

Stack Diagram Practice

(find and work with a partner)

1. Given the code below, draw the stack diagram as it would look right *before* line 5 is executed (so `main` is in the process of executing line 9 and `swap` has just finished swapping). Make sure to include all *values* on the *heap* and all *functions* (with the *variables* in their *scope*) on the *stack*.

```
1 def swap(i, j, lst):
2     temp = lst[i]
3     lst[i] = lst[j]
4     lst[j] = temp
5     print("done swapping!")
6
7 def main():
8     ninjas = ["KT", "RH", "AY", "MP"]
9     swap(2, 0, ninjas)
10    print(ninjas)
11
12 main()
```

2. After this program has finished, what is `ninjas` equal to?

Steps for drawing stack diagrams:

- draw empty stack/heap
- put first function called on stack (usually `main`)
 - set up any parameters for this stack frame (assign to values on the heap)
 - execute function, step by step, setting up any local variables as you go
 - send return value (if any) back to calling function
 - remove finished function from stack (erase or cross out)
- continue executing the function that is now on top of stack
- note: be able to include and increment line numbers associated with the functions on the stack