

## Week 8- Day 1 : Coding Challenge

(Maximum marks -15)

### **Q-1 ) Recursive implementation of atoi() function:(5 marks)**

Atoi() function converts a string into an integer.

eg:

`st = "1234"` is a string.

if we perform,

`st + 1`

this results in error since "st" is a string and 1 is an integer, and,

`st + "1"`

this will append 1 into 1234. Giving us 12341.

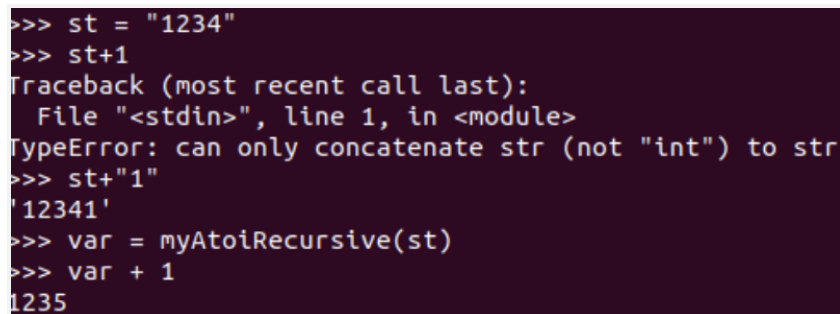
write a function that converts the above variable 'st' into an integer (so that we can perform mathematical operations on it).

Let's call our function "myAtoiRecursive()", it should,

`myAtoiRecursive(st) + 1`

should give us 1235 (that is 1234+1).

As shown in image below:



```
>>> st = "1234"
>>> st+1
Traceback (most recent call last):
  File "<stdin>", line 1, in <module>
TypeError: can only concatenate str (not "int") to str
>>> st+"1"
'12341'
>>> var = myAtoiRecursive(st)
>>> var + 1
1235
```

Sample input:

"1234"

Sample output:

1234

atoi() function stands for ASCII to integer conversion. It is a C function, but not present in python. Try to write a recursive code that implements atoi() in python.)

**Q-2 ) Write a function that prints digits of a number from left to right , using recursion:(5 marks)**

Sample Input:

1234567

Sample output:

1  
2  
3  
4  
5  
6  
7

**Q-3 ) Reverse a string using recursion:(5 marks)**

If we have a string, write a function that prints reverse of that string, using recursion.

Sample Input:

ABCD

Sample Output:

DCBA

**Q-4 ) [Bonus Question] Recursive implementation of binary search:  
(5 extra marks)**

We have seen an iterative approach for binary search algorithm , write a recursive approach for that.

**HINT:** when we divide the array into two parts, we need to perform a search on only one half. Apply binary search only on that half.

**Marks distribution:**

Question 1,2 and 3 carry 5 marks each.

Question 4 is a bonus question, that means if you leave that question you dont lose a mark, but if you solve it, you can extra 5 marks.

Remark: maximum marks you can get is 15, bonus question helps only if you are not able to solve another question.