NPTEL - PYTHON FOR DATA SCIENCE - JULY 2022
ASSIGNMENT – 2: SOLUTIONS

1. **Solution: b and c**

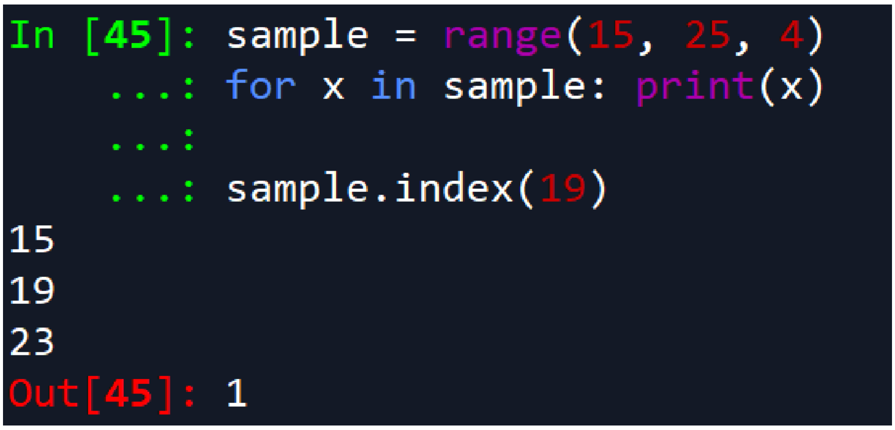
   Feedback: Both ***array.reshape(shape)*** and ***numpy.reshape(array, shape)*** functions reshape (or rather resize) an array without modifying the contents of the array.

2. **Solution: d**

   Feedback: Tuples cannot be modified because of their immutable property.

3. **Solution: d**

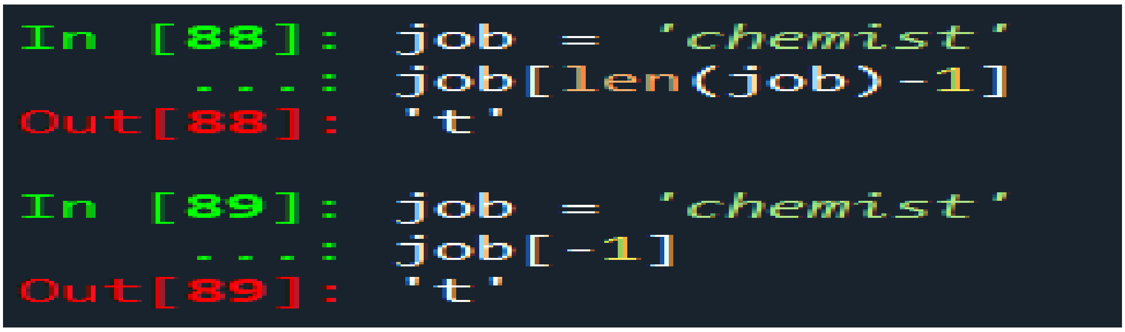
   Feedback:



```
In [45]: sample = range(15, 25, 4)
    ...: for x in sample: print(x)
    ...:
    ...: sample.index(19)
15
19
23
Out[45]: 1
```

4. **Solution: b and d**

   Feedback: In the variable job, the index of the first character starts from 0 and the index of the last character will be the length of the variable minus 1 i.e., len(job)-1. So, job[len(job)-1] gets the last character of the variable.
   Also, job[-n] syntax gets the nth character from the reverse of the variable job. So, job[-1] will get the last character of the variable.

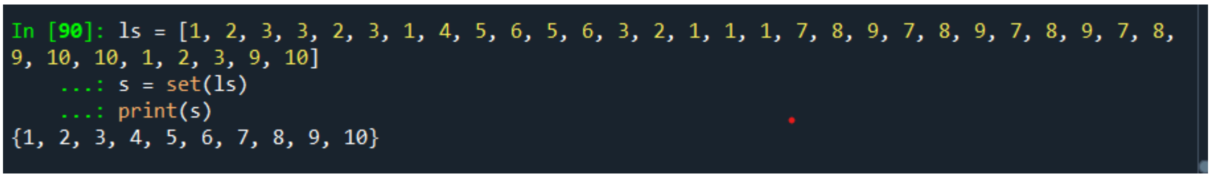


```
In [88]: job = 'chemist'
    ...: job[len(job)-1]
Out[88]: 't'

In [89]: job = 'chemist'
    ...: job[-1]
Out[89]: 't'
```

5. **Solution: b**

   Feedback: Since sets accept unique elements alone, the given list can be converted to a set to easily determine the unique elements.



