

1. Use the following Python program for parts (a) and (b):

```
1. k = 0
2. total = 0
3. while (k < 4):
4.     total += k
5.     k += 1
6. print("The total is", total)
```

a) Using the line numbers, list the order in which the statements are executed when running the program until it terminates.

```
1, 2, 3, 4, 5, 3, 4, 5, 3, 4, 5, 3, 4, 5, 3, 6
      k=0      k=1      k=2      k=3      k=4
```

b) What is the output generated by the program?

```
The total is 6
```

2. Use the following Python program for parts (a) and (b):

```
1. print("And I was like:")
2. i = 1
3. while (i < 4):
4.     j = 0
5.     while (j < 3):
6.         print("Baby, ", end=' ')
7.         j += 1
8.     if (i == 2):
9.         print("no ")
10.    else:
11.        print("Oh ")
12.    i += 1
1. print("I thought you'd always be mine")
```

a) Using the line numbers, list the order in which the statements are executed when running the program until it terminates.

```
1, 2, 3, 4, 5, 6, 7, 5, 6, 7, 5, 6, 7, 5, 8, 10, 11, 12
i=1      j=0      j=1      j=2      j=3
```

```
3, 4, 5, 6, 7, 5, 6, 7, 5, 6, 7, 5, 8, 9, 12,
i=2      j=0      j=1      j=2      j=3
```

```
3, 4, 5, 6, 7, 5, 6, 7, 5, 6, 7, 5, 8, 10, 11, 12,
i=3      j=0      j=1      j=2      j=3
```

```
3, 13
i=4
```

b) What is the output generated by the program?

And I was like:  
 Baby, Baby, Baby, Oh  
 Baby, Baby, Baby, no  
 Baby, Baby, Baby, Oh  
 I thought you'd always be mine

3. Use the following Python program for parts (a) and (b):

```
1. print('Powers')
2. i = 0
3. while (i < 5):
4.     print(str(i) + ': ', end='')
5.     for j in range(0, 5):
6.         print(str(i ** j) + ' ', end='')
7.     print()
8.     i += 1
```

a) Using the line numbers, list the order in which the statements are executed when running the program until it terminates.

1, 2, 3, 4, 5, 6, 5, 6, 5, 6, 5, 6, 5, 6, 7, 8  
*i=0 j=0 j=1 j=2 j=3 j=4*

3, 4, 5, 6, 5, 6, 5, 6, 5, 6, 5, 6, 7, 8  
*i=1 j=0 j=1 j=2 j=3 j=4*

3, 4, 5, 6, 5, 6, 5, 6, 5, 6, 5, 6, 7, 8  
*i=2 j=0 j=1 j=2 j=3 j=4*

3, 4, 5, 6, 5, 6, 5, 6, 5, 6, 5, 6, 7, 8  
*i=3 j=0 j=1 j=2 j=3 j=4*

3, 4, 5, 6, 5, 6, 5, 6, 5, 6, 5, 6, 7, 8  
*i=4 j=0 j=1 j=2 j=3 j=4*

3  
*i=5*

b) What is the output generated by the program?

```
Powers
0: 1 0 0 0 0
1: 1 1 1 1 1
2: 1 2 4 8 16
3: 1 3 9 27 81
4: 1 4 16 64 256
```

4. Use the following Python program for parts (a) thru (f):

```
1. def H(a):
```

```

2.      b = 7
3.      b *= a

4.  def G(a):
5.      global b
6.      b += a

7.  def F(c):
8.      global b
9.      b /= c

10. b = 10
11. F(7)
12. G(-20)
13. H(20)
14. print(b)

```

a) Using the line numbers specified, list the order in which the statements are executed.

```

10, 11, 7, 8, 9, 12, 4, 5, 6, 13, 1, 2, 3, 14
          F           G           H

```

b) What is the value of the variable b after executing line 11?

b is 1

c) What is the value of the variable b after executing line 12?

b is -19

d) What is the output generated by the program?

-19

e) List the formal parameters in the program above.

a from H(a), a from G(a) and c from F(c)

f) List the actual parameters in the program above.

7 from F(7), -20 from G(-20) and 20 from H(20)