Step-1

(i) If the points $(x,y,z),(2,1,0),(1,1,1),(0,0,0)$ are coplanar we get that

$$\begin{vmatrix} x & y & z & 1 \\ 2 & 1 & 0 & 1 \\ 1 & 1 & 1 & 1 \\ 0 & 0 & 0 & 1 \end{vmatrix} = 0$$

and hence expanding by 4^{th} row we get

$$\begin{vmatrix} x & y & z \\ 2 & 1 & 0 \\ 1 & 1 & 1 \end{vmatrix} = 0$$

Step-2

(ii) Now we need to find whether the vectors $(1,0,-1),(2,1,0),(1,1,1)$ are independent or not.

So, consider

$$\begin{vmatrix} 1 & 0 & -1 \\ 2 & 1 & 0 \\ 1 & 1 & 1 \end{vmatrix} = \begin{vmatrix} 1 & 0 \\ 1 & 7 \end{vmatrix} - \begin{vmatrix} 2 & 1 \\ 1 & 1 \end{vmatrix}$$

$$= 1-(2-1)$$

$$= 0$$

Step-3

So,

$(1,0,-1),(2,1,0),(1,1,1)$ are not independent. Or equivalently the points

$(1,0,-1),(2,1,0),(1,1,1),(0,0,0)$ are coplanar.