Numpy quiz

16 out of 16 correct

1. What is the purpose of indexing and slicing in Numpy?

- ○ To change elements in a Numpy array
- ◉ To extract specific elements or sub-arrays from a Numpy array
- ○ To add elements to a Numpy array
- ○ To recreate the array

Explanation: Indexing and slicing are used to extract specific elements or sub-arrays from a Numpy array. It allows you to manipulate and extract information from Numpy arrays more easily.

2. How can you access elements in a 2D Numpy array using indexing and slicing?

- ○ By using one set of square brackets
- ◉ By using two sets of square brackets
- ○ By using parentheses
- ○ By using two sets of parentheses

Explanation: To access elements in a 2D Numpy array, you need to use two sets of square brackets. The first set of brackets is used to specify the row index, and the second set is used to specify the column index. For example, "array[row][column]" returns the element at the specified row and column in the array.

3. How to perform element-wise multiplication of two arrays of different shapes using broadcasting?

- ◯ np.multiply(array1, array2)
- ◯ np.dot(array1, array2)
- ◉ array1 * array2
- ◯ All of the above

4. How to iterate over a Numpy array and modify elements based on a condition?

- ◯
```
for i in np.nditer(array):
if i < threshold:
i = 0
```
- ◯
```
for i in range(np.shape(array)[0]):
for j in range(np.shape(array)[1]):
if array[i][j] < threshold:
array[i][j] = 0
```
- ◉ array[array < threshold] = 0
- ◯ None

Explanation: Option A is incorrect because it only iterates over the elements in the array but doesn't modify them. Option B is a correct method to iterate over the elements in a 2D Numpy array and modify them based on a condition, but it's not the most efficient way. Option C uses Numpy's advanced indexing and broadcasting capabilities to modify elements in the array that meet the condition in a single line of code, making it the most efficient and concise method.

5. How to extract all unique elements from a Numpy array?

- ◉ np.unique(array)
- ◯ np.distinct(array)
- ◯ np.uniqelements(array)

- ◯ All of the above

Explanation: Option B and C are not Numpy functions. Option A uses the Numpy function np.unique, which returns an array of unique elements from a given Numpy array.

6. What does the 'np.concatenate()' function do in NumPy?

- ◯ It adds two arrays element-wise
- ◉ It merges two or more arrays into a single array
- ◯ It performs a dot product between two arrays
- ◯ It subtracts two arrays element-wise

Explanation: The 'np.concatenate()' function in NumPy is used to merge two or more arrays along a specified axis. It takes a sequence of arrays as input and concatenates them together into a single array.

7. Which of the following operators is used to perform element-wise multiplication of two arrays in NumPy?

- ◯ +
- ◉ *
- ◯ /
- ◯ -

Explanation: The * operator is used to perform element-wise multiplication of two arrays in NumPy. It multiplies each element of the first array with the corresponding element of the second array.

8. What does the np.char.upper() function do in NumPy?

- ◯ It returns the length of each string in an array
- ◯ It sorts an array of strings in alphabetical order

- [x] It converts each string in an array to uppercase
- [ ] It returns the index of the first occurrence of a substring in a string array

Explanation: It converts each string in an array to uppercase. The np.char.upper() function in NumPy is used to convert each string in an array to uppercase.

9. Which of the following functions can be used to calculate the standard deviation of an array in NumPy?

- [ ] np.mean()
- [ ] np.median()
- [ ] np.var()
- [x] np.std()

Explanation: The 'np.std()' function in NumPy is used to calculate the standard deviation of an array. It takes an array as input and returns the standard deviation of the array.

10. What does the np.power() function do in NumPy?

- [ ] It performs element-wise addition of two arrays
- [ ] It calculates the square root of each element in an array
- [x] It raises each element in an array to a specified power
- [ ] It performs matrix multiplication of two arrays

Explanation: The 'np.power()' function in NumPy is used to raise each element in an array to a specified power.

11. Which of the following operators is used to perform element-wise division of two arrays in NumPy?

- [ ] +

- ○ *
- ◉ /
- ○ -

Explanation: The '/' operator is used to perform element-wise division of two arrays in NumPy. It divides each element of the first array with the corresponding element of the second array.

12. What does the 'np.flip()' function do in NumPy?

- ◉ It reverses the order of elements in an array
- ○ It reshapes an array into a specified shape
- ○ It sorts an array in ascending order
- ○ It returns the cumulative sum of elements in an array

Explanation: The 'np.flip()' function in NumPy is used to reverse the order of elements in an array along a specified axis. It takes an array as input and returns the reversed array.

13. What does the 'np.argsort()' function do in NumPy?

- ◉ It returns the indices that would sort an array
- ○ It searches for the maximum value in an array
- ○ It returns the number of occurrences of a specified element in an array
- ○ It counts the number of elements in an array that satisfy a specified condition

Explanation: The 'np.argsort()' function in NumPy is used to return the indices that would sort an array. It takes an array as input and returns an array of indices that can be used to sort the input array.

14. Which of the following functions can be used to count the number of occurrences of a specified element in an array in NumPy?

- ○ np.argmax()
- ○ np.argsort()
- ◉ np.count_nonzero()
- ○ np.flip()

Explanation: The 'np.count_nonzero()' function in NumPy is used to count the number of non-zero elements in an array. It takes an array as input and returns the number of non-zero elements in the array.

15. What does the np.transpose() function do in NumPy?

- ○ It returns the dot product of two arrays
- ○ It returns the inverse of a matrix
- ◉ It returns a view of the array with axes transposed
- ○ It returns the eigenvalues of a matrix

Explanation: The 'np.transpose()' function in NumPy is used to return a view of the array with axes transposed. It takes an array as input and returns a new array with the axes transposed.

16. Which of the following functions can be used to swap the byte order of an array in NumPy?

- ○ np.ndarray.copy()
- ○ np.dot()
- ◉ np.byteswap()
- ○ np.diag()

Explanation: The 'np.byteswap()' function in NumPy is used to swap the byte order of an array. It takes an array as input and returns a new array with the byte order swapped.

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