CSCI 150

More Function Stack Tracing Practice

(Sample solutions are posted to the class webpage.)
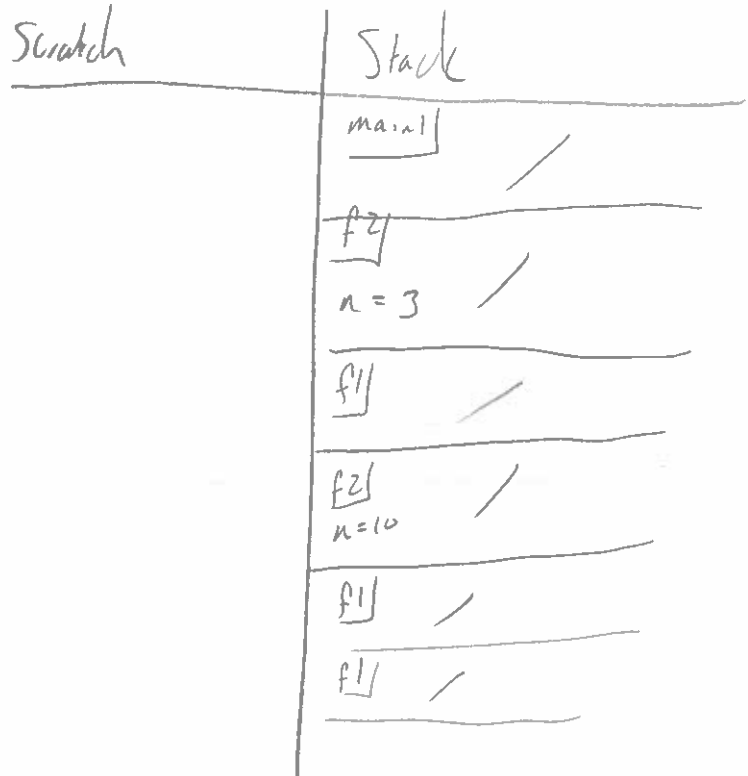
1.

```
def f1():
    print('Hello')


def f2(n: int):
    if n < 5:
        f1()
    else:
        f1()
        f1()
    print('Bye')


def main1():
    f2(3)
    f2(10)

main1()
```

Scratch | Stack

main1

f2
n = 3

f1

f2
n = 10

f1

f1

Printed Output
Hello
Bye
Hello
Hello
Bye

2.

```python
def g1(a: int, b: int) -> int:
    if a < b:
        return a * b
    elif a == b:
        return a
    else:
        return 7


def main2():
    print(g1(2,3))
    print(g1(2,2))
    print(g1(5,g1(5,4)))

main2()
```

Scratch | Stack

| main2 | / |

a < b ✓

| g1 | |
| a = 2 | / |
| b = 3 | | ⌐6

a == b ✓

| g1 | / |
| a = 2 | |
| b = 2 | | ⌐2

| g1 | |
| a = 5 | / |
| b = 7 | | ⌐35

else

| g1 | / |
| a = 6 | |
| b = 4 | | ⌐7

Printed Output

6
2
35

3.

```python
def w(k: int) -> int:
    t = 1
    while k < 5:
        t += k
        k += 1

    return t


def main3():
    print(w(2))
    print(w(4))
    print(w(7))
```

Scratch | Stack

main3

w

k=2<5 ✓
3<5 ✓
4<5 ✓
5<5 X

k=2 3 4 5
t=1 3 6 10

√10

w

4<5 ✓
5<5 X

k<4 5
t=1 5

√5

w

7<5 X

k=7
t=1

√1

Printed output

10

5

1