1.
```java
import java.util.ArrayList;
import java.util.Scanner;

public class OddEvenSeparation {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter the size of the array: ");
        int size = scanner.nextInt();

        int[] inputArray = new int[size];
        System.out.println("Enter the elements of the array:");
        for (int i = 0; i < size; i++) {
            inputArray[i] = scanner.nextInt();
        }

        ArrayList<Integer> evenList = new ArrayList<>();
        ArrayList<Integer> oddList = new ArrayList<>();

        for (int num : inputArray) {
            if (num % 2 == 0) {
                evenList.add(num);
            } else {
                oddList.add(num);
            }
        }

        System.out.println("Even Elements: " + evenList);
        System.out.println("Odd Elements: " + oddList);

        scanner.close();
    }
}
```
2.
```java
import java.util.Scanner;

public class StringCompression {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");
        String input = scanner.nextLine();

        compressString(input);

        scanner.close();
    }

    private static void compressString(String input) {
```

```
        StringBuilder compressedString = new StringBuilder();
        int count = 1;

        for (int i = 1; i < input.length(); i++) {
            if (input.charAt(i) == input.charAt(i - 1)) {
                count++;
            } else {
                compressedString.append(input.charAt(i - 1)).append(count);
                count = 1;
            }
        }

        compressedString.append(input.charAt(input.length() - 1)).append(count);

        System.out.println("Input: " + input);
        System.out.println("Output: " + compressedString);
    }
}
3.import java.util.Scanner;

public class ZigzagPattern {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);

        System.out.print("Enter a string: ");
        String input = scanner.nextLine();

        printZigzagPattern(input);

        scanner.close();
    }

    private static void printZigzagPattern(String input) {
        int n = input.length();
        int diagonalCount = n + (n - 2);

        for (int i = 0; i < n; i++) {
            for (int j = 0; j < diagonalCount; j++) {
                if (j == diagonalCount / 2 || (i + j) % diagonalCount == 0) {
                    System.out.print(input.charAt(i) + " ");
                } else {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```