Algorithm. Finding the Maximum Element in a Finite Sequence.
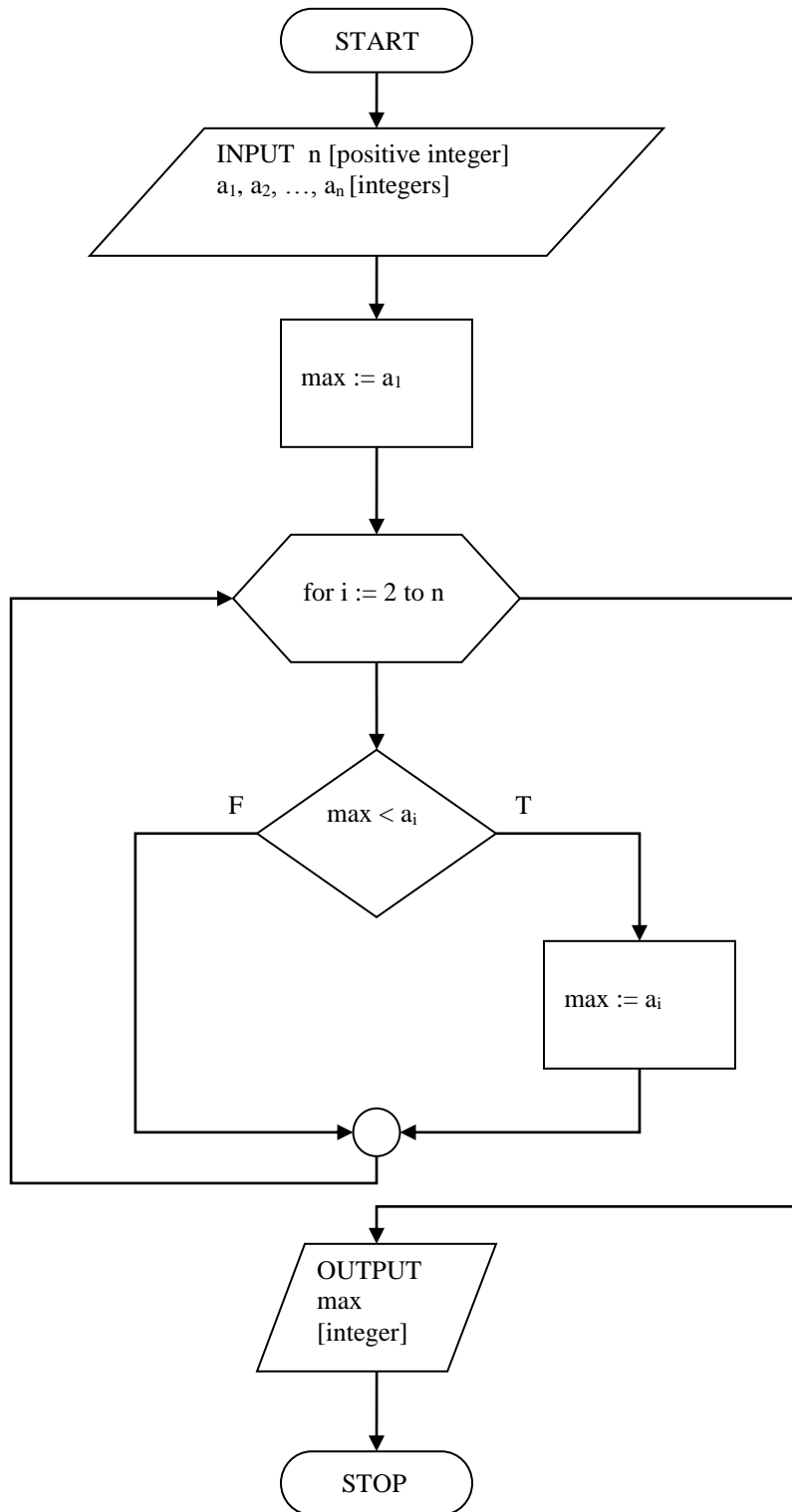
START

INPUT n [positive integer]
$a_1, a_2, \ldots, a_n$ [integers]

$max := a_1$

for i := 2 to n

F $max < a_i$ T

$max := a_i$

OUTPUT
max
[integer]

STOP

Algorithm. Linear Search Algorithm.

