Program 1:

Perform all matrix operations using python(using numpy)

PROGRAM

```
import numpy

A = numpy.array([[1, 2], [4, 5]])
B = numpy.array([[7, 8], [9, 10]])

print ("Addition of two matrices: ")
print (numpy.add(A,B))

print ("Subtraction of two matrices : ")
print (numpy.subtract(A,B))

print ("Matrix Division : ")
print (numpy.divide(A,B))
print ("Multiplication of two matrices: ")
print (numpy.multiply(A,B))
print ("The product of two matrices : ")
print (numpy.dot(A,B))
print ("square root is : ")
print (numpy.sqrt(A))
print ("The summation of elements : ")
print (numpy.sum(B))
print ("The column wise summation  : ")
print (numpy.sum(B,axis=0))
print ("The row wise summation: ")
print (numpy.sum(B,axis=1))
# using "T" to transpose the matrix
print ("Matrix transposition : ")
print (A.T)
```

OUTPUT

Addition of two matrices:

[[8 10]

 [13 15]]

Subtraction of two matrices :

[[-6 -6]

 [-5 -5]]

Matrix Division :

```
[[0.14285714 0.25      ]
 [0.44444444 0.5       ]]
Multiplication of two matrices:
[[ 7 16]
 [36 50]]
The product of two matrices :
[[25 28]
 [73 82]]
square root is :
[[1.         1.41421356]
 [2.         2.23606798]]
The summation of elements :
34
The column wise summation  :
[16 18]
The row wise summation:
[15 19]
Matrix transposition :
[[1 4]
 [2 5]]


Process finished with exit code 0
```

```
C:\Users\ajcemca\PycharmProjects\Project1\venv\Scripts\python.exe C:/Users/ajcemca/PycharmProjects/Project1/matrix.py
Addition of two matrices:
[[ 8 10]
 [13 15]]
Subtraction of two matrices :
[[-6 -6]
 [-5 -5]]
Matrix Division :
[[0.14285714 0.25      ]
 [0.44444444 0.5       ]]
Multiplication of two matrices:
[[ 7 16]
 [36 50]]
The product of two matrices :
[[25 28]
 [73 82]]
square root is :
[[1.         1.41421356]
 [2.         2.23606798]]
The summation of elements :
34
The column wise summation  :
[16 18]
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The summation of elements :
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[15 19]
Matrix transposition :
[[1 4]
 [2 5]]

Process finished with exit code 0
```