Quiz #1

Q.1 Using np.arange, what expression generates the following array:

array([10., 11., 12., 13., 14., 15.]

np.arange(10, 16)

Q.2 Using np.linspace, what expression generates the following array:

array([10., 11., 12., 13., 14., 15.]

np.linspace(10, 16, 6)

Q.3 What is the result of the following code:

a = np.array([4, 1, 2, 1, 3, 2, 1, 3, 4])

np.unique(a)

[1, 2, 3, 4]

Q.4 What is the result of the following code:

a = np.array([1, 0, 2, 0, -1, 0, -2])

np.count\_nonzero(a)

4

Q.5 What is the result of the following expression:

np.arange(0, 10).reshape(2, 5)

[[0, 1, 2, 3, 4], [5, 6, 7, 8, 9]]

Q.6 What is the result of the following code:

a = np.array([1, 2, 3, 4])

a\*a, a.dot(a)

[1, 4, 9, 16]

1\*1 \* 2\*2 + 3\*3 + 4\*4 = 30

Q.7 The following code results in the output array([20, 50, 60, 70]).

Show the equivalent result using the np.where function:

a = np.array([10, 50, 60, 20])

b = np.array([20, 30, 40, 70])

np.maximum(a, b)

np.where(a b, a, b)

Q.8 What is the result of the following code:

a = np.array([1, 2, 3, 4])

np.repeat(a, [0, 2, 0, 3])

[2, 2, 4, 4, 4]

Q.9 Given, a = np.array([1, 2, 3, 4]), show the expression that will result in the following output:

array([[1],

[2],

[3],

[4]])

[[x] for x in a]

Q.10 For a given numpy array, say, a, write the index expression using array indexing to filter out all values that are multiples of 5.

Sample input: a = np.array([3, 5, 10, 12, 20, 22])

Output: array([3, 12, 22])

a[a % 5 != 0]

Q.11 For the two numpy arrays, a and b, shown below, what would be the resulting array using 1) np.hstack((a, b)) and ii) np.vstack((a, b))

a = np.array([ [0, 1, 2],

[3, 4, 5]])

b = np.array([ [6, 7, 8],

[9, 10, 11]])

[0, 1, 2, 6, 7, 8]

[[0, 1, 2],

[3, 4, 5],

[6, 7, 8],

[9, 10, 11]]

Q.12 For the two numpy arrays, a and b, shown below, what would be the resulting array for the equivalent of a + b?

a = array([0, 1, 2])

b = array([ [0],

[1],

[2]])

[[0, 1, 2],

[1, 2, 3],

[2, 3, 4]]

Q.13 For the 2-D numpy array shown below:

array([ [0, 1, 2, 3],

[4, 5, 6, 7])

what would be the result of 1) a[1, 1]

2) a[1:]

3) a[:, 1]

1. 5
2. [4, 5, 6, 7]
3. [1, 5]

Q.14 For the 3=D numpy array shown below:

Array([

[ [ 0, 1, 2, 3],

[ 4, 5, 6, 7],

[ 8, 9, 10, 11]

],

[ [12, 13, 14, 15],

[16, 17, 18, 19],

[20, 21, 22, 23]

]])

what would be the result of 1) a[1,1,1]

2) a[1, :, :]

3) a[:, :, 1]

4) a[:, 1, :]

1) 17

2) [ [12, 13, 14, 15],

[16, 17, 18, 19],

[20, 21, 22, 23]]

3) [[1, 5, 9], [13, 17, 21]]

4) [[4, 5, 6, 7], [16, 17, 18, 19]]