

Software Engineering Intern**Task 03****Matrix Flatten****1. Problem Description**

A 3D matrix is to be stored in a 1D vector (flattened).

The 3D matrix is of size $n \times m \times p$ and is indexed by i, j, k .

The 1D vector is of size q and is indexed by y .

2. Requirements

Implement the following functions:

1. Create a 1D vector suitable for storing the 3D matrix.
2. Convert the 3D matrix index (i, j, k) to a suitable 1D vector index (y) . Must be $O(1)$.

The following is irrelevant:

1. The exact way the matrix is converted into the array.
2. The complexity of the solution.
3. The programming language.