Exencise 2:
i) We know, dis = Sij - 1 (Zif - Zm) THT (HPMHT +R)-7 (HZjf+&j-Jobs)
$= \delta_{ij} - \frac{1}{M-1} (Z_i^{5} - Z_M^{5})^T (P_M^{5} + R)^{-1} (Z_j^{5} + Z_j^{5} - Z_{0bs})$ when $H=1$.
Here & is a random number so, dis will be
nandom whatever value yobs have.
i) $M = M = \sum_{i=1}^{M} \left[G_{ij} - \frac{1}{M-1} \left(Z_{i}^{f} - Z_{M}^{f} \right) \left(P_{M}^{f} + R \right)^{-1} \left(Z_{j}^{f} + S_{j}^{f} - J_{01}^{s} \right) \right]$
$= \sum_{i=1}^{M} \delta_{ij} - \frac{1}{M-1} \sum_{i=1}^{M} (Z_{i}^{f} - Z_{H}^{f})^{T} (P_{H}^{f} + R)^{-1} (Z_{j}^{f} + S_{j}^{f} - J_{Obs})]$
= 1 - m-1 (M=1 - M=f) (Pf+R) (Zj+Sj-Job)
$ \left[-: \sum_{i=j}^{M} \delta_{ij} = 1 \text{ and } \sum_{i=j}^{M} Z_{i}^{f} = M Z_{i}^{f} \right] $
$= 1 - \frac{1}{M-1} \cdot 0 \cdot (P_{M}^{f} + R)^{-1} (Z_{j}^{f} + Z_{j}^{f} - Y_{00}^{s})$
= 1 - 0
= 1.

(iii)	We know,	
	dis = Sis - 1 (Zif - Zmf) HT (HPHHT+R)-1	
	(HZjf+\$j-Jobs)	
	Herre Sis denotes the knomecker detta. i.e.	
	$\delta_{ij} = 0 \text{for } i \neq j$	
	if &ij=0 then	
	dij = 0 - 1 (zif - zf) HT (HPMHT+R)-1	
	(HZjf+8j-Jobs)	
	$= -\frac{1}{M-1} (z_i^f - \overline{z_M})^T H^T (HP_M^f H^T + R)^{-1}$	
	(HZjf + \$j - Yous)	
	So, when i ± j +hen dij will be negative.	
0		
	1	