

# BIS 420 PROGRAMMING FOR DATA SCIENCE

## PRAJAKTA POHARE CHAPTER 6 EXERCISE 6.4

### ILLINOIS STATE UNIVERSITY

Draw a stack diagram for the following program. What does the program print?

```
def b(z):
```

```
    prod = a(z, z)
```

```
    print z, prod
```

```
    return prod
```

```
def a(x, y):
```

```
    x = x + 1
```

```
    return x * y
```

```
def c(x, y, z):
```

```
    total = x + y + z
```

```
    square = b(total)**2
```

```
    return square
```

```
x = 1
```

```
y = x + 1
```

```
print c(x, y+3, x+y)
```

#### **Stack Diagram:**

Global frame:

x -> 1

y -> 2

c -> function c(x, y, z)

b -> function b(z)

a -> function a(x, y)

c frame:

x -> 1

y -> 5

z -> 3

total -> 9

square -> 8100

b frame:

z -> 9

prod -> 90

a frame:

x -> 10

y -> 9

### **Code:**

def b(z):

    prod = a(z, z)

    print(z, prod)

    return prod

def a(x, y):

    x = x + 1

    return x \* y

def c(x, y, z):

    total = x + y + z

    square = b(total)\*\*2

    return square

x = 1

y = x + 1

print(c(x, y+3, x+y))

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```
1  def b(z):
2      prod = a(z, z)
3      print(z, prod)
4      return prod
5
6  def a(x, y):
7      x = x + 1
8      return x * y
9
10 def c(x, y, z):
11     total = x + y + z
12     square = b(total)**2
13     return square
14
15 x = 1
16 y = x + 1
17 print([c(x, y+3, x+y)])
```