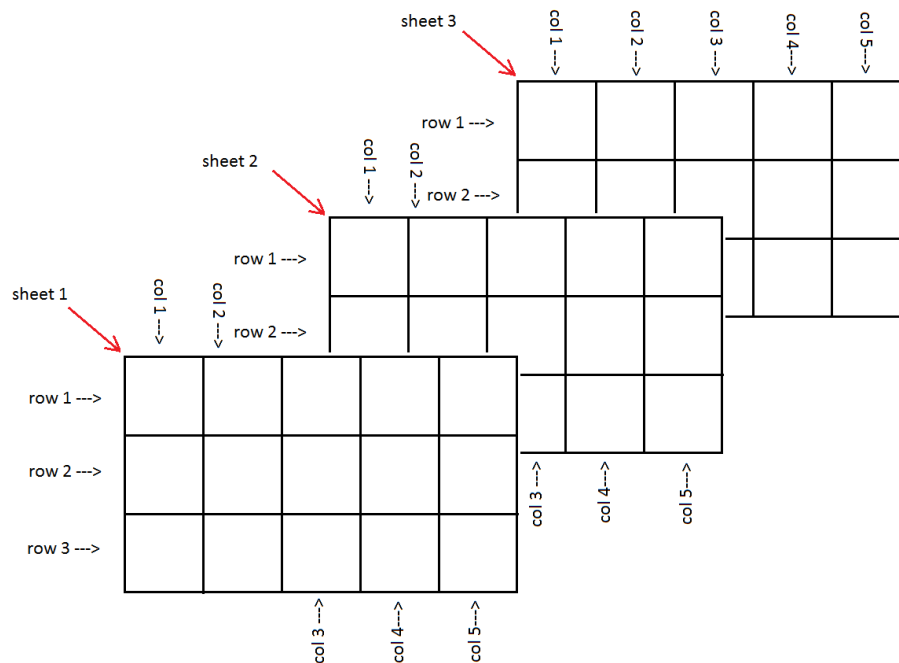


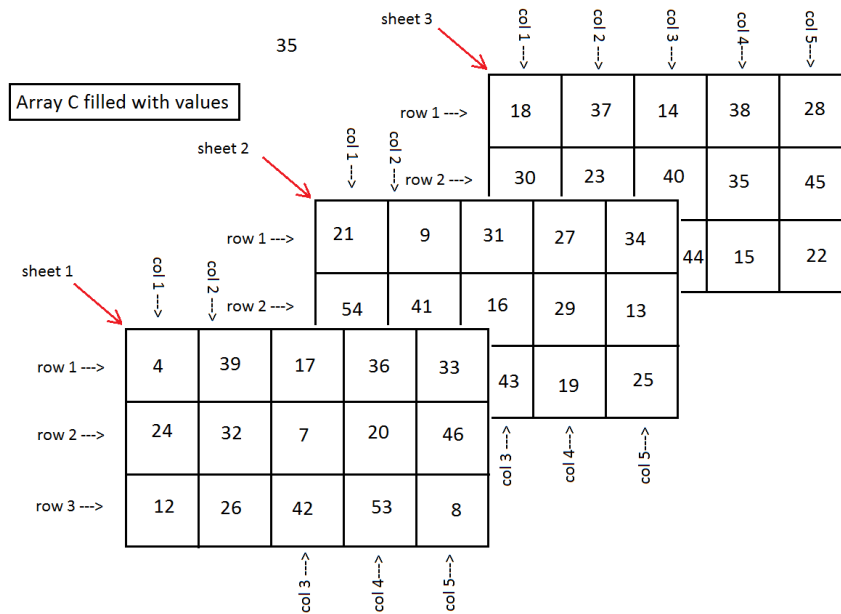
## Three Dimensional Arrays

A three dimensional array is just an extension of the concept of a two dimensional array or matrix. In the two dimensional case we had rows and columns. In the three dimensional case we have rows, columns, and sheets. A picture of a 3x5x3 array, where we have specified this as 3 rows, 5 columns, and 3 sheets would be:



If this is the matrix, or array,  $C$  then an element of that array could be denoted as  $C_{i,j,k}$  where  $i$  indicates the row,  $j$  indicates the column, and  $k$  indicates the sheet of the element. In a programming language this reference might be written as  $C[I,J,K]$  or  $C(I,J,K)$  or  $C[I][J][K]$ , depending upon the particular language.

To reinforce this concept, consider the 3x5x3 array shown below as  $C$  with values in the particular cells (elements) of  $C$ .



Now we can look at row 1 column 2 sheet 3, that is element  $C_{1,2,3}$  to see that it holds the value 37. Similarly,  $C_{2,3,1}$  holds 7 and  $C_{2,1,2}$  holds 54.