# Step-1

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We write the augmented matrix for the system

$$x+\ y+\ z=5$$
$$x+2y+3z=7$$
$$x+3y+6z=11$$

$$[A\,|\,b]=\left[\begin{array}{ccc|c}1&1&1&5\\1&2&3&7\\1&3&6&11\end{array}\right]$$

$l_{21}$ : one time row 1 subtracted from row 2 to give $\sim\left[\begin{array}{ccc|c}1&1&1&5\\0&1&2&2\\1&3&6&11\end{array}\right]$

$l_{31}$ : one time row 1 subtracted from row 3 to give $\sim\left[\begin{array}{ccc|c}1&1&1&5\\0&1&2&2\\0&2&5&6\end{array}\right]$

$l_{32}$ : two times row 2 is subtracted from row 3, we get $\sim\left[\begin{array}{ccc|c}1&1&1&5\\0&1&2&2\\0&0&1&2\end{array}\right]$

Thus, the system is reduced as

$$x+y+z\ =5$$
$$\quad y+2z=2$$
$$\qquad z=2$$

This can simply be written as $Ux=c$