Max operation

Let A = (a_{ij}) and B = (b_{ij}) be any two m×n fuzzy matrices; define Max (A, B) = (Max (a_{ij}, b_{ij})), a_{ij} ∈ A and $(b_{ij}$ ∈ B, 1 ≤ i ≤ m and 1 ≤ j ≤ n. Then Max (A, B) is a fuzzy matrix. This operation will be known as <u>Max operation</u>.

$$\max(A, B) = \max\{\mu_A(x_i, y_j), \mu_B(x_i, y_j)\},$$
$$\mu_A(x_i, y_j)\epsilon A, \mu_B(x_i, y_j) \in B, 1 \le i \le m, 1 \le i \le n$$

EX:
Let A,B be any two 3 × 4 fuzzy matrices fend Max (A, B)

$$A = \begin{bmatrix} 0.8 & 1 & 0 & 0.3 \\ 0.3 & 0.2 & 0.4 & 1 \\ 0.1 & 0 & 0.7 & 0.8 \end{bmatrix} \quad B = \begin{bmatrix} 0.9 & 0.8 & 0.7 & 0 \\ 0.1 & 1 & 0 & 0.3 \\ 0.2 & 0.5 & 0.5 & 0.8 \end{bmatrix}, max(A,B) = \begin{bmatrix} 0.9 & 1 & 0.7 & 0.3 \\ 0.3 & 1 & 0.4 & 1 \\ 0.2 & 0.5 & 0.7 & 0.8 \end{bmatrix}$$

clearly Max(A,B) is again a fuzzy matrix as every entry given by Max(A,B) belongs to the interval [0,1].

It is interesting to note <u>Max (A, A) = A</u> and <u>Max ((0), A) =A</u> where (0) is the zero matrix of the same order as that of A.