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

ANS:

Why Use an Array in Python? An array is used to store more than one value at a time. It can hold multiple values in a single variable, and also helps you reduce the overall size of the code. Arrays save time.

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

ANS:

Limitations

* An array which is formed will be homogeneous. ...
* While declaring an array, passing size of an array is compulsory, and the size must be a constant. ...
* Shifting is required for insertion or deletion of elements in an array.

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

ANS:

There are several important differences between NumPy arrays and the standard Python sequences: NumPy arrays have a fixed size at creation, unlike Python lists (which can grow dynamically). Changing the size of an ndarray will create a new array and delete the original.

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

ANS:

The function zeros creates an array full of zeros, the function ones creates an array full of ones, and the function empty creates an array whose initial content is random and depends on the state of the memory. By default, the dtype of the created array is float64 .

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

ANS:

**numpy.fromfunction()** function construct an array by executing a function over each coordinate and the resulting array, therefore, has a value fn(x, y, z) at coordinate (x, y, z).

Syntax : numpy.fromfunction(function, shape,  dtype)

Parameters :

function : [callable] The function is called with N parameters, where N is the rank of shape. Each parameter represents the coordinates of the array varying along a specific axis.

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:

Scalar operations on Numpy arrays include performing addition or subtraction, or multiplication on each element of a Numpy array.

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

ANS:

The assignment operator (=)

The assignment operator (=) is used to assign a value to a variable, element of an array, or property of an object.

The assignment operator = assigns the value of its right-hand operand to a variable, a property, or an indexer element given by its left-hand operand. The result of an assignment expression is the value assigned to the left-hand operand.

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

ANS:

NumPy arrays have a fixed size at creation, unlike Python lists (which can grow dynamically). Changing the size of an ndarray will create a new array and delete the original. The elements in a NumPy array are all required to be of the same data type, and thus will be the same size in memory.

Issue: You are logging a lengthy string or NumPy array. Neptune has a character length limit of 16384.

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:

We can use np. multiply to multiply two same-sized arrays together. This computes something called the Hadamard product. In the Hadamard product, the two inputs have the same shape, and the output contains the element-wise product of each of the input values.

To add the two arrays together, we will use the numpy. add(arr1,arr2) method. In order to use this method, you have to make sure that the two arrays have the same length. If the lengths of the two arrays are​ not the same, then broadcast the size of the shorter array by adding zero's at extra indexes.

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

ANS:

To create a boolean mask from an array, use the ma. make\_mask() method in Python Numpy. The function can accept any sequence that is convertible to integers, or nomask. Does not require that contents must be 0s and 1s, values of 0 are interpreted as False, everything else as True.

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:

The standard deviation is the square root of the average of the squared deviations from the mean, i.e., std = sqrt(mean(x)) , where x = abs(a - a.mean())\*\*2 . The average squared deviation is typically calculated as x.sum() / N , where N = len(x) .

We can use the DataFrame. std() function to calculate the standard deviation of values in a pandas DataFrame. Note that the std() function will automatically ignore any NaN values in the DataFrame when calculating the standard deviation.

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

ANS:

Boolean Arrays as Masks

What is returned is a one-dimensional array filled with all the values that meet this condition; in other words, all the values in positions at which the mask array is True .