Matrices and Operations

Multiplication

Part 2

Matrices and their Operations

- **Multiplication of Matrices**: Two matrices A and B can be multiplied in **AB** (Pre multiplication of B by A) if number of column of matrix A is equal to number of rows of B.
- If A is of order **m×n** and B is of order **i×j**, then A and B can be multiplied in AB order (or AB is confirmable) only if $n = j$.
- The order of the product matrix would be $m \times i$.

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- **Multiplication Example**:
- Find AB if
- $A = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 1 & 6 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 4 \\ 6 & 1 \\ 2 & 3 \end{bmatrix}$
- **Solution**: Since number of columns of A (3) is equal to number of rows of matrix B (3), AB is conformable:

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- $AB = \begin{bmatrix} 2 & 3 & 4 \\ 5 & 1 & 6 \end{bmatrix} \times \begin{bmatrix} 1 & 4 \\ 6 & 1 \\ 2 & 3 \end{bmatrix}$
- $= \begin{bmatrix} 2 \times 1 + 3 \times 6 + 4 \times 2 & 2 \times 4 + 3 \times 1 + 4 \times 3 \\ 5 \times 1 + 1 \times 6 + 6 \times 2 & 5 \times 4 + 1 \times 1 + 6 \times 3 \end{bmatrix}$
- $= \begin{bmatrix} 2 + 18 + 8 & 8 + 3 + 12 \\ 5 + 6 + 12 & 20 + 1 + 18 \end{bmatrix}$
- $= \begin{bmatrix} 28 & 23 \\ 23 & 39 \end{bmatrix}$ **Answer**

Matrices and their Operations

To be Continued ……

<THANK YOU>