

## 10151 Spaghetti

Early languages like Fortran IV use conditional and unconditional *goto* statements instead of structured statements like *if* and *while*. In Fortran IV, each statement occupies a line of input. The first five positions in each line are reserved for an optional label, which is an integer. The next position is reserved for a continuation marker, which we shall not consider further. Therefore, statements occupy positions 7 and beyond in each input line. The *goto* statement looks like this

```
goto label
```

and the conditional *goto* statement looks like this

```
if(expression)goto label
```

The language contains many other statements, but only the conditional *goto* begins with ‘if(’ and ends with ‘)goto label’ where *label* is an integer. All spaces are ignored within a Fortran IV statement. For this problem, the ‘stop’ statement, which halts execution, appears only as the last line of the program.

Your job is to determine whether or not two Fortran programs are equivalent. They are equivalent if, for all possible inputs, they execute exactly the same sequence of statements, ignoring unconditional gotos and labels. By “the same sequence of statements” we mean statements that are textually identical, after spaces and labels are removed. You must assume that each conditional *goto* will be taken for some inputs and not taken for others. Unconditional gotos are, of course, always taken.

### Input

Your input consists of several couples of programs separated by a blank line. There is also a blank line between two consecutive couples. No input line exceeds 80 characters and no program contains more than 1000 lines. Each label used in a *goto* statement appears to the left of exactly one statement; no label is repeated.

### Output

Output consists of a single line for each one of the input couples, stating either ‘The programs are equivalent.’ or ‘The programs are not equivalent.’

### Sample Input

```
read 6, i,k,j
99 if(i .lt. j)goto 33
goto 55
33 i=j
goto 99
55 k=j+1
stop

read6,i,k,j
if(i.lt.j)goto12345
77 k=j+1
goto5555
12345 i=j
```

```
        if(i.lt.j)goto12345
        goto77
88      goto88
5555   stop
```

```
        read 6, i,k,j
99     if(i .lt. j)goto 33
        goto 55
33     i=j
        goto 99
55     k=j+2
        stop
```

```
        read6,i,k,j
        if(i.lt.j)goto12345
77     k=j+1
        goto5555
12345  i=j
        if(i.lt.j)goto12345
        goto77
5555   stop
```

### Sample Output

The programs are equivalent.

The programs are not equivalent.