1 Environment Diagrams

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

We make a new frame in an environment diagram when calling a user-defined function.

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

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

[https://goo.gl/5pYMp8](https://goo.gl/5pYMp8)

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

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

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

[https://goo.gl/Lp90MJ](https://goo.gl/Lp90MJ)

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

```python
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))
```

[https://goo.gl/z89He9](https://goo.gl/z89He9)
2 Control

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

```python
def is_divisible_by_4(num):
    return num % 4 == 0
```

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.

```python
def is_leap_year(year):
    return year % 4 == 0 and year % 400 != 0
```
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”.

```python
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
    ""

    i = 1
    while i <= n:
        if i % 3 == 0 and i % 5 == 0:
            print('fizzbuzz')
        elif i % 3 == 0:
            print('fizz')
        elif i % 5 == 0:
            print('buzz')
        else:
            print(i)
        i += 1
```