

## CS:1210 Practice Problem Set 3

Complete before Tuesday, Feb 10th

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1. Without executing this program on a computer, figure out what output it produces.

```
n = 10
m = 15
while m >= n:
    if (m + n) % 5 == 0:
        print("Line 1", n, m)
        m = m - 1
    else:
        print("Line 2", n, m)
        n = n + 1
        m = m - 1
```

2. Without executing this program on a computer, figure out what output it produces.

```
n = 10
while n <= 100:
    print(n)
    n = n + 2
    if n % 10 == 0:
        n = n - 1
        break
    print(n)
```

3. Without executing this program on a computer, figure out what output it produces.

```
x = 64
y = 40

count = 0
while abs(x - y) > 0:
    print(x, y)
    if x > y:
        x = x - y
    else:
        y = y - x

    if count > 4:
        break
    count = count + 1

print(x, y)
```

4. Without executing this program on a computer, figure out what output it produces.

```
m = 24
n = 30

upperBound = n
if m <= n:
    upperBound = m
print(upperBound)

factor = 2
maxFactor = 1
while factor <= upperBound:
    if m % factor == 0 and n % factor == 0:
        maxFactor = factor
        print(maxFactor)

    factor = factor + 1
```

5. I want to write a program that takes as input a positive integer  $n$  and prints for each integer 1 through  $n$ , the square of that integer. For example, if  $n$  is 3, I would like the output to be:

```
The square of 1 is 1
The square of 2 is 4
The square of 3 is 9
```

Here are a few different attempts at writing this program. None of these attempts work – they all contain one or more errors. For each attempt, (i) identify the errors in that attempt and (ii) state the type of each error (syntax, run-time, or semantic). Finally, write down a completely correct program for the problem.

```
(a) n = int(input("Enter a number: "))
    while count <= n:
        print("The square of", count, "is", count*count)
        count = count + 1
```

```
(b) n = int(input("Enter a number: "))
    count = 1
    while count <= n
        print("The square of", count, "is", count*count)
        count = count + 1
```

```
(c) n = int(input("Enter a number: "))
    count = 1
    while count <= n:
        print("The square of", count, "is", count*count)
    count = count + 1
```

```
(d) n = int(input("Enter a number: "))
    count = 1
    while count <= n:
        count = count + 1
        print("The square of", count, "is", count*count)
```

```
(e) n = int(input("Enter a number: "))
    count = 1
    while count <= n:
        print("The square of count is", count*count)
        count = count + 1
```

6. Consider the following Python program. Suppose that the user runs this program and when prompted, types 5 as input.

```
n = int(input("Enter a number: "))
n = n + 10
n = n//3.0
n = int(n)
n = "n" + str(n)
n = n + "_hello"
n = 11
n = n % 2
```

Write down the value and type of `n` after each statement is executed.

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