

Operator Related Problems

(Total 15 questions)

SL	Problem statement	Difficulty levels						
1.	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 remainder).	*						
	<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.	Program that will calculate the circumference of a circle having radius r . Area, $A = 2 * \text{Pi} * r$	*						
	<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.	Program that will take two numbers (a, b) as inputs and compute the value of the equation – (Without using math.h) $X = (3.31 * a^2 + 2.01 * b^3) / (7.16 * b^2 + 2.01 * a^3)$	*						
	<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.	Program that will increment and decrement a number X by 1 inside the <i>printf</i> function. (Use ++ and - - operators)	**						
<table><tr><th>Sample input(X)</th><th>Sample output</th></tr><tr><td>5</td><td>X++ : 5 ++X : 6 X- - : 5 --X : 4</td></tr><tr><td>-5</td><td>X++ : -5 ++X : -4 X- - : -5 --X : -6</td></tr></table>			Sample input(X)	Sample output	5	X++ : 5 ++X : 6 X- - : 5 --X : 4	-5	X++ : -5 ++X : -4 X- - : -5 --X : -6
Sample input(X)	Sample output							
5	X++ : 5 ++X : 6 X- - : 5 --X : 4							
-5	X++ : -5 ++X : -4 X- - : -5 --X : -6							
5.	Program that will increment and decrement a number X by Y . (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 X by Y . (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.	<p>Program that will take two numbers as inputs and print the maximum value. (Using conditional operator - ?)</p> <table><tr><th>Sample input (x, y)</th><th>Sample output</th></tr><tr><td>20 100</td><td>Max: 100</td></tr><tr><td>50 -20</td><td>Max: 50</td></tr></table>	Sample input (x, y)	Sample output	20 100	Max: 100	50 -20	Max: 50	**
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 a, b & c as inputs and decide if the statements are True (1) of False (0)</p> <p>a) $(a + b) \leq 80$ b) $!(a + c)$ c) $a! = 0$</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) 0 c) 1</td></tr></table>	Sample input (a, b, c)	Sample output	10 -10 0	a) 1 b) 0 c) 1	**		
Sample input (a, b, c)	Sample output							
10 -10 0	a) 1 b) 0 c) 1							
11.	<p>Program that will take a, b & c as inputs and decide if the statements are True (1) of False (0)</p> <p>1) $(a + b) \leq 80 \&\& b \geq 0$ 2) $(a - b) == 0 c! = 0$ 3) $a! = b (b < a) \&\& c > 0$</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</td></tr></table>	Sample input (a, b, c)	Sample output	10 -10 0	1) 0 2) 1 3) 1	***		
Sample input (a, b, c)	Sample output							
10 -10 0	1) 0 2) 1 3) 1							

12.	<p>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) -</p> $\text{root} = \frac{-b \pm \text{sqrt}(b^2 - 4.a.c)}{2.a}$ <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>	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.	<p>Program that will evaluate the equation</p> $2 \cos^2 x - \sqrt{3} \sin x + \sin \frac{x}{2}$ <p> </p>							