Detecting unreachable instructions

Untouched instructions in code can cause some serious problems. You may have heard about a recent security hole related to [this topic](https://www.imperialviolet.org/2014/02/22/applebug.html).

Your task is to write a small program that catches the “untouched” lines of code written in our simplified programming language.

The program starts at line 1. You may assume the program will be terminated if it infinitely loops or continues past its last instruction.

Input description/format

Each line of input contains an instruction (NEXT or GOTO).

1. NEXT: the program will move to the next line.
2. GOTO X: the program will go to line number X.

Output description/format

Please print out the line number of instructions that the program doesn't touch (one line number per line in the output file).

Example input

NEXT

NEXT

GOTO 5

NEXT

GOTO 1

NEXT

Example output

4

6

Practice

GOTO 36

GOTO 767

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 516

NEXT

NEXT

NEXT

NEXT

GOTO 957

NEXT

NEXT

NEXT

GOTO 816

GOTO 47

GOTO 110

GOTO 582

GOTO 49

NEXT

NEXT

GOTO 905

GOTO 587

GOTO 850

NEXT

NEXT

GOTO 86

NEXT

GOTO 457

NEXT

GOTO 739

NEXT

NEXT

GOTO 47

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 321

NEXT

NEXT

GOTO 442

GOTO 480

GOTO 617

GOTO 202

GOTO 847

GOTO 455

NEXT

NEXT

NEXT

GOTO 666

NEXT

NEXT

GOTO 563

NEXT

NEXT

NEXT

GOTO 32

GOTO 925

NEXT

GOTO 770

NEXT

GOTO 427

GOTO 583

GOTO 809

NEXT

NEXT

GOTO 397

NEXT

NEXT

GOTO 973

NEXT

NEXT

GOTO 810

NEXT

GOTO 223

NEXT

NEXT

NEXT

GOTO 755

NEXT

GOTO 532

GOTO 928

NEXT

NEXT

GOTO 91

GOTO 364

NEXT

NEXT

GOTO 407

GOTO 151

NEXT

GOTO 915

GOTO 755

GOTO 69

NEXT

GOTO 504

NEXT

NEXT

GOTO 124

GOTO 110

GOTO 886

GOTO 790

GOTO 888

NEXT

NEXT

NEXT

GOTO 164

NEXT

GOTO 60

GOTO 733

GOTO 974

NEXT

NEXT

NEXT

NEXT

GOTO 706

GOTO 750

NEXT

GOTO 137

NEXT

NEXT

GOTO 566

GOTO 776

GOTO 199

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 397

GOTO 738

NEXT

GOTO 716

GOTO 144

GOTO 925

GOTO 466

GOTO 881

NEXT

NEXT

NEXT

GOTO 801

NEXT

GOTO 986

GOTO 710

NEXT

GOTO 920

NEXT

NEXT

NEXT

GOTO 891

NEXT

NEXT

NEXT

NEXT

GOTO 200

NEXT

GOTO 368

GOTO 86

NEXT

NEXT

NEXT

GOTO 186

NEXT

NEXT

GOTO 773

GOTO 375

NEXT

NEXT

NEXT

NEXT

GOTO 259

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 884

GOTO 441

GOTO 233

NEXT

GOTO 339

GOTO 824

NEXT

GOTO 563

NEXT

GOTO 139

NEXT

GOTO 914

GOTO 776

NEXT

NEXT

GOTO 584

NEXT

NEXT

GOTO 626

NEXT

NEXT

NEXT

GOTO 288

GOTO 57

GOTO 572

GOTO 355

NEXT

NEXT

GOTO 802

GOTO 828

NEXT

NEXT

GOTO 8

NEXT

GOTO 283

NEXT

NEXT

NEXT

GOTO 378

NEXT

GOTO 992

NEXT

NEXT

NEXT

GOTO 699

NEXT

GOTO 652

GOTO 954

NEXT

GOTO 657

GOTO 748

NEXT

GOTO 104

NEXT

NEXT

GOTO 562

GOTO 332

GOTO 191

GOTO 365

GOTO 437

GOTO 96

NEXT

GOTO 361

GOTO 626

GOTO 155

GOTO 240

