

## CS:1210 Practice Problem Set 2

### Complete before Tuesday, Feb 3

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1. Consider the following program. Without executing on a computer, answer the following questions.

```
number = int(input("Enter a number: "))
while number > 0:
    print(number % 10)
    number = number // 10
```

- (a) What output does it produce, given input 3179?  
(b) Describe in one sentence, what the program does, in general.
2. Consider the following program. Without executing on a computer, answer the following questions.

```
number = int(input("Enter a number: "))
count = 0
while count < number:
    print(count * count)
    count = count + 2
```

- (a) What output does it produce, given input 10?  
(b) Modify the program by swapping the two statements inside the body of the `while` loop. What output does it produce now, given input 10?
3. Consider the following program. Recall that the “`!=`” in the third line stands for “not equal to.” Without executing on a computer, answer the following questions.

```
number = int(input("Enter a number: "))
count = 0
while count != number:
    print(count)
    count = count + 2
```

- (a) What output does it produce, given input 10?  
(b) What happens if the input is 9? Explain in 1-2 sentences.

4. For each program below, make a table that shows that values of all the variables in the program at the beginning of each iteration of the `while`-loop (i.e., at the time the boolean expression in the `while`-statement is executed).

```
(a) n = 20
    while n > 0:
        n = n // 3
```

```
(b) n = 10
    while n <= 15:
        n = n + 2
```

```
(c) n = 10
    m = 20
    while n <= m:
        n = n + 1
        m = m - 2
```

```
(d) n = 10
    while (n % 3) != 0:
        n = n + 1
```

```
(e) sum = 0
    count = 10
    while count > 0:
        sum = sum + count
        count = count - 1
```

```
(f) sum = 0
    count = 1
    while count < 30:
        sum = sum + count
        count = count * 2
```

5. For each expression below, specify its type and value. For expression (6), suppose that the user types 200.5 in response to the prompt. For expression (16), suppose that the user types 20 in response to the prompt.

	Expression	Type	Value
1	<code>176 / 10</code>		
2	<code>176 // 10</code>		
3	<code>str(17 // 2)</code>		
4	<code>str(17 // 2.0)</code>		
5	<code>"hello" + ", how are you?"</code>		
6	<code>input("number?")</code>		
7	<code>"100" == "0100"</code>		
8	<code>str(1) + "1"</code>		
9	<code>int("337")</code>		
10	<code>str(171 % 5)</code>		
11	<code>(171 % 5) != 0</code>		
12	<code>17 // 2 * 5.0</code>		
13	<code>float(17 // 2)</code>		
14	<code>17 // 2 &lt; 17 / 2</code>		
15	<code>"17 / 2" != "17/2"</code>		
16	<code>"0 + " + input("number?")</code>		
17	<code>float(1) + 1</code>		
18	<code>float("300." + "100")</code>		
19	<code>float("hello" != "hi")</code>		
20	<code>float(str(5 % 2) + str(5 // 2))</code>		