



Task GCD

 – sec.  – MB

Write a program which reads two numbers a, b and prints their greatest common divisor (GCD).

Implementation details

The program that you will write must be written in machine code in a text file (`txt`). The machine code supports the following instructions:

IN R

This instruction reads a number into register R .

OUT R

This instruction prints the number in register R .

MOV $R1\ R2$

This instruction copies the value of $R2$ into register $R1$.

ADD $R1\ R2$

This instruction adds the value of $R2$ to the value of $R1$.

SUB $R1\ R2$

This instruction subtracts the value of $R2$ from the value of $R1$.

INC R

This instruction increases the value of register R by 1.

DEC R

This instruction decreases the value of register R by 1.

CMP $R1\ R2$

This instruction compares the values of registers $R1$ and $R2$ and stores the result in register RES . The result is 0 if $R1 \geq R2$ and 1 if $R1 < R2$.

JZ N

This instruction tells the interpreter to go to line N in your code, only if $RES = 0$.

JNZ N



This instruction tells the interpreter to go to line N in your code, only if $RES \neq 0$.

RETURN

This instruction terminates the execution of your program.

- $R, R1, R2$: a register. It can be A, B, C, D, E or RES . You are allowed to write to register RES .
- N : a line number in your code. The indexing starts from 1.



Constraints

- $1 \leq a, b \leq 10^5$



Subtasks

Subtask	Points	Additional constraints
1	6	$a = 1$
2	7	$1 \leq a, b \leq 5$
3	41	$1 \leq a, b \leq 100$
4	46	$1 \leq a, b \leq 10^5$



Sample program

Let us look at a sample program in machine code which reads two numbers and prints their sum:

```
IN A
IN B
ADD A B
OUT A
```

Let us look at another sample program which reads two numbers and prints the greater of them:

```
IN A
IN B
CMP A B
```



```
JZ 6
JNZ 8
OUT A
RETURN
OUT B
RETURN
```



Sample grader

The provided grader reads the machine code from a file `nod.txt`, and the numbers a, b are given on the standard input. On the standard output the grader prints the output of your program.