# Operator Related Problems

## (Total 15 questions)

<table>
<tr><th>SL</th><th>Problem statement</th><th>Difficulty levels</th></tr>
<tr><td>1.</td><td>Program that will take two numbers X and Y as inputs, then calculate and print the values of their addition, subtraction, multiplication, division (quotient and reminder).<br><br>
<table>
<tr><th>Sample input (X,Y)</th><th>Sample output</th></tr>
<tr><td>5 10</td><td>Addition: 15<br>Subtraction: -5<br>Multiplication: 50<br>Quotient : 0<br>Reminder: 5</td></tr>
<tr><td>-5 10.5</td><td>Addition: 5.5<br>Subtraction: -15.5<br>Multiplication: -52.5<br>Quotient: 0<br>Reminder: -48</td></tr>
</table>
-14 % 3<br>= -2</td><td>*</td></tr>
<tr><td>2.</td><td>Program that will calculate the circumference of a circle having radius r.<br>Area, A = 2 * Pi * r<br><br>
<table>
<tr><th>Sample input (r)</th><th>Sample output</th></tr>
<tr><td>5</td><td>Area: 31.4</td></tr>
<tr><td>10.5</td><td>Area: 65.94</td></tr>
</table></td><td>*</td></tr>
<tr><td>3.</td><td>Program that will take two numbers (a, b) as inputs and compute the value of the equation – (Without using math.h)<br><br>$X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$<br><br>
<table>
<tr><th>Sample input (a, b)</th><th>Sample output</th></tr>
<tr><td>5 10.5</td><td>X = 2.315475</td></tr>
<tr><td>100 -250</td><td>X = -12.766287</td></tr>
</table></td><td>*</td></tr>
</table>

**4.** Program that will increment and decrement a number **X** by 1 inside the *printf* function. (Use ++ and - - operators) **

| Sample input(X) | Sample output |
|---|---|
| 5 | X++ : 5<br>++X : 7<br>X- - : 7<br>--X : 5 |
| -5 | X++ : -5<br>++X : -3<br>X- - : -3<br>--X : -5 |

**5.** Program that will increment and decrement a number **X** by **Y**. (Use += and -= operators) *

| Sample input(X,Y) | Sample output |
|---|---|
| 5 10 | Incremented Value: 10<br>Decremented Value: -5 |
| -5 5 | Incremented Value: 0<br>Decremented Value: -10 |

**6.** Program that will multiply and divide a number **X** by **Y**. (Use *= and /= operators) *

| Sample input(X,Y) | Sample output |
|---|---|
| 56 10 | Multiplication: 560<br>Division: 5 |
| -56 -10 | Multiplication: 560<br>Division: 5 |

**7.** Program that will declare and initialize an integer and a floating point number. Then it will perform floating to integer and integer to floating conversions using **

(a) Assignment operation
(b) Type casting

| Sample input | Sample output |
|---|---|
| -150 123.125 | Assignment: 123.125000 assigned to an int produces 123<br>Assignment: -150 assigned to a float produces -150.000000<br>Type Casting: (float) -150 produces -150.000000<br>Type Casting: (int) 123.125 produces -123 |

**8.** Program that will take two numbers as inputs and print the maximum value. (Using conditional operator - ?) **

| Sample input (x, y) | Sample output |
|---|---|
| 20 100 | Max: 100 |
| 50 -20 | Max: 50 |

**9.** Program that will evaluate the following equations - *

$$X = a - b / 3 + c * 2 - 1$$
$$Y = a - ( b / ( 3 + c ) * 2) - 1$$
$$Z = a - ( ( b / 3) + c * 2) - 1$$

| Sample input (a, b, c) | Sample output |
|---|---|
| 9 12 3 | X = 10<br>Y = 4<br>Z = -1 |

**10.** Program that will take **a**, **b** & **c** as inputs and decide if the statements are True (1) of False (0) **

a) $(a + b) \leq 80$
b) $!\,(a + c)$
c) $a! = 0$

| Sample input (a, b, c) | Sample output |
|---|---|
| 10 -10 0 | a) 1<br>b) 0<br>c) 1 |

**11.** Program that will take **a**, **b** & **c** as inputs and decide if the statements are True (1) of False (0) ***

1) $(a + b) \leq 80 \;\&\&\; b \geq 0$
2) $(a - b) == 0 \;||c! = 0$
3) $a! = b \;||(b < a)\&\&c > 0$

| Sample input (a, b, c) | Sample output |
|---|---|
| 10 -10 0 | 1) 0<br>2) 1<br>3) 1 |

**12.** Program that will take calculate the roots of a quadratic equation ($a.x^2 + b.x + c = 0$) from the formula, (here, dot (.) stands for multiplication) - ***

$$root = \frac{-b \pm sqrt(b^2 - 4.a.c)}{2.a}$$

| Sample input (a, b, c) | Sample output |
|---|---|
| 2 4 -16 | 2.00 -4.00 |
| 1 2 3 | Imaginary |

**13.** Program that will evaluate the equation ***

$$2\cos^2 x - \sqrt{3}\sin x + \sin\frac{?}{2}$$

; where 1<= x <=180 [No checking needed]

[Hint: Beware of angle in degree and radian]

| Sample input (x) | Sample output |
|---|---|
| 30 | 1.810066 |
| 120 | 0.778151 |
| 180 | 3.954243 |

**14.** Program that will take a floating point number **X** as input and evaluate **A,B,C** where- **

**A** = Value when **X** is rounded up to the nearest integer

**B** = Value when **X** is rounded down to the nearest integer

**C** = Absolute value of **X**

| Sample input(X) | Sample output |
|---|---|
| 10.6 | A = 11, B = 10, C = 10.6 |
| -77.9 | A = 78, B = 77, C = 77.9 |

**15.** Program to find size of int, float, double and char of the system. **

| Sample input | Sample output |
|---|---|
| | Size of int in byte(s) = 4<br>Size of float in byte(s) = 4<br>Size of double in byte(s) = 8<br>Size of char in byte(s) = 1 |