

Initial interface

```

1 b = [1, 0, 0]
2 for k in range(1, len(b)):
3     b[k] = b[k-1] + 2

```

Fill in the trace table by walking through the program line by line. Only fill in a cell for (a) a line number, (b) a variable/a list element/a list that appears for the 1st time or has changed its value, (c) a specified expression or while/if condition that appears for the 1st time or has changed its evaluated value, (d) the accumulated printed output.

line	k	k-1	b[k-1]	b[k]	b
1					[1,0,0]
2	1				
3		0	1	3	[1,0,0]

Previous

Next



(a) feedback interface

```

1 b = [1, 0, 0]
2 for k in range(1, len(b)):
3     b[k] = b[k-1] + 2

```

Fill in the trace table by walking through the program line by line. Only fill in a cell for (a) a line number, (b) a variable/a list element/a list that appears for the 1st time or has changed its value, (c) a specified expression or while/if condition that appears for the 1st time or has changed its evaluated value, (d) the accumulated printed output.

line	k	k-1	b[k-1]	b[k]	b
1					[1,0,0]
2	1				
3		0	1	3	[1,0,0]

Previous

Next



(b) hint interface

Support language and volume of content

T3 supports Python. It covers *for loop*, *condition* and *lists* topics, with a special focus on common basic programming patterns (i.e., *for&for*, *for&x+=i*, *for&lists*). Currently there are 66 problems available. However, we have created an automated process allowing generating CTAT format problems given a Python file (based on the library provided by the [Online Python Tutor](#)).

Supported integration protocols for sign-on and data logging

The integration protocols for sign-on can be found in CMU [CTAT/TutorShop site](#) and relevant developers. Data logging is supported by CMU [DataShop](#).

References and links

Huang, Y. (2018). Learner modeling for integration skills in programming (Doctoral dissertation, University of Pittsburgh). [\[Thesis\]](#) (Advisor: Peter Brusilovsky@UPitt, Committee Members: Kenneth Koedinger@CMU, Christian Schunn@UPitt, Marek Druzdzal@UPitt).

Huang, Y., Guerra-Hollstein, J., Barria-Pineda, J., & Brusilovsky, P. (2017). Learner modeling for integration skills. In *Proceedings of the 25th Conference on user modeling, adaptation and personalization* (pp. 85-93). [\[paper\]](#) [\[slides\]](#)