```java
1  import java.math.BigInteger;
2
3  public class BinaryCounting {
4      private static boolean foundZero = false;
5      private static int lastRemoved = -1;
6
7      public static int process(String input) {
8          StringBuilder binary = new StringBuilder();
9          for (char c : input.toCharArray()) {
10             // https://docs.oracle.com/javase/8/docs/api/java/util/
   Formatter.html
11             binary.append(String.format("%8s",Integer.
   toBinaryString(c)).replace(' ', '0'));
12         } // 7 -> 111 -> 00000111
13
14         String afterBinary = removeSequence(binary.toString(),
   2);
15
16         if (afterBinary.isEmpty()) return -1;
17         BigInteger binValue = new BigInteger(afterBinary, 2);
18         String octal = binValue.toString(8);
19
20         foundZero = false;
21         removeSequence(octal, 8);
22
23         if (!foundZero) return -1;
24         return lastRemoved;
25     }
26
27     public static String removeSequence(String input, int base
   ) {
28         String current = input;
29         int num = 0;
30
31         while (true) {
32             String repr = Integer.toString(num, base);
33             int first = current.indexOf(repr);
34             if (first == -1) break;
35             int last = current.lastIndexOf(repr);
36
```

```java
37              current = current.substring(0, first) + current.
    substring(first + repr.length());
38
39              if (last > first) {
40                  current = current.substring(0, last - repr.
    length()) + current.substring(last);
41              }
42
43              if (num == 0) foundZero = true;
44              lastRemoved = Integer.parseInt(repr, base);
45              num++;
46          }
47          return current;
48      }
49
50      public static void main(String[] args) {
51 //        String[] inputs = {
52 //              "Roses are red.",
53 //              "A is for Alpha; B is for Bravo; C is for
    Charlie.",
54 //              "A stitch in time saves nine.",
55 //              "1, 2: Buckle my shoe! 3, 4: Shut the door!",
56 //              "The quick brown fox jumped over the lazy
    dogs."};
57          String[] inputs = {
58              "ACSL is 45 years old and going strong.",
59              "What was the first computer programming
    language you learned?",
60              "Lions and Tigers and Bears, Oh My! This is
    from The Wizard of Oz.",
61              "zyxwvutsraponmlkjihgfedcba",
62              "~{w|x|y|z}"};
63
64          for (String input : inputs) {
65              int result = process(input);
66              System.out.println(result);
67          }
68      }
69 }
70
```