

Scratch

Variables.

$$x + 2 = 3 + 2 \\ = 5.$$

x | ~~3~~ 7

y | 5

ONLY variables +
their value.

$$y+x$$

$$= 5+8$$

$$= 13$$

$$y-3 = 13-3 = 10$$

x		5	8
y		5	13
z			10

Scratch	variables
$b * a$	a 7
$\rightarrow b = b * a$	b 7 14
$b * a = 2 * 7 = 14$	c 2 100
$a + b = 7 + 14 = 21$	
$a < b$	
$\rightarrow 7 < 14 \rightarrow \text{true.}$	

Scratch	Variable,
$s > t$	s 'hi'
$\rightarrow \text{'hi'} > \text{'bye'}$	t 'bye' '???'
$\rightarrow \text{true.}$	u 'hello' 'seeya'

Scratch

Function Stack

~~f | \textcircled{x} | 3~~

~~g | z | 9~~

~~g | z | 15~~

$z * 3 = 3 * 3 = 9$

$x + z = 3 + 2 = 5$

Printed output

9

15

3

Scratch

Stack

$$x + y = 6 + 7 = 13$$

$$\begin{aligned} & \text{alice}(x + y) \\ &= \text{alice}(6 + 7) \\ &= \text{alice}(13) \end{aligned}$$

$$z * z = 13 * 2 = 26$$

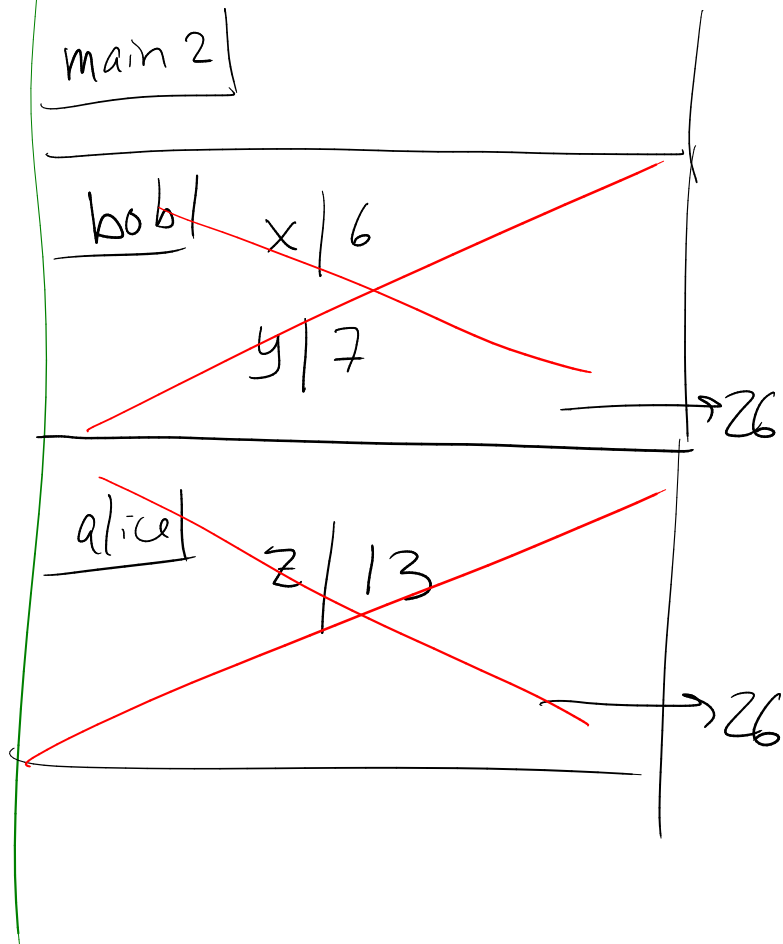
$$= 26$$

return $\text{alice}(x + y)$

→ return 26

Printed output

26



Scratch

Stack

return $\text{alice}(x) + \text{alice}(y)$

→ return $16 + \text{alice}(y)$

→ return $16 + 8$

→ return 24

$$z + 10 = -2 + 10 = 8$$

main

~~bob~~ | ~~x~~ | ~~8~~

~~y~~ | ~~-2~~

→ 24

~~alice~~ | ~~z~~ | ~~8~~

→ 16

~~alice~~ | ~~z~~ | ~~-2~~

→ 8

Printed output

24