

Experiment No.: 1**Aim**

Matrix operations (using vectorization) and transformation using python and SVD using Python.

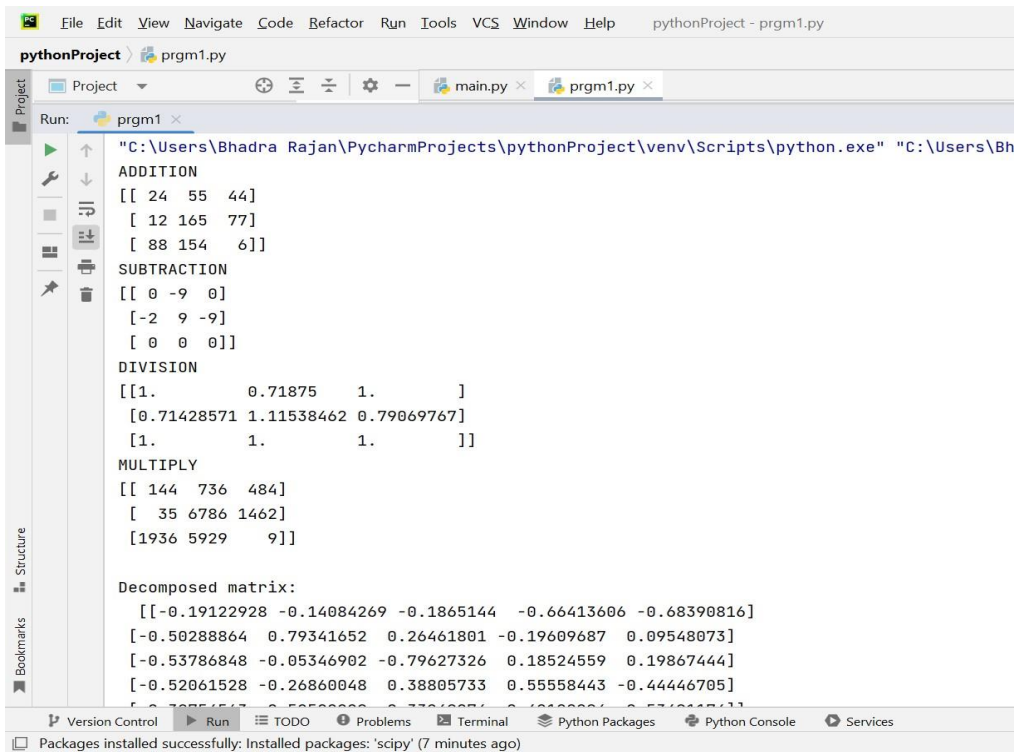
CO1

Use different python packages to perform numerical calculations, statistical computations and data visualization

Procedure

```
import numpy as np
mat1=np.array([[12,23,22],[5,87,34],[44,77,3]])
mat2=np.array([[12,32,22],[7,78,43],[44,77,3]])
print('ADDITION')
print(np.add(mat1,mat2))
print('SUBTRACTION')
print(np.subtract(mat1,mat2))
print('DIVISION')
print(np.divide(mat1,mat2))
print('MULTIPLY')
print(np.multiply(mat1,mat2))
print(".....")
from numpy import array
from scipy.linalg import svd
A = array([[12, 21, 39], [94, 75, 46], [37, 80, 94], [64, 34, 99], [38, 12, 89]])
U, s, VT = svd(A)
print('Decomposed matrix:\n ', U)
print('Inverse matrix:\n ', s)
print("Transpose matrix:\n ", VT)
```

Output Screenshot



```
"C:\Users\Bhadra Rajan\PycharmProjects\pythonProject\venv\Scripts\python.exe" "C:\Users\Bh
pythonProject / prgm1.py
Project
Run: prgm1
[[ 24  55  44]
 [ 12 165  77]
 [ 88 154   6]]
SUBTRACTION
[[ 0 -9  0]
 [-2  9 -9]
 [ 0  0  0]]
DIVISION
[[1.          0.71875  1.          ]
 [0.71428571  1.11538462  0.79069767]
 [1.          1.          1.          ]]
MULTIPLY
[[ 144  736  484]
 [  35 6786 1462]
 [1936 5929   9]]

Decomposed matrix:
[[-0.19122928 -0.14084269 -0.1865144 -0.66413606 -0.68390816]
 [-0.50288864  0.79341652  0.26461801 -0.19609687  0.09548073]
 [-0.53786848 -0.05346902 -0.79627326  0.18524559  0.19867444]
 [-0.52061528 -0.26860048  0.38805733  0.55558443 -0.44446705]
 [-0.30851517  0.50500000  0.37010000  0.10000000  0.57100000]]
```

Version Control Run TODO Problems Terminal Python Packages Python Console Services

☐ Packages installed successfully: Installed packages: 'scipy' (7 minutes ago)

Result

The program was executed and the result was successfully obtained. Thus CO1 was obtained.