

## Task number : 4

### Implement matrix factorization using singular value decomposition (SVD)

#### 1. Task Description

Implement matrix factorization using singular value decomposition (SVD) with numpy.

#### 2. Task Output Screenshot

```
Original Matrix (A):
[[2 0 0]
 [3 0 0]
 [0 2 0]
 [0 0 0]
 [0 1 0]]

U Matrix:
[[-0.5547002  0.          0.74420841]
 [-0.83205029 0.          -0.49613894]
 [ 0.          -0.89442719  0.2       ]
 [ 0.          0.          0.         ]
 [ 0.          -0.4472136  -0.4        ]]

S Matrix:
[[3.60555128 0.          0.          ]
 [0.          2.23606798 0.          ]
 [0.          0.          0.          ]]

VT Matrix:
[[-1. -0. -0.]
 [-0. -1. -0.]
 [ 0.  0.  1.]]

Reconstructed Matrix (A):
[[2. 0. 0.]
 [3. 0. 0.]
 [0. 2. 0.]
 [0. 0. 0.]
 [0. 1. 0.]]
PS C:\Users\reya>
```

### 3. Widget/Algorithm Used In Task

Matrix factorization utilizing Singular Value Decomposition (SVD) and NumPy's `linalg.svd`` function.