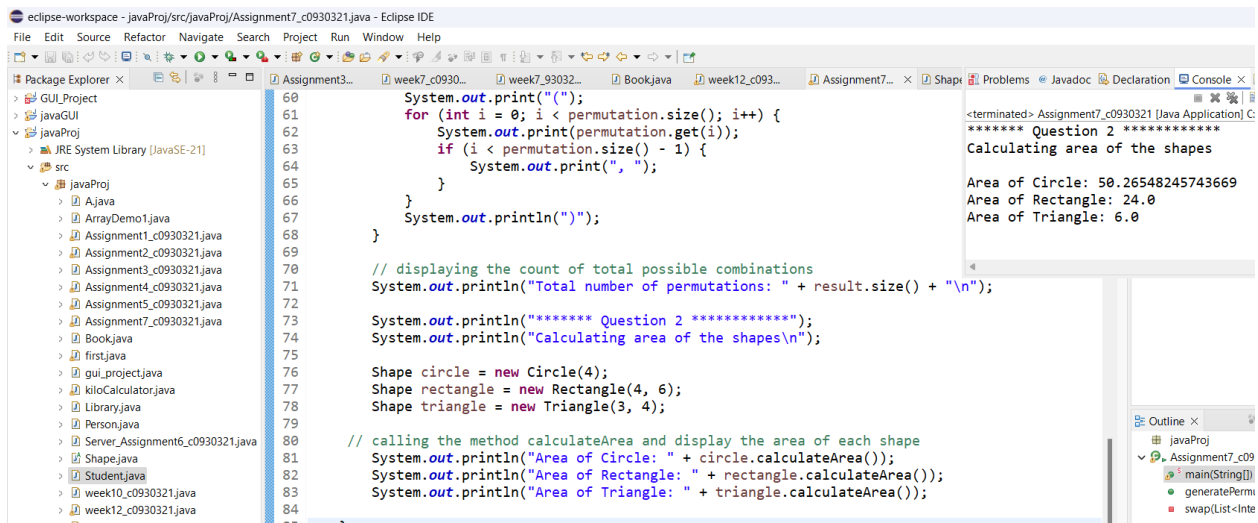


```
7 public class Assignment7_c0930321 {
8
9     public static void main(String[] args) {
10         System.out.println("***** Question 1 *****");
11         System.out.println("Finding permutation of the array of elements\n");
12         Scanner scanner = new Scanner(System.in);
13
14         // get number of elements from user
15         System.out.print("Enter the number of elements: ");
16         int size = 0;
17         while (true) {
18             if (scanner.hasNextInt()) {
19                 size = scanner.nextInt();
20                 scanner.nextLine();
21                 if (size > 0) {
22                     break;
23                 } else {
24                     System.out.println("Invalid input. Please enter a positive int");
25                 }
26             } else {
27                 System.out.println("Invalid input. Please enter a valid integer.");
28                 scanner.next();
29             }
30         }
31
32         // initialize List to store user input
33         // using list to manage elements in more flexible way
34         List<Integer> list = new ArrayList<>();
35
36         // get input for array elements
37         System.out.println("Enter " + size + " distinct integer values:");
38         for (int i = 0; i < size; i++) {
39             while (true) {
40                 System.out.print("Element " + (i + 1) + ": ");
41                 if (scanner.hasNextInt()) {
42                     list.add(scanner.nextInt());
43                     scanner.nextLine();
44                 }
45             }
46         }
47     }
48 }
```

```
<terminated> Assignment7_c0930321 [Java Application] C:\Program Files\Java
***** Question 1 *****
Finding permutation of the array of elements
Enter the number of elements: 4
Enter 4 distinct integer values:
Element 1: 1
Element 2: 2
Element 3: 3
Element 4: 4
Permutations of the list:
(1, 2, 3, 4)
(1, 2, 4, 3)
(1, 3, 2, 4)
(1, 3, 4, 2)
(1, 4, 3, 2)
(1, 4, 2, 3)
(2, 1, 3, 4)
(2, 1, 4, 3)
(2, 3, 1, 4)
(2, 3, 4, 1)
(2, 4, 3, 1)
(2, 4, 1, 3)
(3, 2, 1, 4)
(3, 2, 4, 1)
(3, 1, 2, 4)
(3, 1, 4, 2)
(3, 4, 1, 2)
(3, 4, 2, 1)
(4, 2, 3, 1)
(4, 2, 1, 3)
(4, 3, 2, 1)
(4, 3, 1, 2)
(4, 1, 3, 2)
(4, 1, 2, 3)
Total number of permutations: 24
```

Question 2: Calculate area of the shapes

output screenshot



The screenshot shows the Eclipse IDE with a Java project named 'javaProj'. The Package Explorer on the left shows the project structure, including a 'src' folder with various Java files. The main editor displays the code for 'Assignment7_c0930321.java'. The code calculates the area of a circle, rectangle, and triangle, and also calculates the total number of permutations. The console on the right shows the output of the program.

```
60      System.out.print("(");
61      for (int i = 0; i < permutation.size(); i++) {
62          System.out.print(permutation.get(i));
63          if (i < permutation.size() - 1) {
64              System.out.print(", ");
65          }
66      }
67      System.out.println(")");
68  }
69  }
70  // displaying the count of total possible combinations
71  System.out.println("Total number of permutations: " + result.size() + "\n");
72
73  System.out.println("***** Question 2 *****");
74  System.out.println("Calculating area of the shapes\n");
75
76  Shape circle = new Circle(4);
77  Shape rectangle = new Rectangle(4, 6);
78  Shape triangle = new Triangle(3, 4);
79
80  // calling the method calculateArea and display the area of each shape
81  System.out.println("Area of Circle: " + circle.calculateArea());
82  System.out.println("Area of Rectangle: " + rectangle.calculateArea());
83  System.out.println("Area of Triangle: " + triangle.calculateArea());
84
85  }
```

Console Output:

```
<terminated> Assignment7_c0930321 [Java Application] C
***** Question 2 *****
Calculating area of the shapes

Area of Circle: 50.26548245743669
Area of Rectangle: 24.0
Area of Triangle: 6.0
```

Outline:

- javaProj
 - Assignment7_c0930321
 - main(String[])
 - generatePerm
 - swap(List<Inte