



Question Bank

Numpy

Questions

Q-1 How to stack two arrays vertically?

```
sampleArray = numpy.array([[34,43,73],[82,22,12],[53,94,66]])
```

```
newColumn = numpy.array([[10,10,10]])
```

Q-2 Given an integer n and a 2D array X , select from X the rows which can be interpreted as draws from a multinomial distribution with n degrees, i.e., the rows which only contain integers and which sum to n .

[In probability theory, the multinomial distribution is a generalization of the binomial distribution. For example, it models the probability of counts for each side of a k -sided die rolled n times. For n independent trials each of which leads to a success for exactly one of k categories, with each category having a given fixed success probability, the multinomial distribution gives the probability of any particular combination of numbers of successes for the various categories.

Questions

Q-3 Convert a vector of ints into a matrix binary representation

Q-4 How to create a record array from a regular array?

[Record arrays are structured arrays wrapped using a subclass of ndarray, numpy.recarray, which allows field access by attribute on the array object, and record arrays also use a special datatype, numpy.record, which allows field access by attribute on the individual elements of the array.]

Q-5 Given an arbitrary number of vectors, build the cartesian product (every combinations of every item)

[The Cartesian product is the set of all combinations of elements from multiple sets.]

Questions

- Q-6** How to compute averages using a sliding window over an array?
[Sliding window technique shows how a nested for loop in some problems can be converted to a single for loop to reduce the time complexity.]
- Q-7** Considering a four dimensions array, how to get sum over the last two axis at once?
- Q-8** How to accumulate elements of a vector (X) to an array (F) based on an index list (I)?

Questions

Q-9 How to create strides from a given 1D array?

[The strides of an array tell us how many bytes we have to skip in memory to move to the next position along a certain axis. For example, we have to skip 4 bytes (1 value) to move to the next column, but 20 bytes (5 values) to get to the same position in the next row. As such, the strides for the array x will be (20, 4).]

array([0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14])

Q-10 How to fill in missing dates in an irregular series of numpy dates?

dates = np.arange(np.datetime64('2018-02-01'), np.datetime64('2018-02-25'), 2)

Questions

- Q-11** How to compute the moving average of a numpy array?
[A moving average is a calculation used to analyze data points by creating a series of averages of different subsets of the full data set.]
array: [8 8 3 7 7 0 4 2 5 2]
- Q-12** How to convert numpy's datetime64 object to datetime's datetime object?
Input: a numpy datetime64 object dt64 = np.datetime64('2018-02-25 22:10:10')
- Q-13** How to subtract a 1d array from a 2d array, where each item of 1d array subtracts from the respective row?
a_2d = np.array([[3,3,3],[4,4,4],[5,5,5]])
b_1d = np.array([1,1,1])

Questions

- Q-14** How to compute the euclidean distance between two arrays?
[Euclidean distance is the shortest between the 2 points irrespective of the dimensions.]
`a = np.array([1,2,3,4,5])`
`b = np.array([4,5,6,7,8])`
- Q-15** How to generate one-hot encodings for an array in numpy?
[One-hot is a group of bits where the only combinations are those with a single 1 and the rest 0 for any valid combination.]
`array([2, 3, 2, 2, 2, 1])`