AN ALTERNATIVE FORM OF THE GAUSS-SEIDEL ITERATIVE METHOD FOR SOLVING LINEAR SYSTEMS OF EQUATIONS IS:

$$D x_{k+1} = D x_k - (L x_{k+1} + (D+U) x_k - b)$$

IF A SOLUTION CAN BE FOUND BY THIS, CONVERGENCE CAN BE ACCELERATED W/ AN APTLY TERMED 'ACCELERATION PARAMETER'

$$\longrightarrow D x_{k+1} = D x_k - \omega (L x_{k+1} + (D+U) x_k - b) \quad (1)$$

REARRANGE (1) TO THE FORM:

$$(\omega L + D) x_{k+1} = D x_k - \omega (D+U) x_k + \omega b$$

$$\rightarrow D x_{k+1} = D x_k - \omega L x_{k+1} - \omega (D+U) x_k + \omega b$$

$$D x_{k+1} + \omega L x_{k+1} = D x_k - \omega (D+U) x_k + \omega b$$

$$\boxed{(\omega L + D) x_{k+1} = D x_k - \omega (D+U) x_k + \omega b} \qquad (2)$$

REARRANGE (2) TO THE FORM:

$$(\omega L + D) x_{k+1} = ((1-\omega) D - \omega U) x_k + \omega b$$

$$\| \qquad = (D - \omega(D+U)) x_k + \omega b$$

$$= (D - \omega D - \omega U) x_k + \omega b$$

$$\boxed{(\omega L + D) x_{k+1} = ((1-\omega) D - \omega U) x_k + \omega b}$$