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));

 }

}