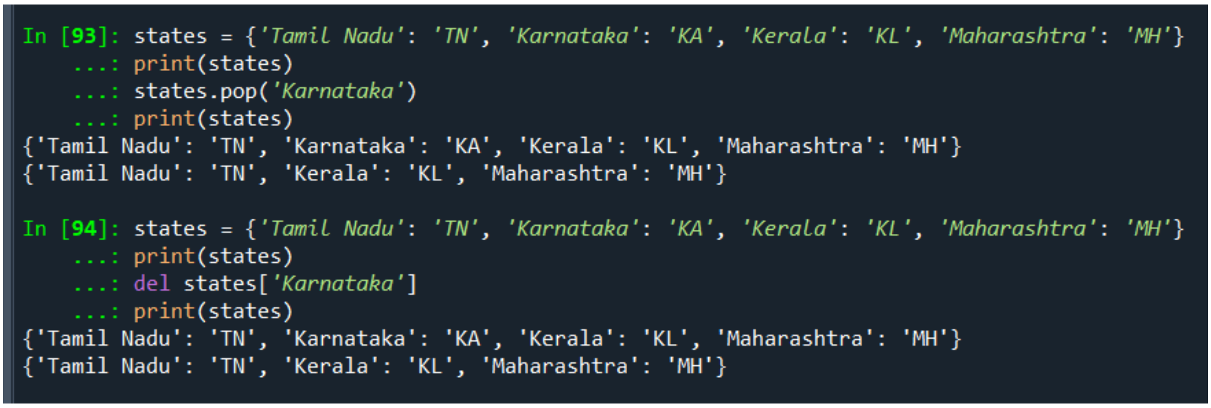
```
In [90]: ls = [1, 2, 3, 3, 2, 3, 1, 4, 5, 6, 5, 6, 3, 2, 1, 1, 1, 7, 8, 9, 7, 8, 9, 7, 8, 9, 7, 8,
9, 10, 10, 1, 2, 3, 9, 10]
    ...: s = set(ls)
    ...: print(s)
{1, 2, 3, 4, 5, 6, 7, 8, 9, 10}
```

6. **Solution: b and d**

   Feedback: All immutable objects like **int**, **float**, **str**, **complex**, and **bool** can be used as keys in a dictionary. Since **list** and **set** are mutable in Python, using them as keys throws an error.

7. **Solution: a and c**

   Feedback: ***pop()*** is the python inbuilt method and it takes the key as a parameter and deletes the key and value associated with it from the dictionary. The second way is using the **del** keyword, key and associated value from a dictionary can be deleted. ***popitem()*** method deletes the last item added to the dictionary and will not have any parameter passed to the method. ***clear()*** method removes all the items from the dictionary and also will not have any parameter passed to it.



```
In [93]: states = {'Tamil Nadu': 'TN', 'Karnataka': 'KA', 'Kerala': 'KL', 'Maharashtra': 'MH'}
    ...: print(states)
    ...: states.pop('Karnataka')
    ...: print(states)
{'Tamil Nadu': 'TN', 'Karnataka': 'KA', 'Kerala': 'KL', 'Maharashtra': 'MH'}
{'Tamil Nadu': 'TN', 'Kerala': 'KL', 'Maharashtra': 'MH'}

In [94]: states = {'Tamil Nadu': 'TN', 'Karnataka': 'KA', 'Kerala': 'KL', 'Maharashtra': 'MH'}
    ...: print(states)
    ...: del states['Karnataka']
    ...: print(states)
{'Tamil Nadu': 'TN', 'Karnataka': 'KA', 'Kerala': 'KL', 'Maharashtra': 'MH'}
{'Tamil Nadu': 'TN', 'Kerala': 'KL', 'Maharashtra': 'MH'}
```

8. **Solution: a**

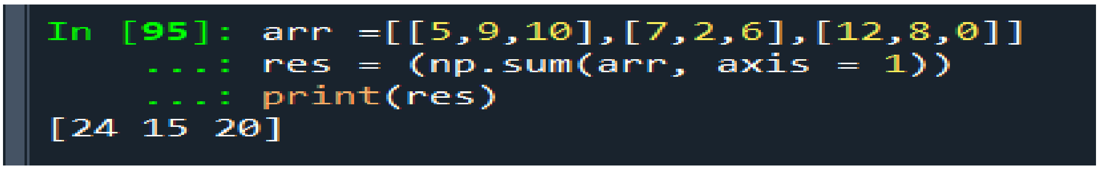
   Feedback: In python, a string literal is enclosed in either single quotes or double quotes. However, if either single or double quote is a part of the string itself, then the string must be placed in double or single quotes respectively. In our exercise, the string Shin'ichi has a single quote as part of the string itself, so it should be enclosed inside double quotes.

9. **Solution: d**

   Feedback: np.array() – creates a new array , np.zeros() creates an array filled with zeros and np.empty() creates a new array of values closer to zero and given shape and type, without initializing entries.

10. **Solution: c**

    Feedback: The output array is obtained by adding the values of each row of given NumPy array ***arr***. To calculate the sum of values of each row, we need to collapse the column during the summation process. When we set axis = 1, np.sum() collapses the columns and calculates the sum for each row.



```
In [95]: arr =[[5,9,10],[7,2,6],[12,8,0]]
    ...: res = (np.sum(arr, axis = 1))
    ...: print(res)
[24 15 20]
```