

# Operator Related Problems

(Total 15 questions)

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

		<div>++X : 6</div> <div>X-- : 5</div> <div>--X : 4</div>							
	-5	<div>X++ : -5</div> <div>++X : -4</div> <div>X-- : -5</div> <div>--X : -6</div>							
5.	Program that will increment and decrement a number <b>X</b> by <b>Y</b> . (Use += and -= operators)		*						
	<table><tr><th>Sample input(X,Y)</th><th>Sample output</th></tr><tr><td>5 10</td><td>Incremented Value: 10 Decrement Value: -5</td></tr><tr><td>-5 5</td><td>Incremented Value: 0 Decrement Value: -10</td></tr></table>		Sample input(X,Y)	Sample output	5 10	Incremented Value: 10 Decrement Value: -5	-5 5	Incremented Value: 0 Decrement Value: -10	
Sample input(X,Y)	Sample output								
5 10	Incremented Value: 10 Decrement Value: -5								
-5 5	Incremented Value: 0 Decrement Value: -10								
6.	Program that will multiply and divide a number <b>X</b> by <b>Y</b> . (Use *= and /= operators)		*						
	<table><tr><th>Sample input(X,Y)</th><th>Sample output</th></tr><tr><td>56 10</td><td>Multiplication: 560 Division: 5</td></tr><tr><td>-56 -10</td><td>Multiplication: 560 Division: 5</td></tr></table>		Sample input(X,Y)	Sample output	56 10	Multiplication: 560 Division: 5	-56 -10	Multiplication: 560 Division: 5	
Sample input(X,Y)	Sample output								
56 10	Multiplication: 560 Division: 5								
-56 -10	Multiplication: 560 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		**						
	<table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td>-150 123.125</td><td>Assignment: 123.125000 assigned to an int produces 123 Assignment: -150 assigned to a float produces -150.000000 Type Casting: (float) -150 produces -150.000000 Type Casting: (int) 123.125 produces -123</td></tr></table>		Sample input	Sample output	-150 123.125	Assignment: 123.125000 assigned to an int produces 123 Assignment: -150 assigned to a float produces -150.000000 Type Casting: (float) -150 produces -150.000000 Type Casting: (int) 123.125 produces -123			
Sample input	Sample output								
-150 123.125	Assignment: 123.125000 assigned to an int produces 123 Assignment: -150 assigned to a float produces -150.000000 Type Casting: (float) -150 produces -150.000000 Type Casting: (int) 123.125 produces -123								
8.	Program that will take two numbers as inputs and print the maximum value. (Using conditional operator - ?)		**						
	<table><tr><th>Sample input (x, y)</th><th>Sample output</th></tr><tr><td>20 100</td><td>Max: 100</td></tr></table>		Sample input (x, y)	Sample output	20 100	Max: 100			
Sample input (x, y)	Sample output								
20 100	Max: 100								

