 Data Structures and Algorithm | Jan 2021​

# Assignment 6 | 23rd January 2021

**For any doubts regarding the assignment, ask questions in the** [**Dat**](https://community.letsupgrade.in/group/dsaes0121b2)​ [**a**](https://community.letsupgrade.in/group/dsaes0121b2)

[**Structures and Algorithms**](https://community.letsupgrade.in/group/dsaes0121b2) **Group**​ ​ **in the Community.**​

**Submit Assignments by** ​ **26**​ **th January 2021 11:59 PM**

## Assignment Submit Form: [https://forms.gle/bJBQwoRVk4P8SR4T](https://forms.gle/bJBQwoRVk4P8SR4T8)​ [8](https://forms.gle/bJBQwoRVk4P8SR4T8)

**Submit assignments in Appropriate Dropdowns.**

### Question 1

A Barua number is a number that consists of only zeroes and ones and has only one 1. Barua’s number will start with 1. Given numbers, find out the multiplication of the numbers. Note: The input may contain one decimal number and all other Barua numbers. (Assume that each number is the very large and the total number of values give is also very large)

**Input 1:** ​100 10 12 1000

**Output 1:**​ 12000000

**Input 2:** ​100 121 1000000000000000

**Output 2:**​ 12100000000000000000

**Input 3:**​ 10 100 1000

**Output 3:**​ 1000000

**Answer:**

def two\_factor( n ):

twocount = 0

while n % 2 == 0:

twocount+=1

n =int( n / 2)

return twocount

def five\_factor( n ):

fivecount = 0

while n % 5 == 0:

fivecount+=1

n = int(n / 5)

return fivecount

def find\_con\_zero( arr, n ):

twocount = 0

fivecount = 0

for i in range(n):

twocount += two\_factor(arr[i])

fivecount += five\_factor(arr[i])

if twocount < fivecount:

return twocount

else:

return fivecount

arr = [100, 10, 12, 1000]

n = 4

x = 1

N=find\_con\_zero(arr, n)

for i in range(n):

if arr[i] % 10!=0:

dec = arr[i]

break

else:

dec = 1

number\_str = str(dec)

x= N + len(number\_str)

res = number\_str.ljust(x, '0')

print(res)

**Output:**

12000000

### Question 2

Implement push, pop and find the minimum element in a stack in O(1) time complexity.

**Answer:**

class Node:

def \_\_init\_\_(self, value):

self.value = value

self.next = None

def \_\_str\_\_(self):

return "Node({})".format(self.value)

\_\_repr\_\_ = \_\_str\_\_

class Stack:

def \_\_init\_\_(self):

self.top = None

self.count = 0

self.minimum = None

def \_\_str\_\_(self):

temp=self.top

m = self.minimum

out=[]

if temp is None:

print("Empty Stack")

else:

while not temp is None :

val = temp.value

if val < m:

m = (2 \* m) -val

val = ( val + m ) / 2

out.append(str(int(val)))

temp=temp.next

out=' '.join(out)

return (out)

\_\_repr\_\_=\_\_str\_\_

def push(self,value):

if self.top is None:

self.top = Node(value)

self.minimum = value

else:

new\_node = Node(value)

if value < self.minimum:

temp = (2 \* value) - self.minimum

new\_node.value = temp

self.minimum = value

new\_node.next = self.top

self.top = new\_node

def pop(self):

new\_node = self.top

if self.top is None:

print( "Stack is empty")

else:

removedNode = new\_node.value

if removedNode < self.minimum:

self.minimum = ( ( 2 \* self.minimum ) - removedNode )

new\_node.value = ( (removedNode + self.minimum) / 2 )

self.top = self.top.next

return int(new\_node.value)

def getMin(self):

if self.top is None:

return "Stack is empty"

else:

return self.minimum

stack = Stack()

stack.push(5)

stack.push(4)

stack.push(3)

stack.push(2)

print("Initial stack:", stack)

print("Popped Element:", stack.pop())

print("New Stack:", stack)

print("Minimum element:", stack.getMin())

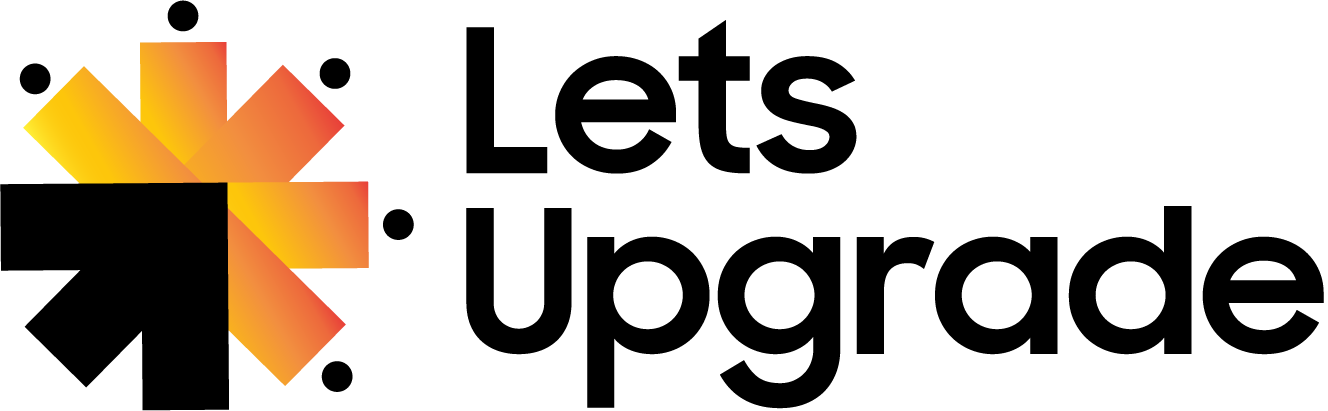
**Output:**

Initial stack: 2 3 4 5

Popped Element: 2

New Stack: 3 4 5

Minimum element: 3

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## FAQs

**Q. When do I submit the Assignments and how?**

1. The assignments for the week should be submitted by 26th January 2021 i.e.Tuesday 11:59 PM IST.
2. You need to submit the answers in Document Format

**Q. Where do I get class links for the next session?**

1. All sessions will be Live on our Youtube Channel. Subscribe to LetsUpgrade​​[YouTube Channel](https://www.youtube.com/channel/UCWUDiLzQZr4VDHNyMsVYn-g)​[.](https://www.youtube.com/channel/UCWUDiLzQZr4VDHNyMsVYn-g)

You'll also get an email with the link to the live session.

1. It will be also updated in the Community Group in the pinned post.

**Q. I have some doubt, who do I ask?**

A. Post your Queries on the community, someone will help you out.

**Q. How can we know if my assignment is verified or not? And is it successfully submitted or not?**

A. You will receive a mail for your successful submission.