START

INPUT n [integer]
$a_1, a_2,...,a_n$ [distinct integers]
x [integer]

i := 1

$i \leq n$ and $x \neq a_i$ F

T

i := i+1

$i \leq n$ F   T

location := 0   location := i

OUTPUT
location
[integer]

STOP
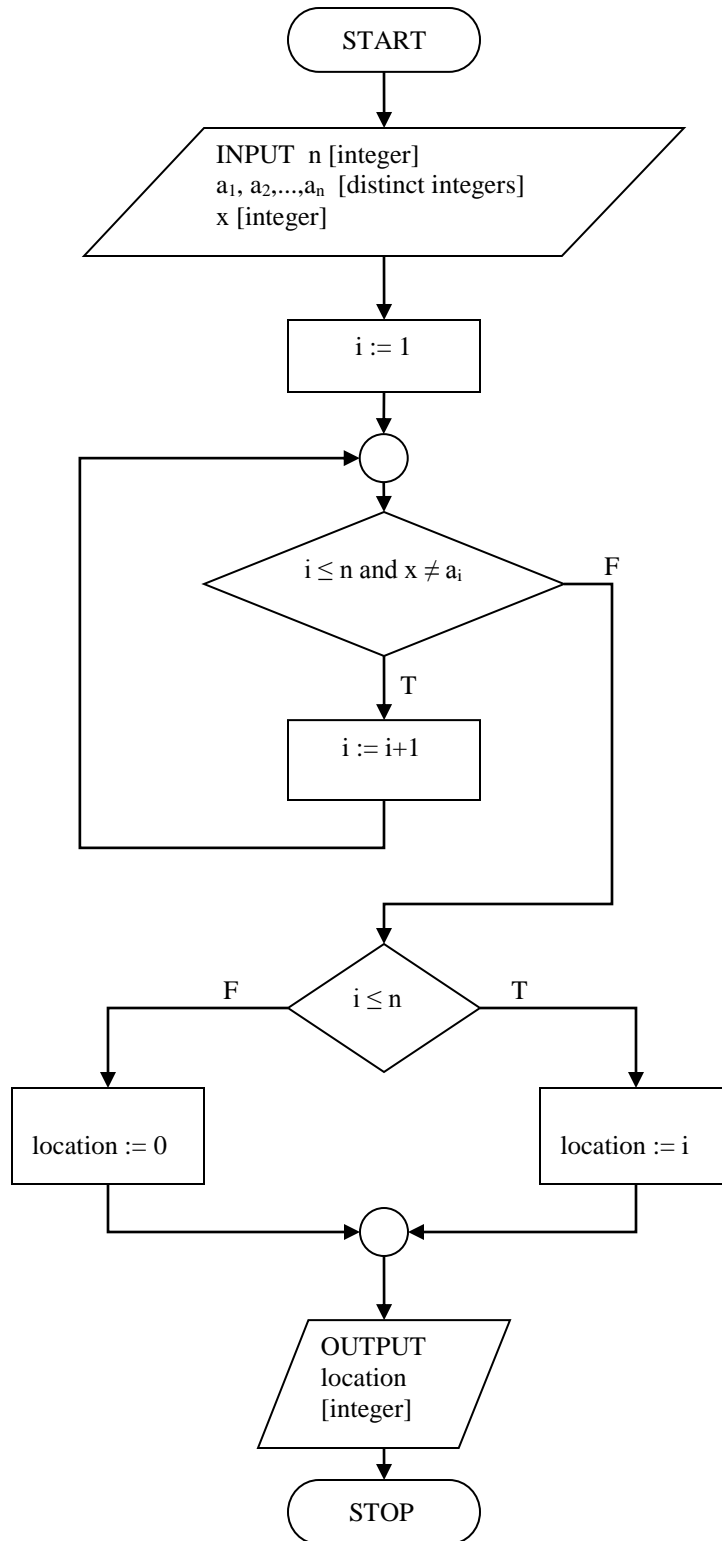
Algorithm. Binary Search Algorithm.

