

Tracing with the Heap

1) Scratch	Stack	Heap
	main	
	a_list	→ [1, ⁻⁷ 8 , 3, 47]
	b_list	→ [2, 4, 6]
	temp list	→ [2 , 4 , 6]
	item = 1 2 3	

Printed Output

[1, -7, 3, 47]

[1, -7, 3, 47]

[2, 4, 6]

There is no elegant way to indicated changes in the heap. Just make clear what is happen.

You can always re-write the values/list as needed

2)

Scratch	Stack	Heap
	main2	'snail'
	a-dict	1: 'cat', 2: dog ,
	b-dict	34: 'fish' }
	temp-dict	100: 'pis' }
	item = x 2 34	1: 'cat!!', 2: 'dog!!', 34: 'fish!!' }

{ 1: 'cat', 2: 'snail', 34: 'fish', 100: 'pis' }

{ 1: 'cat', 2: 'snail', 34: 'fish', 100: 'pis' }

{ 1: 'cat!!', 2: 'dog!!', 34: 'fish!!' }

Note: item loops
over the keys
of a-dict

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Scratch

Stack

Heap

main 3

a-str = 'bye'

b-str = ~~'bye'~~ 'byeZ'temp-str = ~~'b!'~~ ~~'y!'~~ 'b!y!c!'item = ~~'b'~~ ~~'y'~~ 'c'

Since strings
are immutable,
nothing goes in
the heap

bye

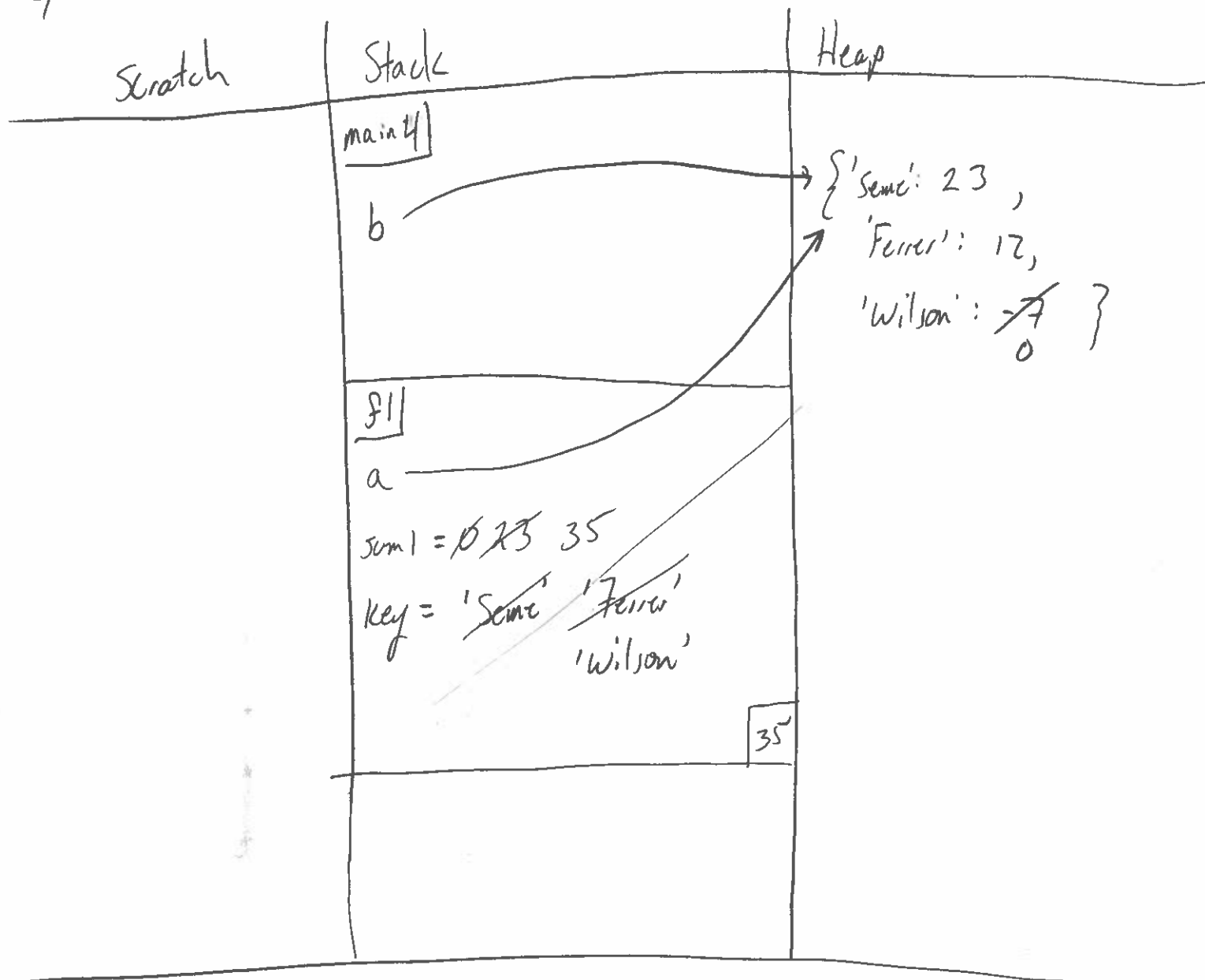
byeZ

b!y!c!

It is worth your time
to think carefully about

#1-#3

4



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{ 'Sene': 23, 'Ferrer': 12, 'Wilson': 0 }

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Scratch

Stack

Heap

main 5

a-list

$\left[\begin{matrix} 6 \\ 1 \end{matrix}, \begin{matrix} 2 \\ 1 \end{matrix}, \begin{matrix} 8 \\ 3 \end{matrix}, \begin{matrix} 9 \\ 1 \end{matrix} \right]$

len(lst) = 4
len(s) = 4

g2

lst

s = 'exam'

i = 0 1 2 3 4

char = 'x' 'x' 'x' 'm'

g1

s = 'e'

g1

s = 'x'

g1

s = 'x' '500'

g1

s = 'm'

Notice that g2 does not print or return anything

[1, 1, 3, 1]