

L0038

September 19, 2022

```
[44]: #####  
# Solution.py  
# Author: Jagadeesh Vasudevamurthy  
# Copyright: Jagadeesh Vasudevamurthy 2020  
#####  
class Solution:  
    def __init__(self):  
        pass  
  
    #THIS IS LEETCODE  
    def countAndSay(self,n:'int')->'string':  
        ## NOTHING CAN BE CHANGED HERE  
        return self._alg_integer(n)  
  
    def countAndSayString(self,n:'string')->'string':  
        #Nothing can be changed here  
        return self._alg_string(n)  
  
    ### YOU CAN HAVE ANY NUMBER OF FUNCTIONS AND CLASSES BELOW  
  
    ## n is str here  
    def _alg_string(self,n:'string')->'string':  
        #print("WRITE CODE BELOW")  
        s=""  
        count=1  
        for i in range(0,len(n)):  
            if(i<len(n)-1):  
                if(n[i]==n[i+1]):  
                    count=count+1  
                else:  
                    s= s+"%s"%count+n[i]  
                    count=1;  
            else:  
                s=s+"%s"%count+n[i];  
        return s
```

```

## n is int here
def _alg_integer(self,n:'int')->'string':
    if(n==1):
        return "1"
    result_previous="1"
    result_new=""
    for i in range(2,n+1):
        result_new=self._alg_string(result_previous)
        result_previous=result_new
    return result_new

```

## 1 YOU CANNOT CHANGE ANYTHING BELOW

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[45]: #####
# LookAndSay.py
# Author: Jagadeesh Vasudevamurthy
# Copyright: Jagadeesh Vasudevamurthy 2020
#####

#####
# NOTHING CAN BE CHANGED IN THIS FILE
#####

#####
# All imports
#####

class LookAndSay():
    def __init__(self):
        self._testBench()

    def _look_and_say_integer(self,n:'int')->'string':
        s = Solution()
        return s.countAndSay(n) #implement in solution

    def _look_and_say_string(self,n:'string')->'string':
        s = Solution()
        return s.countAndSayString(n) #implement in solution

    #private function
    def _testBench(self):
        self._tests()
        self._testn()

```

```

print("ALL TESTS PASSED")

#Private sunction
def _tests(self):
    n = "123"
    e = "111213"
    s = self._look_and_say_string(n)
    assert(s == e);

    n = "9999999999"
    e = "109"
    s = self._look_and_say_string(n)
    assert(s == e);

    n = "9876543210"
    e = "19181716151413121110"
    s = self._look_and_say_string(n)
    assert(s == e);

#Private sunction
def _testn(self):
    n = 1
    e = "1"
    s = self._look_and_say_integer(n)
    assert(s == e);

    n = 2
    e = "11"
    s = self._look_and_say_integer(n)
    assert(s == e);

    n = 3
    e = "21"
    s = self._look_and_say_integer(n)
    assert(s == e);

    n = 4
    e = "1211"
    s = self._look_and_say_integer(n)
    assert(s == e);

    n = 5
    e = "111221"
    s = self._look_and_say_integer(n)
    assert(s == e);

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for n in range(1,32):
    s = self._look_and_say_integer(n)
    print("n = ",n, " Length = ", len(s))
    print("n = ",n, " ",s)

#####
# main
# YOU CANNOT CHANGE ANYTHING BELOW
#####
def main():
    t = LookAndSay()
#####
# start up
#####
if (__name__ == '__main__'):
    main()

```

```

n = 1 Length = 1
n = 1 1
n = 2 Length = 2
n = 2 11
n = 3 Length = 2
n = 3 21
n = 4 Length = 4
n = 4 1211
n = 5 Length = 6
n = 5 111221
n = 6 Length = 6
n = 6 312211
n = 7 Length = 8
n = 7 13112221
n = 8 Length = 10
n = 8 1113213211
n = 9 Length = 14
n = 9 31131211131221
n = 10 Length = 20
n = 10 13211311123113112211
n = 11 Length = 26
n = 11 11131221133112132113212221
n = 12 Length = 34
n = 12 3113112221232112111312211312113211
n = 13 Length = 46
n = 13 1321132132111213122112311311222113111221131221
n = 14 Length = 62
n = 14 11131221131211131231121113112221121321132132211331222113112211
n = 15 Length = 78
n = 15

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311311222113111231131112132112311321322112111312211312111322212311322113212221  
 n = 16 Length = 102  
 n = 16 1321132132211331121321133112111312211213211312111322211231131122211311  
 12311332111213211322211312113211  
 n = 17 Length = 134  
 n = 17 1113122113121113222123211211131221232112311311222112111312211311123113  
 3221121321132132211331121321231231121113122113322113111221131221  
 n = 18 Length = 176  
 n = 18 3113112221131112311332111213122112311311221112131221121321132132211231  
 13112221133112132123222112111312211312111322212321121113121112131112132112311311  
 22212322211331222113112211  
 n = 19 Length = 226  
 n = 19 1321132132211331121321231231121113112221121321132122311211131122211211  
 13122113121113222112132113213221232112111312111213322112311311222113111231133211  
 1213122112311311123112111331121113122112132113213211121332212311322113212221  
 n = 20 Length = 302  
 n = 20 1113122113121113222123211211131211121311121321123113213221121113122113  
 12112213211231132132211231131122211311123113322112111312211312111322111213122112  
 31131112311211232221121321132132211331121321231231121113112221121321133112132112  
 312321123113112221121113122113121113123112112322111213211322211312113211  
 n = 21 Length = 408  
 n = 21 3113112221131112311332111213122112311311123112111331121113122112132113  
 12111322211231131122211311122122111312211213211312111322211213211321322113311213  
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 12211312111322212321121113121112131112132112311321322112111312212321121113122112  
 13111213122112132113213221123113112221131112311311121321122112132231121113122113  
 322113111221131221  
 n = 22 Length = 528  
 n = 22 1321132132211331121321231231121113112221121321133112132112312321123113  
 11222112111312211311123113322112132113213221133122112231131122211211131221131112  
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 1113122122211211132213211231131122212322211331222113112211  
 n = 23 Length = 678  
 n = 23 1113122113121113222123211211131211121311121321123113213221121113122123  
 21121113122112131112131221121321132132211231131122211331121321232221121113122113  
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 22211311123113322112111312211312111322212321121113122123211231131122113221123113  
 221113122112132113213211121332212311322113212221  
 n = 24 Length = 904  
 n = 24 3113112221131112311332111213122112311311123112111331121113122112132113  
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22211213211321322123211211131211121332211231131122211311123113321112132132112211  
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3112112322111213211322211312113211

n = 25 Length = 1182

n = 25 1321132132211331121321231231121113112221121321133112132112312321123113  
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n = 26 Length = 1540

n = 26 1113122113121113222123211211131211121311121321123113213221121113122123  
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131122212322211331222113112211

n = 27 Length = 2012

n = 27 3113112221131112311332111213122112311311123112111331121113122112132113  
12111322211231131122111213122112311311222112111331121113112221121113122113121113  
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21131211132221232112111312212321123113112211322112311322111312211213211321321112  
1332212311322113212221

n = 28 Length = 2606

n = 28 1321132132211331121321231231121113112221121321133112132112312321123113  
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n = 29 Length = 3410

n = 29 1113122113121113222123211211131211121311121321123113213221121113122123  
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ALL TESTS PASSED