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1 // In number theory, a lucky number is a natural number in a set which is generated by a certain "sieve".
2 // This sieve is similar to the Sieve of Eratosthenes that generates the primes, but it eliminates numbers based on their position in the remaining set,
3 // instead of their value (or position in the initial set of natural numbers).
4 // Starting from 2, start eliminating numbers till the count is big enough that all remaining numbers stay
5
6 import java.util.Scanner;
7
8 public class luckyNumbers {
9     int N;
10    int[] arr;
11
12    public static void main(String[] args) {
13        luckyNumbers obj = new luckyNumbers();
14        Scanner sc = new Scanner(System.in);
15        System.out.println("Enter value of N");
16        obj.N = sc.nextInt();
17        sc.close();
18        obj.arr = new int[obj.N];
19        for (int i = 0; i < obj.N; i++) {
20            obj.arr[i] = i + 1;
21        }
22        obj.print();
23        int steps = obj.numberOfSteps();
24        for (int i = 1; i <= steps; i++) {
25            obj.eliminate(++i);
26        }
27        System.out.println("Lucky numbers: ");
28        obj.print();
29    }
30
31    void eliminate(int count) {
32        int a = 0;
33        for (int i = 0; i < N; i++) {
34            if (arr[i] == 0) continue;
35            if ((a + 1) % count == 0) arr[a] = 0;
36            a += 1;
37        }
38    }
39
40    int numberOfSteps() {
41        // Find number of steps of elimination required to find lucky numbers for a given value of N
42        int N = this.N;
43        int steps = 0;
44        int i = 2;
45        while (i <= N) {
46            int R = (int) (Math.floor(N / (i + 0.0)));
47            N -= R;
48            i += 1;
49            steps += 1;
50        }
51        return steps;
52    }
53
54    void print() {
55        for (int i = 0; i < N; i++) {
56            if (arr[i] != 0) System.out.print(arr[i] + " ");
57        }
58        System.out.println();
59    }
60 }

```