

1 WWPDP? 61A, Assemble!

```
avengers = 6
```

```
def vision(avengers):  
    print(avengers)  
    return avengers + 1
```

```
def hawkeye(thor, hulk):  
    love = lambda black_widow: add(black_widow, hulk)  
    return thor(love)
```

```
def hammer(worthy, stone):  
    if worthy(stone) < stone:  
        return stone  
    elif worthy(stone) > stone:  
        return -stone  
    return 0
```

```
capt = lambda iron_man: iron_man(avengers)
```

Expression	Interactive Output
<code>capt(vision)</code>	6 7
<code>print(print(1), vision(2))</code>	1 2 None 3
<code>hawkeye(hammer, 3)</code>	Error
<code>hawkeye(capt, 3)</code>	9
<code>hammer(lambda ultron: ultron, -1)</code>	0
<code>hammer(vision, avengers)</code>	6 6 -6

2 Environment Diagrams

A complete answer will:

- Add all missing names and parent annotations to all local frames.
- Add all missing values created or referenced during execution.
- Show the return value for each local frame.

Draw the environment diagram that results from executing the code below until the entire program is finished or an error occurs.

2.1 No "rst" for the Weary

```
def r(s, t):  
    while s(a) > b:  
        def s(a):  
            return t(b)  
        return b + 2
```

```
def t(t):  
    return t - 10
```

```
a, b = -10, 2  
weary = r(abs, t)
```

<https://goo.gl/73BSvB>

2.2 Return of the Horse Mask

```
def bo(jack):  
    return lambda mask: horse  
  
def horse(mask):  
    horse = mask  
    def mask(horse):  
        return horse  
    return horse(mask)  
  
jack, mask = horse, bo  
  
hollywoo = bo(jack)(horse)(mask)
```

<https://goo.gl/yhcHuC>

2.3 How Do You Like Your Eggs?

```
def scramble(egg):  
    return [egg, over(egg)]
```

```
def over(easy):  
    easy[1] = [[easy], 2]  
    return list(easy[1])
```

```
egg = scramble([12, 24])
```

<https://goo.gl/nia1NS>

2.4 Lazy

```
def lazy(n):  
    return lambda k: (n if k == 0 else lazy(n + 1))  
v = lazy(4)(1)(0)
```

<https://goo.gl/TWFJZc>



2.5 Snow Day

```
def snow(snow, x):  
    if snow(x, x) == x:  
        def x(x):  
            return 32  
        return x(x)  
    else:  
        return snow(snow, x)  
  
def flake(x, y):  
    return y + x - 1  
  
griffin = snow(flake, 1)
```

<https://goo.gl/thDVCx>

2.6 Environmentalists

```
def snow(x):  
    def ice(x):  
        if x == 0:  
            return 1  
        return 2 + rain(ice, x)  
  
    def rain(g, h):  
        return 3 + g(h - x)  
    return ice(x)  
snow(4)
```

<https://goo.gl/Ld4hSm>

2.7 Instructor Appreciation

```
def kevin(a, b):  
    x = 42  
    y = stan(a + b, x)  
    return x - y
```

```
def stan(a, b):  
    a, b = a + x, a - y  
    return a // b
```

```
x, y = 1, 2  
kevin(x, y)
```

<https://goo.gl/PRIcP6>