Sieve.java

```java
package labs;
import java.util.Scanner;

public class Sieve {
    public static void main(String[] args) {
        System.out.println("Sieve of Eratosthenes\n");
        Scanner input = new Scanner(System.in);
        System.out.print("Enter the primes upper bound ===>> ");
        final int MAX = input.nextInt();
        input.close();
        if (MAX <= 0)
            System.out.print("input out of bounds error- enter an integer between 1 and 2000000");
        boolean[] primes = computePrimes(MAX);
        displayPrimes(primes);
    }

    public static boolean[] computePrimes(int upperBound) {
        // This method will compute the prime numbers
        System.out.println("COMPUTING PRIMES");
        boolean[] primeArray = new boolean[upperBound+1];
        for (int i = 2; i < primeArray.length; i++) {
            primeArray[i] = true;
        }
        for (int i = 2; i <= Math.sqrt(upperBound); i++) {
            if (primeArray[i]) {
            for (int j = 2; j <= (double) upperBound / i; j++)
                primeArray[i * j] = false;
            }
        }
        return primeArray;
    }

    public static void displayPrimes(boolean[] primeArray) {
    // This method will display the prime numbers
        DecimalFormat form = new DecimalFormat("0000");
        System.out.println("PRIMES BETWEEN 1 AND " + (primeArray.length - 1));
        String primes = new String();
        int j = 0;
        for (int i = 2; i < primeArray.length; i++) {
            if (primeArray[i] == true) {
                if (j % 16 == 0)
                    primes = primes.concat("\n");
                primes = primes.concat(form.format(i) + " ");
                j++;
            }
        }
        System.out.println(primes);
    }
}

```