

Name: \_\_\_\_\_

Use this quiz to help make sure you understand the videos/reading. **Answer all questions.** Make additional notes as desired. **Not sure of an answer?** Ask your instructor to explain in class and revise as needed then.

Throughout, where you are asked to “circle your choice”, you can circle or underline it (whichever you prefer).

[Online reading: “Formatting strings”](#)

[Video: Loops within Loops – How They Work](#)

1. What does the code snippet below display? (Note: the `end=" "` in the `print` statement causes a space instead of the default newline to appear after the items of the `print` statement are printed. Combined with the no-argument `print` statement, the effect is to print all the items on each iteration of the `j` loop on the same line. So there will be 3 lines printed by this problem, each with 5 numbers on it.

```
for j in range(3):
    for k in range(1, 6):
        print(j + k, end=" ")
    print()
```

2. What does the code snippet below display?

```
for j in range(5):
    for k in range(1, j + 2):
        print(j + k, end=" ")
    print()
```

For the next several problems (which are taken from a textbook by Horstmann and Necaie), study and consider the code snippet shown below:

```
NMAX = 4
XMAX = 10
for x in range(1, XMAX + 1):
    for n in range(1, NMAX + 1):
        print("{:10.0f}".format(x ** n), end="")
    print()
```

It produces the following output:

1	1	1	1
2	4	8	16
3	9	27	81
4	16	64	256
5	25	125	625
6	36	216	1296
7	49	343	2401
8	64	512	4096
9	81	729	6561
10	100	1000	10000

3. Why is the newline suppressed (using `end=""`) in the inner loop but not in the outer loop? (Note: the `format` method prints its argument (which is `x** n`) per the formatting string – here, using 10 spaces with no decimal places.)
4. How would you change the program to display all powers from  $x^0$  to  $x^5$  (still for  $x$  from 1 to 10)?
5. If you make the change in the previous problem, how many values are displayed?

6. Write nested loops that make the following pattern of exclamation marks. (There are 8 exclamation marks on each row, and each row starts on the left edge of the line.)

```
!!!!!!!  
!!!!!!!  
!!!!!!!
```

Write your code here:

7. Write nested loops that make the following pattern of exclamation marks.

```
!!!!  
!!!!  
!!!
```

Write your code here:

8. Write nested loops that make the following pattern of alternating brackets.

```
[][][][]  
[][][]  
[][][]  
[][][]  
[][]  
[][]  
[]
```

Write your code here:

9. Write nested loops that make the following pattern of alternating brackets, WITHOUT using any IF statements. (Hint: you are permitted to print more than one symbol on each time through the loop.)

```
[][][][]  
[][][][]  
[][][][]  
[][][][]
```

Write your code here: