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Where ϵ is the relative error, $\Delta x_i = x_i^{(m)} - x_i^{(m-1)}$ and α is suitably small tolerance.

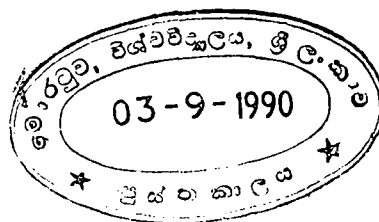
It is often possible to improve the rate of convergence by a technique which is generally known as over-relaxation. Equation A.2 provides new estimates, x_i , which provided the process is convergent, are closer to the required solutions than the $x_i^{(m-1)}$. Over Relaxation applies a limited amount of extrapolation from these two sets of estimates towards the final solution. Thus if x_i are the values obtained from the equation A.2 the extrapolated values after the m^{th} iteration are

$$x_i^{(m)} = x_i^{(m-1)} + \omega (\tilde{x}_i^{(m)} - x_i^{(m-1)}) \quad \text{-----A.4}$$

Where ω is the over relaxation factor, for which the same for all equations, Sri Lanka. For computer programming it is convenient to rewrite equation A.4 and A.2 with the aid of the changes in the unknowns, Δx_i , introduced in equation A.2. Thus

$$x_i^{(m)} = x_i^{(m-1)} + \omega \Delta x_i \quad \text{-----A.5}$$

$$\Delta x_i = \frac{1}{a_{ii}} (b_i - \sum_{j=1}^n a_{ij} x_j) \quad \text{-----A.6}$$



90.9.3