We are given a partially defined matrix M_0:

$$M_0 = \begin{bmatrix} 0 & 1 & ? & 3 \\ ? & 2 & 3 & ? \\ 1 & ? & 1 & 1 \\ 2 & 1 & 5 & ? \end{bmatrix}$$

$$D_\tau(X) = U D_\tau(\Sigma) V^T$$

$$D_\tau(\Sigma) = \text{diag}(\max(\sigma_1 - \tau, 0), \dots, \max(\sigma_{\min(n_1,n_2)} - \tau, 0))$$

$$P_\Omega(A) = \begin{cases} a_{ij}, & (i,j) \in \Omega \\ 0, & (i,j) \notin \Omega \end{cases}$$

δ - STEP SIZE

$$X^{(k)} = D_\tau(Y^{(k-1)})$$

$$Y^{(k)} = Y^{(k-1)} + \delta_k P_\Omega(M - X^{(k)})$$

$k=0$:

$X^{(0)} = 0$

$Y^{(0)} = 0$

$k=1$:

$X^{(1)} = D_\tau(0) = 0$

$$Y^{(1)} = 0 + \delta_k \cdot P_\Omega(M-0) = \delta_k \cdot P_\Omega\left(\begin{bmatrix} 0 & 1 & ? & 3 \\ ? & 2 & 3 & ? \\ 1 & ? & 1 & 1 \\ 2 & 1 & 5 & ? \end{bmatrix}\right) = \delta_k \begin{bmatrix} 0 & 1 & 0 & 3 \\ 0 & 2 & 3 & 0 \\ 1 & 0 & 1 & 1 \\ 2 & 1 & 5 & 0 \end{bmatrix}$$