## Example:

Using max- min composition and max- product composition find the relation between R and S?

$$R = \begin{bmatrix} 1 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 1 & 0 \end{bmatrix} \quad , S = \begin{bmatrix} 0 & 1 \\ 1 & 0 \\ 1 & 1 \end{bmatrix}$$

In matlab:

```
clc
clear
R=[1 1 0;0 0 1;0 1 0]
S=[0 1;1 0;1 1]
[m,n]=size(R)
[a,b]=size(S)
if(n==a)
    for i=1:m
      for j=1:b
          c=R(i,:)
          d=S(:,j)
         f=d'
         e=min(c,f)
         t(i,j)=max(e)
          end
    end
    disp(t)
end
```

## H.m

## Max production composition ???

# Fuzzy matrices

Let A be a matrix, every element in A is in the interval [0,1]. Thus A is a fuzzy matrix.

- Suppose A = $(a_{ij})$ with $a_{ij} \in [0, 1]$; $1 \leq i \leq n$ and $1 \leq j \leq m$ then A is known as the n × m rectangular fuzzy matrix. We can say A is a 3 × 4 rectangular fuzzy matrix:

- Let B = $(b_{ij})$ with $b_{ij} \in [0, 1]$, $1 \leq i \leq n$ and $1 \leq j \leq n$. A will be known as the n × n fuzzy square matrix. a fuzzy matrix B is a 5 × 5 square fuzzy matrix

$$A = \begin{bmatrix} 0.8 & 1 & 0 & 0.3 \\ 0.3 & 0.2 & 0.4 & 1 \\ 0.1 & 0 & 0.7 & 0.8 \end{bmatrix} \qquad B = \begin{bmatrix} 0.3 & 0.1 & 0.6 \\ 0 & 0.7 & 1 \\ 0.4 & 0.2 & 0.3 \end{bmatrix}$$

**fuzzy row matrix**

If C = $[c_1\ c_2\ \dots\ c_n]$ where $c_i \in [0, 1]$; $1 \leq i \leq n$, C will be known as the fuzzy row matrix or the fuzzy row vector. Let C is a 1 ×4 fuzzy matrix will also be known as the fuzzy row vector or row fuzzy matrix.

$$A = [0.1 \quad 0 \quad 0.9 \quad 0.4]_{1\times 4}$$