

Test Case Verification

3 Variable System of Equations

Verified using : <https://www.mathportal.org/calculators/system-of-equations-solver/system-3x3.php>

Test Case 1 :

$$\boxed{-1} \ x \ \boxed{-} \ \boxed{5} \ y \ \boxed{-} \ \boxed{5} \ z = \boxed{2}$$

$$\boxed{4} \ x \ \boxed{-} \ \boxed{5} \ y \ \boxed{+} \ \boxed{4} \ z = \boxed{19}$$

$$\boxed{1} \ x \ \boxed{+} \ \boxed{5} \ y \ \boxed{-} \ \boxed{1} \ z = \boxed{-20}$$

$$x = -2, y = -3, z = 3$$

```
-1 -5 -5 2
4 -5 4 19
1 5 -1 -20
```

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 3
Solution to the System of Equations is
Variable : a = -2
Variable : b = -3
Variable : c = 3
[kirtan2605@wlan209031 Workspace]$
```

Test Case 2 :

$$5x + 2y - 1z = 13$$

$$2x - 6y + 9z = 25$$

$$-4x + 3y - 8z = -36$$

$$x = 2, y = 4, z = 5$$

5	2	-1	13
2	-6	9	25
-4	3	-8	-36

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 3
Solution to the System of Equations is
    Variable : a = 2
    Variable : b = 4
    Variable : c = 5
[kirtan2605@wlan209031 Workspace]$
```

Test Case 3 :

$$3x + 2y + 4z = 11$$

$$9x + 8y - 4z = 28$$

$$-3x + 2y + 8z = -2$$

$$x = \frac{1}{3}, y = \frac{7}{2}, z = \frac{3}{4}$$

3	2	4	11
9	8	-4	28
-3	-2	8	-2

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 3
Solution to the System of Equations is
    Variable : a = 0.333333
    Variable : b = 3.5
    Variable : c = 0.75
[kirtan2605@wlan209031 Workspace]$
```

Test Case Verification

4 Variable System of Equations

Verified using : <https://www.mathportal.org/calculators/system-of-equations-solver/system-4x4.php>

$$2x + (-3)y + 1z + (-4)t = 27$$

$$5x + 5y + (-2)z + 3t = -23$$

$$3x + (-1)y + 3z + (-1)t = 18$$

$$4x + 1y + (-4)z + 4t = -26$$

$$x = 1$$

$$y = -2$$

$$z = 3$$

$$t = -4$$

Test Case 1 :

```
2 -3 1 -4 27
5 5 -2 3 -23
3 -1 3 -1 18
4 1 -4 4 -26
```

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 4
Solution to the System of Equations is
Variable : a = 1
Variable : b = -2
Variable : c = 3
Variable : d = -4
[kirtan2605@wlan209031 Workspace]$
```

$$2x + 1y + 0z + 1t = 6$$

$$x = 251/83$$

$$0x + 1y + -2z + 0t = -3$$

$$y = -183/83$$

$$4x + -1y + 2z + -7t = 0$$

$$z = 33/83$$

$$2x + 1y + 7z + -4t = -2$$

$$t = 179/83$$

Test Case 2 :

```
2 1 0 1 6
0 1 -2 0 -3
4 -1 2 -7 0
2 1 7 -4 -2
```

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 4
Solution to the System of Equations is
Variable : a = 3.0241
Variable : b = -2.20482
Variable : c = 0.397591
Variable : d = 2.15663
[kirtan2605@wlan209031 Workspace]$
```

$$\boxed{2} x + \boxed{1} y + \boxed{5} z + \boxed{3} t = \boxed{17}$$

$$\boxed{5} x + \boxed{4} y + \boxed{2} z + \boxed{0} t = \boxed{11}$$

$$\boxed{0} x + \boxed{-2} y + \boxed{3} z + \boxed{7} t = \boxed{-3}$$

$$\boxed{-3} x + \boxed{0} y + \boxed{1} z + \boxed{5} t = \boxed{3}$$

$$x = -2$$

$$y = 3$$

$$z = 4.5$$

$$t = -1.5$$

Test Case 3 :

```
2 1 5 3 17
5 4 2 0 11
0 -2 3 7 -3
-3 0 1 5 3
```

```
[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 4
Solution to the System of Equations is
Variable : a = -2
Variable : b = 3
Variable : c = 4.5
Variable : d = -1.5
[kirtan2605@wlan209031 Workspace]$
```


Test Case Verification

5 Variable System of Equations

Verified using : <https://www.mathportal.org/calculators/system-of-equations-solver/system-3x3.php>

	Equations	Solved Values
Eq.1:	$6V + 3W + 4X + 1Y + 4Z = 12$	$V = 6.94221$
Eq.2:	$8V + -9W + 3X + -2Y + 2Z = -20$	$W = 3.95800$
Eq.3:	$4V + 5W + 3X + -1Y + 6Z = 4$	$X = -9.47102$
Eq.4:	$8V + 1W + 9X + 7Y + -3Z = 7$	$Y = 3.87241$
Eq.5:	$-7V + 4W + -3X + 2Y + 5Z = -6$	$Z = -1.87889$

Test Case 1 :

```

6 3 4 1 4 12
8 -9 3 -2 2 -20
4 5 3 -1 6 4
8 1 9 7 -3 7
-7 4 -3 2 5 -6

```

```

[kirtan2605@wlan209031 Workspace]$ g++ main.cpp -lm
[kirtan2605@wlan209031 Workspace]$ ./a.out 5
Solution to the System of Equations is
Variable : a = 6.94221
Variable : b = 3.958
Variable : c = -9.47102
Variable : d = 3.87241
Variable : e = -1.87889
[kirtan2605@wlan209031 Workspace]$ 

```