GOTO 590

NEXT

GOTO 103

NEXT

NEXT

NEXT

GOTO 725

NEXT

GOTO 770

NEXT

NEXT

GOTO 822

NEXT

NEXT

NEXT

NEXT

GOTO 713

NEXT

GOTO 681

GOTO 538

GOTO 482

NEXT

GOTO 31

NEXT

NEXT

GOTO 825

GOTO 915

NEXT

GOTO 668

GOTO 983

GOTO 234

GOTO 746

NEXT

GOTO 32

GOTO 180

GOTO 90

NEXT

GOTO 558

NEXT

GOTO 402

NEXT

GOTO 77

GOTO 418

NEXT

GOTO 930

NEXT

GOTO 670

GOTO 746

GOTO 493

NEXT

NEXT

GOTO 35

GOTO 763

GOTO 70

NEXT

GOTO 404

GOTO 362

GOTO 704

NEXT

NEXT

NEXT

GOTO 757

GOTO 539

NEXT

NEXT

GOTO 681

GOTO 323

GOTO 271

NEXT

GOTO 831

GOTO 2

GOTO 871

GOTO 803

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 824

NEXT

GOTO 264

NEXT

GOTO 249

NEXT

NEXT

NEXT

NEXT

GOTO 213

GOTO 646

GOTO 170

NEXT

NEXT

GOTO 754

NEXT

GOTO 105

GOTO 658

GOTO 564

NEXT

GOTO 772

NEXT

NEXT

NEXT

GOTO 47

GOTO 22

GOTO 177

GOTO 959

NEXT

GOTO 967

GOTO 125

NEXT

GOTO 167

NEXT

GOTO 563

GOTO 554

NEXT

NEXT

GOTO 9

GOTO 89

GOTO 594

NEXT

GOTO 317

GOTO 755

NEXT

GOTO 946

GOTO 274

GOTO 810

NEXT

GOTO 201

GOTO 739

NEXT

NEXT

GOTO 203

GOTO 683

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 726

NEXT

GOTO 616

GOTO 803

GOTO 466

GOTO 608

NEXT

GOTO 787

NEXT

NEXT

NEXT

GOTO 566

NEXT

GOTO 893

GOTO 233

GOTO 693

GOTO 246

GOTO 809

GOTO 171

NEXT

GOTO 141

NEXT

GOTO 755

GOTO 489

NEXT

GOTO 211

GOTO 850

NEXT

GOTO 536

GOTO 436

GOTO 976

GOTO 752

GOTO 43

GOTO 924

NEXT

NEXT

GOTO 244

GOTO 231

NEXT

GOTO 586

GOTO 367

GOTO 181

NEXT

NEXT

NEXT

GOTO 99

GOTO 870

NEXT

NEXT

GOTO 903

GOTO 960

NEXT

GOTO 521

GOTO 382

GOTO 987

NEXT

GOTO 17

GOTO 392

NEXT

NEXT

GOTO 7

GOTO 755

GOTO 52

GOTO 639

NEXT

NEXT

GOTO 716

GOTO 689

GOTO 162

GOTO 882

GOTO 684

GOTO 39

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 864

NEXT

GOTO 449

GOTO 60

NEXT

GOTO 533

GOTO 200

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 314

GOTO 189

GOTO 419

NEXT

GOTO 39

GOTO 849

GOTO 203

NEXT

NEXT

NEXT

NEXT

GOTO 982

NEXT

NEXT

NEXT

NEXT

GOTO 203

NEXT

GOTO 593

GOTO 826

GOTO 254

NEXT

NEXT

NEXT

GOTO 875

NEXT

GOTO 815

GOTO 104

GOTO 887

GOTO 567

NEXT

NEXT

GOTO 155

NEXT

NEXT

GOTO 506

NEXT

GOTO 856

GOTO 978

GOTO 794

GOTO 950

NEXT

NEXT

GOTO 951

NEXT

GOTO 691

GOTO 937

GOTO 483

GOTO 124

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 620

NEXT

NEXT

GOTO 991

GOTO 700

NEXT

GOTO 226

NEXT

GOTO 365

GOTO 277

GOTO 430

GOTO 317

NEXT

GOTO 798

NEXT

GOTO 537

GOTO 565

NEXT

NEXT

GOTO 401

GOTO 868

GOTO 384

GOTO 238

NEXT

NEXT

NEXT

NEXT

GOTO 118

GOTO 997

GOTO 578

NEXT

GOTO 164

GOTO 838

NEXT

GOTO 167

GOTO 350

NEXT

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GOTO 510

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GOTO 915

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GOTO 268

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GOTO 308