START

INPUT n [positive integer]
$a_1, a_2,...,a_n$ [increasing integers]
x [integer]

location := 0
bot := 1
top := n

top $\geq$ bottom
and
location = 0

F

T

m := floor((bot+top)/2)

$a_m = x$

F   T

location := m

$a_m > x$

F   T

bot := m+1

top := m-1

OUTPUT
location
[integer]

STOP
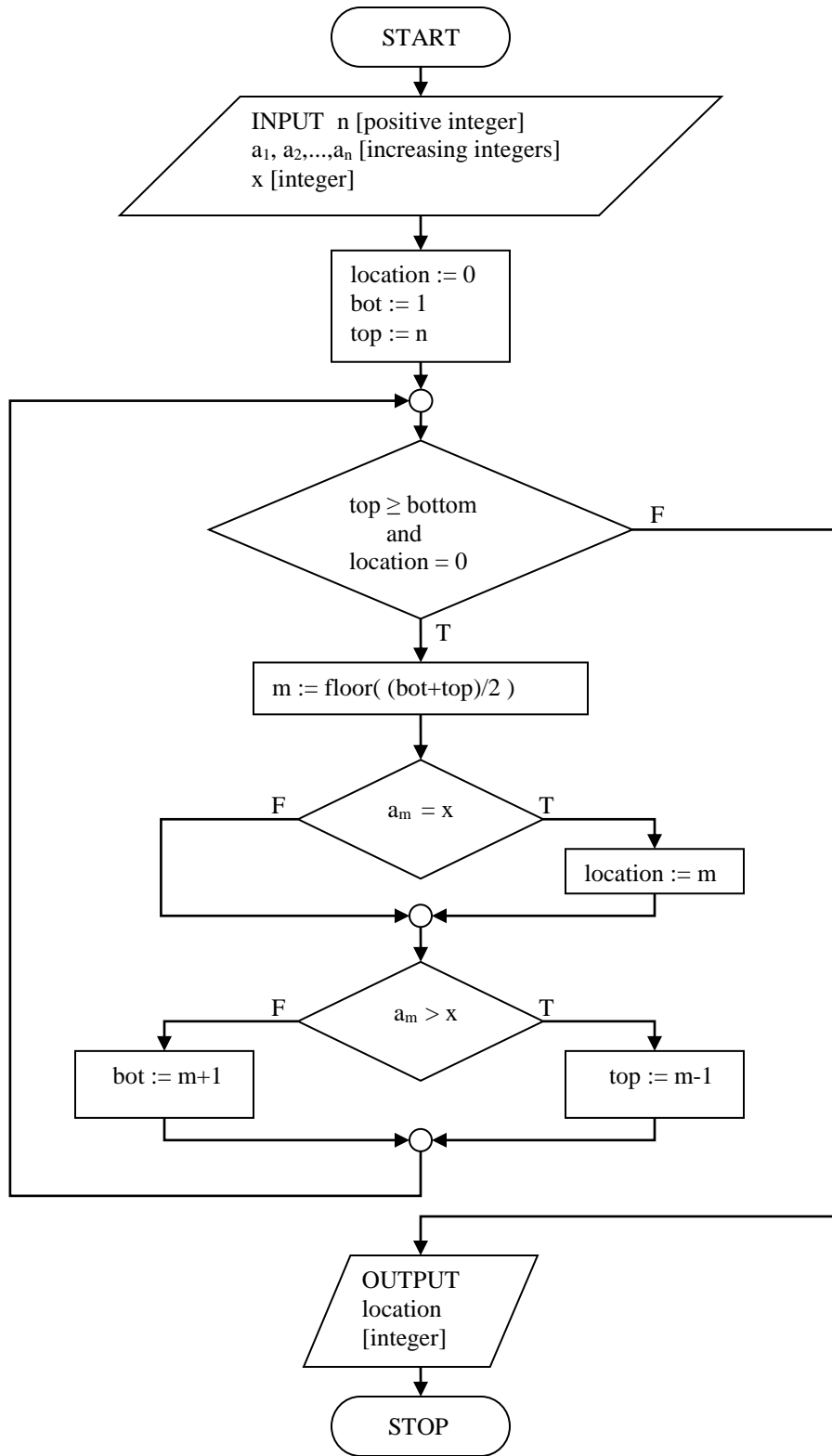
Algorithm. Division Algorithm.
(Positive divisor, nonnegative dividend.)

