

# CONTROL & ENVIRONMENTS

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## 1 Environment Diagrams

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1. When do we make a new frame in an environment diagram?
2. Draw the environment diagram that results from running the following code.

```
def swap(x, y):  
    x, y = y, x  
    return print("Swapped!", x, y)
```

```
x, y = 60, 1  
a = swap(x, y)  
swap(a, y)
```

3. Draw the environment diagram that results from running the following code.

```
def funny(joke):  
    hoax = joke + 1  
    return funny(hoax)  
  
def sad(joke):  
    hoax = joke - 1  
    return hoax + hoax  
  
funny, sad = sad, funny  
result = funny(sad(1))
```

4. Draw the environment diagram that results from running the following code.

```
a = 1  
c = 2  
def b(b):  
    def d():  
        return b + c  
    return d()  
c = b(a)  
a = b(c)
```



3. Implement `fizzbuzz(n)`, which prints numbers from 1 to `n` (inclusive). However, for numbers divisible by 3, print "fizz". For numbers divisible by 5, print "buzz". For numbers divisible by both 3 and 5, print "fizzbuzz".

```
def fizzbuzz(n):  
    """  
    >>> result = fizzbuzz(16)  
    1  
    2  
    fizz  
    4  
    buzz  
    fizz  
    7  
    8  
    fizz  
    buzz  
    11  
    fizz  
    13  
    14  
    fizzbuzz  
    16  
    >>> result is None  
    True  
    """
```