	50    -20	Max: 50					
9.	<p>Program that will evaluate the following equations -</p> $X = a - b / 3 + c * 2 - 1$ $Y = a - ( b / ( 3 + c ) * 2 ) - 1$ $Z = a - ( ( b / 3 ) + c * 2 ) - 1$		*				
	<table><tr><th>Sample input (a, b, c)</th><th>Sample output</th></tr><tr><td>9    12    3</td><td>X = 10 Y = 4 Z = -1</td></tr></table>	Sample input (a, b, c)	Sample output	9    12    3	X = 10 Y = 4 Z = -1		
Sample input (a, b, c)	Sample output						
9    12    3	X = 10 Y = 4 Z = -1						
10.	<p>Program that will take <b>a, b &amp; c</b> as inputs and decide if the statements are True (1) of False (0)</p> <p>a) <math>(a + b) \leq 80</math> b) <math>!(a + b)</math> c) <math>c! = 0</math></p>		**				
	<table><tr><th>Sample input (a, b, c)</th><th>Sample output</th></tr><tr><td>10   -10   0</td><td>a) 1 b) 1 c) 0</td></tr></table>	Sample input (a, b, c)	Sample output	10   -10   0	a) 1 b) 1 c) 0		
Sample input (a, b, c)	Sample output						
10   -10   0	a) 1 b) 1 c) 0						
11.	<p>Program that will take <b>a, b &amp; c</b> as inputs and decide if the statements are True (1) of False (0)</p> <p>1) <math>(a + b) \leq 80 \ \&amp;\&amp; \ c \geq 0</math> 2) <math>(a - b) == 0 \    \ c! = 0</math> 3) <math>a! = b \    \ !(b &lt; c) \ \&amp;\&amp; \ c &gt; 0</math> 4) <math>(a! = b \    \ !(b &lt; c)) \ \&amp;\&amp; \ c &gt; 0</math></p>		***				
	<table><tr><th>Sample input (a, b, c)</th><th>Sample output</th></tr><tr><td>10   -10   0</td><td>1) 0 2) 1 3) 1 4) 0</td></tr></table>	Sample input (a, b, c)	Sample output	10   -10   0	1) 0 2) 1 3) 1 4) 0		
Sample input (a, b, c)	Sample output						
10   -10   0	1) 0 2) 1 3) 1 4) 0						
12.	<p>Program that will take calculate the roots of a quadratic equation (<math>a.x^2 + b.x + c = 0</math>) from the formula, (here, dot (.) stands for multiplication) -</p>		***				

	<div><math display="block">root = \frac{-b \pm \sqrt{b^2 - 4.a.c}}{2.a}</math><table><tr><th>Sample input (a, b, c)</th><th>Sample output</th></tr><tr><td>2    4    -16</td><td>2.00   -4.00</td></tr><tr><td>1    2    3</td><td>Imaginary</td></tr></table></div>	Sample input (a, b, c)	Sample output	2    4    -16	2.00   -4.00	1    2    3	Imaginary			
Sample input (a, b, c)	Sample output									
2    4    -16	2.00   -4.00									
1    2    3	Imaginary									
13.	<div>Program that will evaluate the equation</div> <div><math display="block">2cos^2x - \sqrt{3}\sin \sin x + \log \frac{x}{2}</math><div>; where 1&lt;= x &lt;=180 [No checking needed]</div></div> <div><table><tr><th>Sample input (x)</th><th>Sample output</th></tr><tr><td>30</td><td>1.810066</td></tr><tr><td>120</td><td>0.778151</td></tr><tr><td>180</td><td>3.954243</td></tr></table></div>	Sample input (x)	Sample output	30	1.810066	120	0.778151	180	3.954243	***
Sample input (x)	Sample output									
30	1.810066									
120	0.778151									
180	3.954243									
14.	<div>Program that will take a floating point number <b>X</b> as input and evaluate <b>A,B,C</b> where-</div> <div><div><b>A</b> = Value when <b>X</b> is rounded up to the nearest integer</div><div><b>B</b> = Value when <b>X</b> is rounded down to the nearest integer</div><div><b>C</b> = Absolute value of <b>X</b></div></div> <div><table><tr><th>Sample input(X)</th><th>Sample output</th></tr><tr><td>10.6</td><td>A = 11, B = 10, C = 10.6</td></tr><tr><td>-77.9</td><td>A = 78, B = 77, C = 77.9</td></tr></table></div>	Sample input(X)	Sample output	10.6	A = 11, B = 10, C = 10.6	-77.9	A = 78, B = 77, C = 77.9	**		
Sample input(X)	Sample output									
10.6	A = 11, B = 10, C = 10.6									
-77.9	A = 78, B = 77, C = 77.9									
15.	<div>Program to find size of int, float, double and char of the system.</div> <div><table><tr><th>Sample input</th><th>Sample output</th></tr><tr><td></td><td>Size of int in byte(s) = 4 Size of float in byte(s) = 4 Size of double in byte(s) = 8 Size of char in byte(s) = 1</td></tr></table></div>	Sample input	Sample output		Size of int in byte(s) = 4 Size of float in byte(s) = 4 Size of double in byte(s) = 8 Size of char in byte(s) = 1	**				
Sample input	Sample output									
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