Lab 10

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Python Code:

```
import numpy as np
x = np.array([[1,2],[3,4]], dtype=np.float64)
y = np.array([[5,6],[7,8]], dtype=np.float64)

print(x+y)
print(np.add(x,y))

print(x-y)
print(np.subtract(x,y))

print(x*y)
print(np.multiply(x,y))

print(x/y)
print(np.divide(x,y))

print(np.sqrt(x))
print(np.sqrt(y))
```

Output:

```
[[ 6.  8.]
 [10. 12.]]
[[ 6.  8.]
 [10. 12.]]
```

```
[[-4. -4.]
 [-4. -4.]]
[[-4. -4.]
 [-4. -4.]]
[[ 5. 12.]
 [21. 32.]]
[[ 5. 12.]
 [21. 32.]]
[[0.2        0.33333333]
 [0.42857143 0.5       ]]
[[0.2        0.33333333]
 [0.42857143 0.5       ]]
[[1.         1.41421356]
 [1.73205081 2.        ]]
[[2.23606798 2.44948974]
 [2.64575131 2.82842712]]
```

Task2: Perform dot product of the array.

Python Code:

```python
import numpy as np
v = np.array([9,10])
w = np.array([11,12])

print(v.dot(w))
print(np.dot(v, w))
```

Output:

```
219
219
```

Task3: Print the transpose of the given matrix

Python Code:

```
import numpy as np
x = np.array([[1,2],[3,4]], dtype=np.float64)
y = np.array([[5,6],[7,8]], dtype=np.float64)

print(x)
print(x.T)
```

Output:

```
[[1. 2.]
 [3. 4.]]
[[1. 3.]
 [2. 4.]]
```

Task4: Use the function linspace()

Python Code:

```
import numpy as np
print(np.linspace(0,10,11))
print(np.arange(0,100,5))
```

Output:

```
[ 0.  1.  2.  3.  4.  5.  6.  7. 8.  9. 10.]
[ 0  5 10 15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95]
```

Task5: Find mean median for arrays.

Python Code:

```
import numpy as np
f = np.array([1,2,3,4,5,6,7,8,9,11])
print(np.mean(f))
print(np.median(f))
print(np.std(f))
```

Output:

5.6
5.5
3.0397368307141326

Task6: Print the square of the elements of the matrix

Python Code:

```
 import numpy as np
A = np.arange(1,10)
print(A**2)
```

Output:

[1 4 9 16 25 36 49 64 81]

Task7: Perform logical operations on array.

Python Code:

```
import numpy as np
A = np.arange(1,10)
print(A>5)
print(A!=5)
```

Output:

[False False False False False True True True True]
[True True True True False True True True True]