Q1. What are the benefits of the built-in array package, if any?

Ans.It helps to store same type of data and allows random access to elements and it uses fixed memory.

Q2. What are some of the array package's limitations?

Ans.It can store only same type of data and if a specific data type was mentioned, we cant update the array with a value of different data type.

Q3. Describe the main differences between the array and numpy packages.

Ans. Main difference between array and numpy package is that in array if a specific data type was mentioned, we cant update the array with a value of different data type but using numpy array we can insert a value of different data type.

Q4. Explain the distinctions between the empty, ones, and zeros functions.

Ans. Empty will give very small values close to 0, ones will give 1 and zeros will give 0 of mentioned array size.

Q5. In the fromfunction function, which is used to construct new arrays, what is the role of the callable argument?

Ans. We call a function which helps to fill in the values of the ndim array.

Q6. What happens when a numpy array is combined with a single-value operand (a scalar, such as an int or a floating-point value) through addition, as in the expression A + n?

Ans.It is called broadcasting, all the elements will get added with the scalar value.

Q7. Can array-to-scalar operations use combined operation-assign operators (such as += or \*=)? What is the outcome?

Ans. It is the same as A+n

Q8. Does a numpy array contain fixed-length strings? What happens if you allocate a longer string to one of these arrays?

Ans. Yes numpy array contains fixed length strings, if we allocate a longer string to one of these arrays we will get dimension error.

Q9. What happens when you combine two numpy arrays using an operation like addition (+) or multiplication (\*)? What are the conditions for combining two numpy arrays?

Ans. + and \* will act like arithmetic operators

To combine we must use np.concatenate

Datatype should be same otherwise dtype of 1 array is changed to other and the axis along which concat happens must be of same dimension.

Q10. What is the best way to use a Boolean array to mask another array?

Ans. Simply give the condition

Eg. X=[1,2,5,78,9,4]

Mask=X<5

print(Mask)

Q11. What are three different ways to get the standard deviation of a wide collection of data using both standard Python and its packages? Sort the three of them by how quickly they execute.

Ans.

l=[ 2. , 3.4, 4.8, 6.2, 7.6, 9. , 10.4, 11.8, 13.2, 14.6]

method 1:

np.std(l)

method2:

import math

math.sqrt(np.var(l))

method3:

n=len(l)

mean=sum(l)/n

d=[(x-mean)\*\*2 for x in l]

var=sum(d)/n

math.sqrt(var)

execution time

method1>method3>method2

12. What is the dimensionality of a Boolean mask-generated array?

Ans. it is equal to the dim of input array whose masking is to be done