

# 1 Environment Diagrams

1.1 When do we make a new frame in an environment diagram?

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

```
a = 1
def b(b):
    return a + b
a = b(a)
a = b(a)
```

1.3 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)
```

## 2 Control & Environments

1.4 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))
```

## 2 Control

2.1 Write a function that returns true if a number is divisible by 4 and false otherwise.

2.2 Write a function, `is_leap_year`, that returns true if a number is a leap year and false otherwise. Recall that a *leap year* is divisible by 4 unless the year is not divisible by 400.

- 2.3 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
    """
```