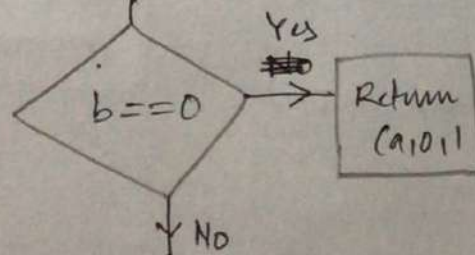
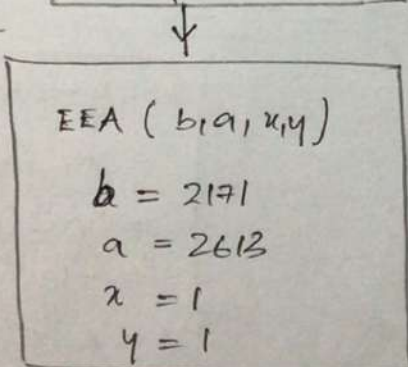
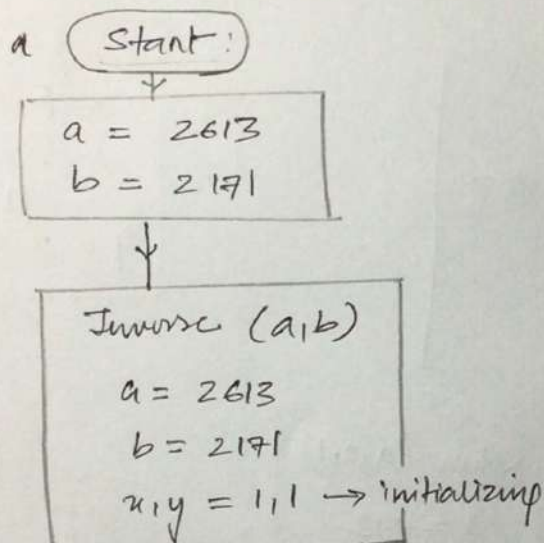


# ASSIGNMENT

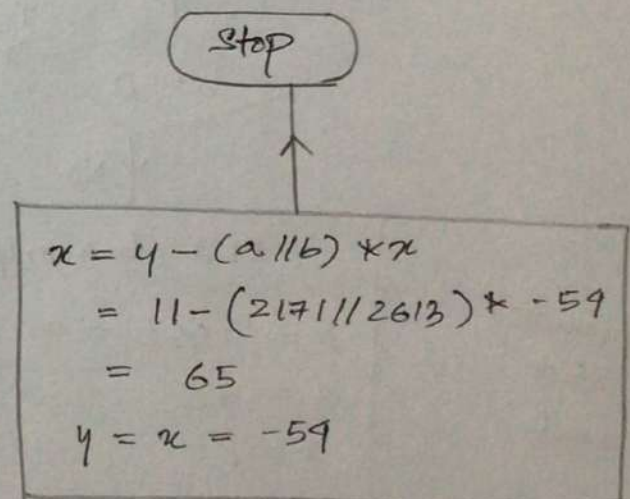
## Logical Flow of the submitted program:

- The program that is submitted uses recursive method to solve the gcd (2613, -2171) and inverse of 2613 and -2171.  
So, the datastructure implemented is stack.

Therefore, the right size of the paper is the flow of stack push and the left size of the paper is the flow of stack pop.



Bottom  
of the  
stack



Updated value  
of x, y

Intermediate  
Stack  
Level

EEA(b, a, x, y)

$$b = a \% b = 2613 \% 2171 = 442$$

$$a = 2171$$

$$x = 1$$

$$y = 1$$

$$b == 0$$

Yes

Return (a, 0, 1)

$$a = 2171$$

$$\begin{aligned} x &= y - (a // b) * x \\ &= -10 - (2171 // 442) * 11 \\ &= -10 - 4 * 11 \\ &= -54 \\ y &= x = 11 \end{aligned}$$

Updated  
value of  
x & y

Intermediate  
Stack  
Level

EEA(b, a, x, y)

$$b = a \% b = 2171 \% 442 = 403$$

$$a = 442$$

$$x = 1$$

$$y = 1$$

$$b == 0$$

Yes

Return (a, 0, 1)

$$a = 442$$

$$\begin{aligned} x &= y - (a // b) * x \\ &= 1 - 442 // 403 * (-10) \\ &= 1 - 1 * -10 \\ &= 11 \\ y &= x = -10 \end{aligned}$$

Updated  
value of  
x & y

Intermediate  
Stack  
Level

EEA(b, a, x, y)

$$b = a \% b = 442 \% 403 = 39$$

$$a = 403$$

$$x = 1$$

$$y = 1$$

$$b == 0$$

Yes

Return (a, 0, 1)

$$a = 403$$

$$\begin{aligned} x &= y - (a // b) * x \\ &= 0 - (403 // 39) * 1 \\ &= 0 - 10 * 1 \\ &= -10 \end{aligned}$$

$$y = x = 1$$

Here x is the x from  
previous function)

Updated value  
of x & y



Immediate  
stack  
level

EEA (b, a, x, y)

$$b = a \% b = 403 \% 39 = 13$$

$$a = 39$$

$$x = 1$$

$$y = 1$$

$$b == 0$$

Yes

Return (a, 0, 1)

$$a = 39$$

EEA (b, a, x, y)

$$b = a \% b = 39 \% 13 = 0$$

$$a = 13$$

$$x = 1$$

$$y = 0$$

$$b == 0$$

Yes

Return (a, 0, 1)

$$a = 13, 0, 1$$

$$x = y - (a // b) * x$$

$$= 1 - (39 // 13) * 0$$

$$= 1$$

$$y = x = 0$$

Here  $x$  is the value of  
 $x$  from the previous  
function

$$x = 0$$

$$y = 1$$

Pop Operation

Result :  $gcd = 13$

$$x = 65$$

$$y = -59$$