**Programming - Python for Beginners - Pattern Problems - 6 of 6**

# Look-and-Say Sequence

Find the n’th term in Look-and-say (Or Count and Say) Sequence. The look-and-say sequence is the sequence of below integers:   
1, 11, 21, 1211, 111221, 312211, 13112221, 1113213211, …

***How is above sequence generated?***   
n’th term in generated by reading (n-1)’th term.

The first term is "1"

Second term is "11", generated by reading first term as "One 1"

(There is one 1 in previous term)

Third term is "21", generated by reading second term as "Two 1"

Fourth term is "1211", generated by reading third term as "One 2 One 1"

and so on

#Function to generate the term next to T that is given as input

def GenerateTerm(T):

#Since the last digit of Term is also used, a dummy character is

# added to make sure that loop runs one extra iteration.

T=T+'$'

#Dictionary to count the same number

dict={}

cnt =1 #If 'Number' is present it would be there atleast 1 time

TheTerm =""

#Parse the entire term T

for i in range(0, len(T)):

#If a different number is encountered then finish the callout

if(dict.get(T[i])==None and i>0):

#Add no of times the 'Number' is present and the 'Number'

TheTerm+=str(dict.get(T[i-1]))+T[i-1]

if T[i]=='$': break

dict={}

cnt=1 #Start with new 'Number'

dict[T[i]]=cnt

cnt+=1

return TheTerm

#Function to iterate till the Nth term

def Term(n):

#We know first two terms

N\_Term = ["1","11"]

if n==1:

return(["1"])

elif n==2:

return(N\_Term)

#Keep generating till the Nth term

for ele in range(1,n-1):

N\_Term.append(GenerateTerm(N\_Term[ele]))

return(N\_Term[n-1])

#/\*Main Program\*/

N = int(input())

print(Term(N))

#Function to generate the Nth term of Look and Say sequence

def CountNSay(T):

Term='1'

#Start generating other terms till the Nth

while(T>1):

NewTerm=''

i=0

#Generate NewTerm all digits of previous term

while(i<len(Term)):

count=1

#Count the no of times same digit is encountered

while (i+1<len(Term) and Term[i]==Term[i+1]):

count+=1

i+=1

#Append the count and digit to new term

NewTerm+=str(count)+Term[i]

#Move to next digit

i+=1

Term=NewTerm

T-=1

return Term

#/\*Main Program\*/

N = int(input())

print(CountNSay(N))