GOTO 977

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GOTO 40

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GOTO 653

NEXT

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GOTO 537

NEXT

NEXT

GOTO 833

GOTO 116

GOTO 570

GOTO 205

GOTO 169

GOTO 467

NEXT

NEXT

NEXT

GOTO 439

NEXT

GOTO 567

GOTO 904

NEXT

GOTO 244

NEXT

GOTO 160

GOTO 667

NEXT

GOTO 481

NEXT

NEXT

NEXT

GOTO 691

NEXT

NEXT

GOTO 879

GOTO 971

NEXT

NEXT

GOTO 525

NEXT

NEXT

GOTO 910

GOTO 341

GOTO 294

GOTO 406

NEXT

GOTO 640

NEXT

NEXT

NEXT

GOTO 649

GOTO 779

NEXT

GOTO 466

GOTO 120

GOTO 831

NEXT

NEXT

NEXT

GOTO 866

NEXT

GOTO 168

GOTO 900

NEXT

GOTO 407

GOTO 164

GOTO 725

NEXT

NEXT

NEXT

GOTO 462

GOTO 646

NEXT

GOTO 923

GOTO 358

GOTO 422

GOTO 140

NEXT

GOTO 788

GOTO 598

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GOTO 150

GOTO 795

NEXT

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GOTO 546

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GOTO 202

GOTO 195

GOTO 379

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GOTO 585

GOTO 585

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GOTO 309

GOTO 895

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GOTO 884

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GOTO 306

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GOTO 560

GOTO 533

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GOTO 72

GOTO 919

GOTO 968

GOTO 700

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GOTO 837

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GOTO 647

GOTO 489

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NEXT

GOTO 993

GOTO 451

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GOTO 909

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GOTO 427

GOTO 649

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NEXT

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GOTO 77

GOTO 599

GOTO 889

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GOTO 656

NEXT

NEXT

GOTO 233

GOTO 991

GOTO 959

GOTO 65

GOTO 824

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 892

NEXT

GOTO 352

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 126

NEXT

NEXT

NEXT

NEXT

GOTO 264

NEXT

NEXT

GOTO 100

NEXT

GOTO 551

NEXT

GOTO 336

GOTO 173

NEXT

GOTO 979

GOTO 920

GOTO 244

NEXT

GOTO 299

NEXT

NEXT

GOTO 773

GOTO 721

NEXT

NEXT

GOTO 343

NEXT

GOTO 902

NEXT

GOTO 225

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 147

GOTO 273

GOTO 680

GOTO 439

NEXT

GOTO 865

NEXT

GOTO 700

GOTO 267

NEXT

GOTO 70

NEXT

NEXT

NEXT

GOTO 897

NEXT

GOTO 611

NEXT

NEXT

NEXT

GOTO 841

GOTO 652

GOTO 579

GOTO 821

NEXT

NEXT

NEXT

GOTO 482

GOTO 191

GOTO 776

NEXT

GOTO 143

GOTO 433

NEXT

NEXT

NEXT

GOTO 499

GOTO 792

NEXT

GOTO 695

NEXT

NEXT

NEXT

NEXT

GOTO 867

GOTO 125

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 710

