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import java.text.DecimalFormat;
import java.util.Scanner;

public class Eratosthenes {
    public static void main(String[] args) {
        System.out.println("\nSieve of Eratosthenes\n");
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the primes upper bound ===> ");
        final int MAX = input.nextInt();
        input.close();

        boolean[] primes = computePrimes(MAX);
        displayPrimes(primes);
    }

    public static boolean[] computePrimes(int upperBound) {

        boolean[] primeArray = new boolean[upperBound + 1];
        for (int i = 2; i <= upperBound; i++) {
            primeArray[i] = true;
        }

        for (int p = 2; p * p <= upperBound; p++) {
            if (primeArray[p]) {
                for (int multiple = p * p; multiple <= upperBound;
multiple += p) {
                    primeArray[multiple] = false;
                }
            }
        }
        return primeArray;
    }

    public static void displayPrimes(boolean[] primeArray) {
        DecimalFormat df = new DecimalFormat("0000");
        int count = 0;

        for (int i = 2; i < primeArray.length; i++) {
            if (primeArray[i]) {
                System.out.print(df.format(i) + " ");
                count++;
                if (count % 16 == 0) {
                    System.out.println();
                }
            }
        }

        if (count % 16 != 0) {
            System.out.println();
        }
    }
}

```

}
}
}