function Map\_Matrix(input):

# This function collects the pair of co-ordinates of the elements in matrix and wraps it as key value pairs

i = row[0]

j = row[1]

value = row[2]

return ({i,j}, value)

#Similar key values are grouped based on the same keys and then sorted.

function Reduce\_Matrix(key, values):

#Reduce function adds sums the grouped values which has the same co-ordinates.

i = key[0]

j = key[1]

sum = 0;

for each value from values:

sum = sum + value

return ({i,j}, sum)