Home Assignment 1

Your task is to find out the product of two matrices. Follow the instructions:

1. Take as input the values of m, n and p.
2. Create an $m \times n$ matrix A, and an $n \times p$ matrix B. Take these matrices as inputs.
3. Create an $m \times p$ matrix M. Calculate $A \times B$, and put the result in M.

Now how to calculate the product of two matrices? Here's a big example ☺ follow carefully:

Let $A = \begin{bmatrix} 1 & 4 & 6 & 2 & 4 \\ 7 & 9 & 0 & 5 & 3 \\ 2 & 4 & 1 & 5 & 9 \\ 8 & 9 & 4 & 7 & 2 \end{bmatrix}$, and $B = \begin{bmatrix} 3 & 4 & 2 \\ 6 & 6 & 1 \\ 7 & 0 & 5 \\ 6 & 2 & 1 \\ 7 & 8 & 4 \end{bmatrix}$. The dimension of the product will be 4×3.

1. For the first element of the first row, multiply each element of the first row of A with each element of the first column of B, and take their sum. The remaining elements will come from the sum of products of first row of A with the remaining columns of B.
   1st element: $1 \times 3 + 4 \times 6 + 6 \times 7 + 2 \times 6 + 4 \times 7 = 109$
   2nd element: $1 \times 4 + 4 \times 6 + 6 \times 0 + 2 \times 2 + 4 \times 8 = 64$
   3rd element: $1 \times 2 + 4 \times 1 + 6 \times 5 + 2 \times 1 + 4 \times 4 = 54$
2. For the second row, consider the second row of A and each column of B to get the result.
3. Similarly, calculate the sums of products of each element in the corresponding rows of A and the corresponding columns of B to populate the sum.

The product of these two matrices will be $\begin{bmatrix} 109 & 64 & 54 \\ 126 & 116 & 40 \\ 130 & 114 & 54 \\ 162 & 116 & 60 \end{bmatrix}$.