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GOTO 588

GOTO 871

NEXT

NEXT

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GOTO 583

GOTO 320

NEXT

GOTO 255

GOTO 258

GOTO 503

NEXT

GOTO 994

GOTO 797

NEXT

GOTO 603

GOTO 173

NEXT

GOTO 75

GOTO 730

GOTO 132

NEXT

GOTO 583

GOTO 827

GOTO 638

NEXT

GOTO 29

GOTO 445

GOTO 652

NEXT

NEXT

GOTO 816

GOTO 345

GOTO 516

NEXT

GOTO 699

NEXT

NEXT

NEXT

GOTO 42

NEXT

NEXT

NEXT

GOTO 774

GOTO 790

GOTO 39

GOTO 818

GOTO 420

NEXT

NEXT

GOTO 258

GOTO 728

GOTO 509

NEXT

GOTO 949

NEXT

GOTO 202

GOTO 278

NEXT

GOTO 210

GOTO 5

GOTO 293

NEXT

GOTO 591

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

NEXT

GOTO 512

NEXT

NEXT

NEXT

GOTO 947

GOTO 798

NEXT

GOTO 814

GOTO 442

NEXT

GOTO 188

NEXT

GOTO 847

NEXT

GOTO 769

GOTO 731

GOTO 214

GOTO 608

GOTO 242

GOTO 182

GOTO 146

NEXT

GOTO 440

GOTO 667

GOTO 271

NEXT

GOTO 449

NEXT

NEXT

GOTO 162

NEXT

NEXT

NEXT

GOTO 152

GOTO 997

NEXT

GOTO 129

GOTO 467

NEXT

NEXT

NEXT

NEXT

GOTO 760

NEXT

NEXT

NEXT

GOTO 418

NEXT

GOTO 42

GOTO 136

GOTO 439

GOTO 741

NEXT

NEXT

GOTO 594

NEXT

GOTO 139

GOTO 656

GOTO 483

NEXT

GOTO 494

GOTO 652

GOTO 249

GOTO 442

NEXT

GOTO 38

NEXT

NEXT

GOTO 553

GOTO 908

GOTO 678

GOTO 558

GOTO 485

NEXT

GOTO 374

NEXT

GOTO 478

NEXT

NEXT

NEXT

GOTO 700

NEXT

NEXT

GOTO 385

NEXT

NEXT

Program

import java.io.BufferedReader;

import java.io.FileReader;

import java.io.IOException;

import java.util.ArrayList;

import java.util.List;

public class HelloWorld{

public static void main(String []args){

System.out.println("Hello World");

// int SIZE = 5;

// String[] input = new String[SIZE];

// int[] visited = new int[SIZE];

// input[0] = "NEXT";

// input[1] = "NEXT";

// input[2] = "GOTO 5";

// input[3] = "NEXT";

// input[4] = "NEXT";

int nextLoc = 1;

try{

FileReader fileReader = new FileReader("input.txt");

BufferedReader bufferedReader = new BufferedReader(fileReader);

List<String> input = new ArrayList<String>();

String line = null;

while ((line = bufferedReader.readLine()) != null) {

input.add(line);

}

bufferedReader.close();

int SIZE = input.size();

int[] visited = new int[SIZE];

System.out.println(SIZE);

int counter = 0;

int i = 0;

if(SIZE>0){

visited[i]=1;

}

while(i<SIZE-1){

// System.out.println((input.get(i)).substring(0,4));

if((input.get(i)).substring(0,4).equals("GOTO")){

i = Integer.parseInt((input.get(i)).substring(5, (input.get(i)).length()));

// System.out.println("B");

if(i<=SIZE){

i--;

visited[i] = 1;

}

else{

// System.out.println("C");

break;

// i = SIZE+1;

}

}

if(input.get(i).equals("NEXT")){

// System.out.println("D");

i++;

if(i<SIZE){

visited[i] = 1;

}

}

counter++;

if (counter>SIZE){

break;

}

}

for( i =0; i<SIZE; i++){

if(visited[i]==0){

System.out.println(i+1);

}

}

}

catch(Exception e){}

}

}