## Control \& Environments

## CS 61A Group Mentoring

June 25, 2018

## 1 Environment Diagrams

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 $\mathrm{b}(\mathrm{b})$ :
def $d():$
return $b+c$
return $d()$
$\mathrm{c}=\mathrm{b}(\mathrm{a})$
$\mathrm{a}=\mathrm{b}(\mathrm{c})$
5. Write a function that returns true if a number is divisible by 4 and false otherwise.
6. 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 .
7. Implement $f$ izzbuzz ( 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
" " "
