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Problem No. 7

Problem Statement :

Take an arbitrary Matrix of positive integers, say, 128 X 128. Also take integer matrices of size 3 X 3 and 5 X 5. Find out an output matrix of size 128 X 128 by multiplying the small matrix with the corresponding submatrix of the large matrix with the centre of the small matrix placed at the individual positions within the large matrix. Explain how you will handle the boundary values.

Solution Approach:

We take the matrix as the input and then we take the non zero values and then make the corresponding matrix entries as per the input.

We take another matrix to be multiplied to the part of the original matrix.We multiply the submatrix and then replace the entries of the original matrix with that of the resulting values after multiplication.

Structured Pseudocode :

1.take the original matrix to be mat

2. let the auxiliary matrix be aux

3.take the submatrix from the original matrix in the another matrix say sub\_mat

4.multiply aux ,sub\_mat

5.store the resulting values again into the original matrix

Results:

We obtain the new modified matrix after replacing the corresponding matrix elements with the resultant values of the final matrix obtained.

Discussion:

For the boundary values we must ensure that the submatrix is possible for the original matrix and then call the corresponding multiply function .We must ensure the compatibility of the multiplication.

Separate files containing commented source code

The file has been attached.