import java.util.ArrayList;

import java.util.Arrays;

public class ReshetoEratosfena {

private static boolean[] AllNumbers;

private static int[] EndResult;

private static int size;

public ReshetoEratosfena(int size) {

ReshetoEratosfena.size = size;

if(size < 2 ) ShowArray();

else {

GenerateBooleanArray();

CrossOutMultiples();

ConvertResultIntoArray();

ShowArray();

}

}

public static void GenerateBooleanArray(){

AllNumbers = new boolean[size + 1];

for (int i = 2; i < AllNumbers.length; i++)

AllNumbers[i] = false;

}

public static void CrossOutMultiples(){

int limit = SetLimit();

for (int i = 2; i < limit; i ++)

if(CheckCrossedNum(i))

ExpongeNumbers(i);

}

public static int SetLimit(){

double limit = Math.sqrt(AllNumbers.length);

return (int)limit;

}

public static boolean CheckCrossedNum(int i){

return !AllNumbers[i];

}

public static void ExpongeNumbers(int i){

for (int multiple = i \* 2; multiple < AllNumbers.length; multiple += i)

AllNumbers[multiple] = true;

}

public static void ConvertResultIntoArray(){

EndResult = new int[NumberOfUncrossedNumbers()];

for (int i = 2, j = 0; i < AllNumbers.length; i ++)

if(CheckCrossedNum(i))

EndResult[j++] = i;

}

public static int NumberOfUncrossedNumbers(){

int counter = 0;

for (int i = 2; i < AllNumbers.length; i++)

if(CheckCrossedNum(i)) counter++;

return counter;

}

public static void ShowArray(){

if(EndResult.length == 0) System.out.println("Pip");

else System.out.println(Arrays.toString(EndResult));

}

}