IT5001 Quiz 0

For Questions 1 and 2, please do not use any IDE to help you. You should evaluate the answers by yourself without any electronic device. Of course, you can use IDLE or other IDE to work with Question 3. However, you should not search the code directly online.

You should be able to finish this quiz within 1 hour time. After you finish, then you can check the answers for Questions 1 and 2 by IDLE.

Question 1

Evaluate the following terms. If we type them into the shell, what will be the output or echo from IDLE? If any of these causes an error, please write "error" instead. The type of your answer is important, e.g. the integer `5` is different from `'5'` or `5.0`.

Evaluate the Following:	Answer:
`print(sorted('abc'))`	
`True and sqrt(-1)`	
`not True or False`	
`False or not True`	
`3*(('b' * 2)+'a')`	
`(2+1>1)+(--1)*True`	
`('a'+'b')*3 == 'a'*3 + 'b'*3`	
`int(-3.2)`	
`'1G o3o\'dh 5joodba'[1::2]`	

Question 2

Each row of the table is a separate program/file. What is the output of each of them when we run it? If the code produces errors or runs into infinite loops, please state 'error' or 'infinite loop' respectively.

Code	Output

`a = 1`
`++a`
`print(a)`	

`b = 128`
`def half(x):`
`  return x / 2`
`print(half(half(half(b))))`	

`a,b,c = 1,2,3`
`a,b,c = b,a,a`
`a,b,c = c,a,b`
`print(str(a)+str(b)+str(c))`	

Question 3

Write a function `solveCubicE(a,b,c,d)` to solve a cubic equation, in which, `a`, `b`, `c` and `d` are the coefficients of a cubic equation:

$$ax^3 + bx^2 + cx + d = 0$$

Here are some examples:

```
>>> print(solveCubic(1,3,3,1))
-1.0
>>> print(solveCubic(1,-12,48,-64))
4.0
>>> print(solveCubic(8,-36,54,-27))
1.5
```

Question 4 Sum powers up to N

The sum of $1 + 2 + 3 + \ldots + 10 = 55$.
The sum of $1^2 + 2^2 + 3^2 + \ldots + 10^2 = 385$.
The sum of $1^5 + 2^5 + 3^5 + \ldots + 20^5 = 12333300$.
What is the sum of $1^d + 2^d + 3^d + \ldots + N^d$? Write a function `sumTo(N,d)` to compute the answer.

```
>>> sumTo(10,2)
385
>>> sumTo(20,5)
12333300
>>> sumTo(100,6)
14790714119050
```