Programming in Python (CSE 3142)

MINOR ASSIGNMENT-1: BASIC ELEMENTS OF PYTHON PROGRAMMING

1. Evaluate the following expressions:
   (x<y) or (not(z==y) and (z<x))
   a. x =0, y=6, z=10
   b. x=1, y=1, z=1

2. Evaluate the following expressions involving arithmetic operators:
   a. -7*20+8/16*2+54
   b. 7**2//9%3
   c. (7-4*2)*10-25*8//5
   d. 5%10+10-25*8//5
   e. 'hello'*2-5

3. Evaluate the following expressions involving relational and logical operators:
   a. 'hi' > 'hello' and 'bye' < 'Bye'
   b. 'hi' > 'hello' or 'bye' < 'Bye'
   c. 7 > 8 or 5 < 6 and 'I am fine > 'I am not fine'
   d. 10 !=9 and 29 >= 29
   e. 10 !=9 and 29 >= 29 and 'hi' > 'hello' or 'bye' < 'Bye' and 7 <= 2.5

4. Evaluate the following expressions involving arithmetic, relational and logical operators:
   a. 5 % 10 + 10 < 50 and 29 >= 29
   b. 7 ** 2 <= 5 // 9 % 3 or 'bye' < 'Bye'
   c. 5 % 10 < 8 and -25 > 1 * 8 // 5
   d. 7 ** 2 // 4 + 5 > 8 or 5 != 6
   e. 7/4 < 6 and 'I am fine > 'I am not fine'
   f. 10 + 6 * 2 ** 2 != 9//4-3 and 29 >= 29/9
   g. 'hello' * 5 > 'hello' or 'bye' < 'Bye'

5. Evaluate the following expressions involving bitwise operators:
   a. 15 & 22
   b. 15 | 22
   c. -15 & 22
   d. -15 | 22
   e. ~ 15
   f. ~ 22
   g. ~ -20
   h. 15^22
   i. $8 << 3$
   j. $40 >> 3$

6. Differentiate between the following operators with the help of examples:
   a. = and ==
   b. / and %
   c. / and //
   d. * and **

7. What output will be displayed when the following commands are executed in Python shell in sequence:
   a. >>> a = 6
      >>> a == 6
      >>> a < 5.9
      >>> a > 5.9
   b. >>> b = 7
      >>> b / 6
      >>> b // 6
      >>> b / 4
      >>> b % 4
      >>> b % 7
      >>> b * 2
      >>> b ** 2

8. Construct logical expressions for representing the following conditions:
   a. marks scored should be greater than 300 and less than 400.
   b. Whether the value of grade is an uppercase letter.
   c. The post is engineer and experience is more than four years.

9. Write Python statements for the following equations:
   a. root1= $\frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$
   b. result= $\frac{2xy - 9y}{2xy^3} - \frac{4yx^2}{2y}$
   c. result= $2\cos\frac{1}{2}(x+y)\cos\frac{1}{2}(x-y) + e^x - 1 - \frac{x}{4} + \tan x - \log(v)$

10. How does the effect of the following two statements differ?
    a. x += x + 10
    b. x = x+ 10