Arrays and Strings

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Array or List in Python

- Initializing a list,

```
>>> a = []
>>> b = [1,2,3]
>>> c = [1,2.5,”a”,”cap”]
```

- Printing

```
>>> print (b) will print [1,2,3]
```

Array or List in Python

- Adding or Removing a single item,

```
>>> a = []
>>> a.append(2) # will add 2 to the list a
....
>>> a = [2,5,6,3,2]
>>> a.remove(2) # will remove the 1st 2
```

Array or List in Python

- Adding a list of items to another list,

```
>>> a = [1,2,3]
>>> b = [10,11]
>>> a.extend(b)
>>> print (a) # will output [1,2,3,10,11]
```

Array or List in Python

- Some common operations on lists,

```
>>> a = [5,2,3,6,1]
>>> len(a) # will return length of array
>>> a.sort() # will sort the array a
>>> a.reverse() # will reverse the array a
>>> a.count(x) # will return how many times
x appears in a
>>> sum(a) # will return the sum of a
```

Array or List in Python

- List indexing : starts with 0, ends with len(list)-1

```
>>> a = [6,2,5,1,3]
>>> print (a[0]) # will print 6
>>> print (a[4]) # will print 3
```

- Negative indexing

```
>>> print (a[-1]) # will print 3
>>> print (a.index(5)) # will print 2
```

Array or List in Python

- List slicing

```
>>> a = [2,6,3,5,2]
>>> print (a[1:4]) # will print [6,3,5]
>>> print (a[1:-1]) # will print [6,3,5]
>>> print (a[0:-2]) # will print [2,6,3]
>>> print (a[3:2]) # invalid, will print []
>>> print (a[3:3]) # invalid, will print []
```

Array or List in Python

- List slicing

```
>>> a = [2,6,3,5,2]
>>> print (a[2:]) # will print [3,5,2]
>>> print (a[:4]) # will print [2,6,3,5]
>>> print (a[:]) # will print [2,6,3,5,2]
```

Array or List in Python

- General format of list slicing,
  List_name[start : end : increment_index]
- Some example,

```
>>> a = [1,2,3,4,5,6]
>>> print (a[0:5:1]) # will print
[1,2,3,4,5]
>>> print (a[0:4:2]) # will print [1,3]
>>> print (a[::2]) # [1,3,5]
```

Array or List in Python

- General format of list slicing,
  List_name[start : end : increment_index]
- Negative increment index,

```
>>> a = [1,2,3,4,5,6]
>>> print (a[::-1]) # will print
[6,5,4,3,2,1]
>>> print (a[::-2]) # will print [6,4,2]
```

Strings

- Strings are just (arrays of characters - some functionalities)
- Example:

```
>>> s = “Rourkela”
>>> print (s[2]) # will print “u”
>>> print (len(s)) # will print 8
>>> s.append(‘A’) # will show error
>>> s = s + “A”
>>> print (s) # will print RourkelaA
```

Strings

- Slicing is same as in lists

```
>>> s = “Rourkela”
>>> print (s[0:5]) # will print “Rourk”
>>> print (s[::-1]) # will print “alekruoR”
```

Strings

- Removing a single character from a string

```
>>> s = “rourkela”
>>> print (s.index(‘u’)) # will print 2
>>> i = s.index(‘u’)
>>> s.replace(s[i], ‘’)
>>> print (s) # will print “rorkela”
```

Strings

- Removing multiple occurrence of the same character from a string

```
>>> s = “rourkela”
>>> s.replace(‘r’, ‘’)
>>> print (s) # will print “oukela”
```

2D lists (multidimensional arrays)

- Lists inside lists

```
>>> A = [ [1,2,3], [4,5,6], [7,8,9]]
>>> print (A[1][2]) # will print 6
>>> print (A[-1][-1]) # will print 9
>>> B = [“cat”, “dog”, “ball”]
>>> print (B[2][1]) # will print ‘a’
```

List repetition

- Repeat a list for a certain number of times, creating a new list

```
>>> a = [1,2]
>>> b = a*3
>>> print (b) # will print [1,2,1,2,1,2]
>>> s = “abc”
>>> print (s*2) # will print abcabc
```

Assignments 1/2

- Create a list of 10 integers using **while loop** and **append** method, then print the sum of even indexed items, i.e. 0th item, 2nd item so on.
- Print your name in the following format,
  ALICE
  ALIC
  …
  A
  Don’t type manually, use loop and indexing.

Assignments 2/2

- Check if a string is palindrome or not.
- Create a 3x3 matrix, and print sum of each row and each column. You can create the matrix manually, no need to take input.
- Input a string and remove the duplicate characters. For example for input “pineapple” your output should be “pineal”.