EECS 1210 Introduction to Programming in Python

Fall Semester 2022

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Self-Check 2

Due Date: --

Answer the following questions to check your understanding of your material. Expect the same kind of questions to show up on your tests.

## 1. Definitions and Short Answers

1. What is a **comment** in a program and what is its purpose?
2. What is an **operator**? Give some examples of **arithmetic operators** in Python.
3. What is a **comparison operator**? What are possible results of a comparison?
4. What is a **logical operator**? What are possible results of a logical operation?
5. What is 20 in **hexadecimal** representation? in **octal** representation?
6. Why does Python support two **division operators**? What is their difference?
7. What is the difference between **'12'** and **12** in Python?
8. What is the difference between **x = 3** and **x == 3** in Python?
9. Assuming the variable y has been assigned the integer value of 4, which of the following are legal in Python and what do they do? which are illegal in Python?
   * y = 4
   * 4 = y
   * y == 4
   * 4 == y
   * 'y' = y
   * 'y' == '4'
   * '4' = y
10. Assume variable x has integer value 3, and variable y has integer value of 4. What is the result of the following operator expressions, if they are legal in Python? Which of the following are not legal?
    * x \* y
    * 'x' \* y
    * x \* 'y'
    * 'x' \* 'y'
    * x + y
    * 'x' + 'y'
    * 'x' + y
    * x + 'y'
11. What is the data type of ['Sun','Mon','Tue','Wed','Thu','Fri','Sat']?
12. if L = ['Sun','Mon','Tue','Wed','Thu','Fri','Sat'], then what are the **values** of the following **expressions** if they are legal Python? Which are illegal?
    * L[3]
    * L[1:5]
    * L[5:1]
    * L(2:3)
    * L[1,2,3]
    * L{3}
    * L[1-5]
    * L['3']
13. Assume T = ('Sun','Mon','Tue','Wed','Thu','Fri','Sat'), which of the following are allowed in Python, and what are their output or effect? Which are not allowed, for what reasons?
    * print(T[3])
    * print(T(3))
    * print(T{3})
    * T[3] = 'WED'
    * T[3] == 'WED'
    * print(T[3:5])
    * print(T[3, 5])
    * print(T['3'])
14. Assume S = {'Sun','Mon','Tue','Wed','Thu','Fri','Sat'}, which of the following are allowed in Python, and what are its output or effect? Which are not allowed, for what reasons?
    * print(S[3])
    * print(S(3))
    * print(S{3})
    * S[3] = 'WED'
    * S[3] == 'WED'
    * print(S[3:5])
    * print(S[3, 5])
    * print(S['3'])
15. Assume D = {'Sun':0, 'Mon':1, 'Tue':2, 'Wed':3, 'Thu':4, 'Fri':5, 'Sat':6}, which of the following are legal in Python, and what are their values?
    * D[3]
    * D['Thu']
    * D[0:3]
    * D[2, 6]
    * D{'Sun'}
    * D(0)
    * D{3}
    * D('Sun')
16. What is the value of { 2, 3, 4 } | { 3, 4, 5 } ?
17. What is the value of { 2, 3, 4 } & { 3, 4, 5 }?
18. Suppose you have the following sequence of Python statements:  
    x = 3  
    y = 2  
    **if** x > y:  
     print("x is bigger than y")  
    **elif** x == y:  
     print("x and y are the same")  
    **else**:  
     print("x is smaller than y")  
    What is printed?
19. What is wrong with the following code, which is supposed to compute the total of a list of numbers?  
    L = [3, 2, 6, 5]  
    **for** i **in** L:  
     total = total + i  
    print(total)  
    How can it be fixed?
20. What is the difference between  
    x = 0  
    **while** x < 100:  
     x = x + 1  
    and  
    x = 0  
    **if** x < 100:  
     x = x + 1  
    ?
21. What is an example of a **function** in Python? How do you **call** a function? What is a **parameter**?
22. What is an example of calling a (built-in) function that **returns a value**?
    * does input() return a value?
    * does print() return a value?
    * what other built-in functions do you know that returns a value?
23. Python supports two kinds of **loops**. What are they?
24. What is a **suite**? What is the pronunciation of "suite"?
25. What does **import** math do? How do you call the cos function (cosine) defined in the math module in Python?
26. To read a file, it is common to see fh = open('filename'). What kind of data is fh called? Give an example of using fh for accessing (e.g., reading or writing) a file.
27. if s = 'hello', Python supports two styles of “calls” (or “invocation”):
    * len(s) is an example of a **function call**
    * s.upper() is another form of call. What kind of call is it?
28. How are **class** and **instance** related to each other?
29. Why is it incorrect to split the statement  
    f = a + b \* 2 + c / 2 - 4 \* d  
    onto two separate lines as the following  
    f = a + b \* 2 + c / 2  
     - 4 \* d  
    ? How can it be fixed so Python will accept it?
30. If you want to **swap** the values of two variables x and y, why can't you just do  
    x = y  
    y = x  
    ?  
    Give two different ways you can swap their values correctly in Python.
31. What is a **keyword** in Python? Give some example keywords in Python.
32. Which of the following are legal and illegal **identifiers** in Python?
    * myname
    * my\_name
    * \_myname
    * MyName
    * myname\_
    * my-name
    * my11name
    * myname11
    * 11myName
    * my\_11Name
    * \_11myName
    * @myname
    * my@name
    * myname@
    * in
    * out
    * \_in
    * \_out
    * IN
    * OUT
    * and
    * or
    * but
    * function
    * integer
    * number
    * class
    * instance
    * global
    * local
    * you+me
    * I\_love\_$$
33. What is an example of a **snake-case** identifier? a **camel-case** identifier?