Program 1

Aim: Perform all matrix operations using python

Program Code

```
import numpy as np
mat1 = np.array([[10,20,30],[20,50,70],[15,20,40]])
mat2 = np.array([[5,10,15],[3,6,9],[10,20,30]])
print("mat1+mat2")
print(mat1+mat2)
print("np.add(mat1,mat2)")
print(np.add(mat1,mat2))
print()
print("mat1-mat2")
print(mat1-mat2)
print("np.subtract(mat1,mat2)")
print(np.subtract(mat1,mat2))
print()
print("mat1/mat2")
print(mat1/mat2)
print("np.divide(mat1,mat2)")
```

```
print(np.divide(mat1,mat2))
print()
print("mat1*mat2")
print(mat1,mat2)
print("np.multiply(mat1,mat2)")
print(np.multiply(mat1,mat2))
print()
print("np.dot(mat1,mat2)")
print(np.dot(mat1,mat2))
print("np.sqrt(mat1)")
print(np.sqrt(mat1))
print("np.sqrt(mat2)")
print(np.sqrt(mat2))
```

Output

```
"C:\Users\ajcemca\PycharmProjects\python project1\venv\Scripts\python.exe" "C:/Users/ajcemca/P
mat1+mat2
[[15 30 45]
 [23 56 79]
 [25 40 70]]
np.add(mat1,mat2)
[[15 30 45]
 [23 56 79]
 [25 40 70]]

mat1-mat2
[[ 5 10 15]
 [17 44 61]
 [ 5  0 10]]
np.subtract(mat1,mat2)
[[ 5 10 15]
 [17 44 61]
 [ 5  0 10]]

mat1/mat2
[[2.         2.         2.        ]
 [6.66666667 8.33333333 7.77777778]
 [1.5        1.         1.33333333]]
np.divide(mat1,mat2)
[[2.         2.         2.        ]
 [6.66666667 8.33333333 7.77777778]
 [1.5        1.         1.33333333]]

mat1*mat2
[[10 20 30]
 [20 50 70]
 [15 20 40]] [[ 5 10 15]
 [ 3  6  9]
 [10 20 30]]
np.multiply(mat1,mat2)
[[  50  200  450]
 [  60  300  630]
 [ 150  400 1200]]

np.dot(mat1,mat2)
[[ 410  820 1230]
 [ 950 1900 2850]
```