

Numpy

Assignment Questions



1. What is a Python library? Why do we use Python libraries?

2. What is the difference between Numpy array and List?

3. Find the shape, size and dimension of the following array?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

4. Write python code to access the first row of the following array?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

5. How do you access the element at the third row and fourth column from the given numpy array?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

6. Write code to extract all odd-indexed elements from the given numpy array?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

7. How can you generate a random 3x3 matrix with values between 0 and 1?

8. Describe the difference between `np.random.rand` and `np.random.randn`?

9. Write code to increase the dimension of the following array?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

10. How to transpose the following array in NumPy?

```
[[1, 2, 3, 4]  
[5, 6, 7, 8],  
[9, 10, 11, 12]]
```

11. Consider the following matrix:

Matrix A: `[[1, 2, 3, 4] [5, 6, 7, 8],[9, 10, 11, 12]]`

Matrix B: `[[1, 2, 3, 4] [5, 6, 7, 8],[9, 10, 11, 12]]`

Perform the following operation using Python:

1. Index wise multiplication
2. Matrix multiplication
3. Add both the matrices
4. Subtract matrix B from A
5. Divide Matrix B by A

12. Which function in Numpy can be used to swap the byte order of an array?

13. What is the significance of the `np.linalg.inv` function?

14. What does the `np.reshape` function do, and how is it used?

15. What is broadcasting in Numpy?