START

INPUT
a [nonnegative integer]
d [positive integer]

r := a

q := 0

$r \geq d$ F

T

r := r-d

q := q+1

OUTPUT
q, r
[nonnegative integers]

STOP
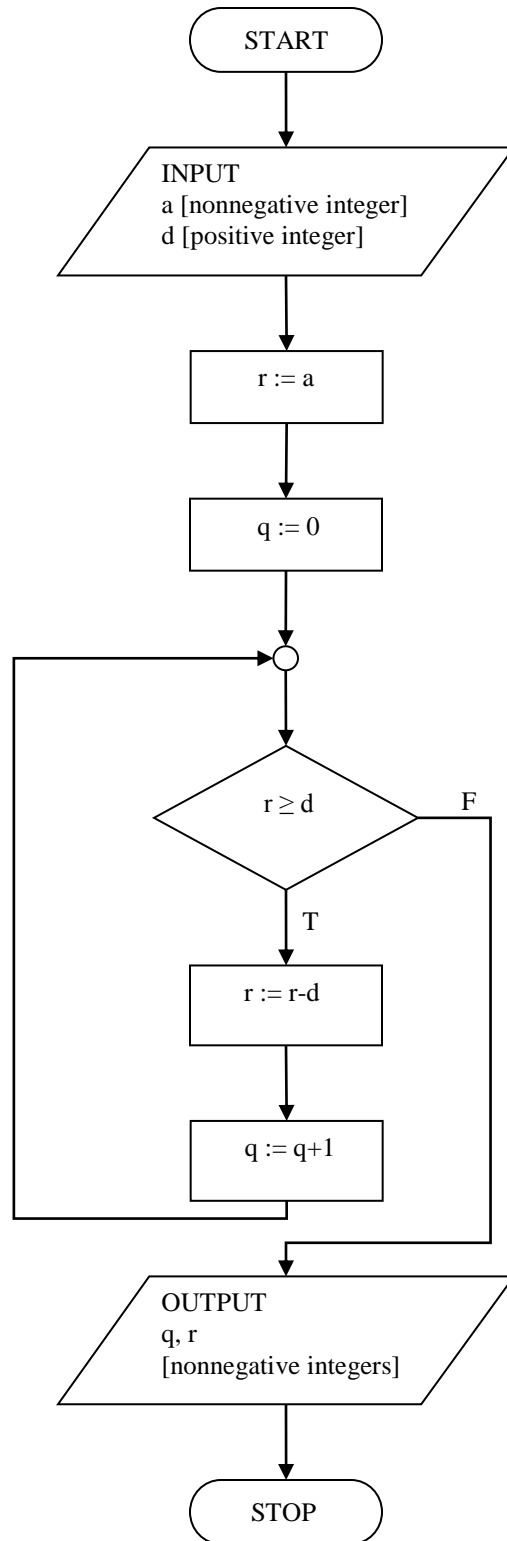
Algorithm. Computing gcds by Subtraction.
(Finds greatest common divisor of two positive integers.)

START

INPUT
A, B
[positive integers]

a := A

b := B

a ≠ 0 and b ≠ 0

F

T

a ≥ b

F

T

b := b − a

a := a − b

a = 0

F

T

gcd := a

gcd := b

OUTPUT
gcd [a positive integer]

STOP