

CS:1210 Practice Problem Set 3

Morning Section: Complete before Tuesday, Feb 11th

Evening Section: Complete before Monday, Feb 10th

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 = 3
while n <= 5:
    m = n + 1
    while m <= 10:
        print m * n
        m = m + 3
    print "----"
    n = n + 1
```

3. 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
```

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

```
x = 15
while x < 100:
    y = x + 40
    while (x < y) :
        if (y % 10) == 5 :
            y = y + 15
        else :
            print x, y
            y = y - 35
    x = x + 30
```

5. 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
```

6. 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
```

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

```
n = 1
while n < 6:
    m = n
    line = ""
    while m > 1:

        if m % 2 == 0:
            m = m/2
        else:
            line = line + str(m) + " "
            m = 3*m + 1
    line = line + str(1)
    print line

    n = n + 2
```

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

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

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

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

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

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

```
n = int(raw_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.
