l=list(map(eval,input().split()))

k=int(input())

l1=[]

l2=[]

l3=[]

l4=[]

l5=[]

l6=[]

a,b=l[-1]

for i in range(97,ord(a)+1):

for j in range(len(l)):

if l[j][0]==chr(i):

l1.append(l[j][1])

l2.append(l1)

l1=[]

for i in range(len(l2)):

for j in range(i+1,len(l2)):

l3.append((chr(i+97),chr(j+97)))

for z in range(len(l2[i])):

if l2[i][z] in l2[j]:

l3.append(l2[i][z])

l4.append(l3)

l3=[]

l4.sort(key=len,reverse=True)

max\_length=len(l4[0])

for i in l4:

if len(i)==max\_length:

l5.append(i)

a,b=lst[0]

d=max(len(l2[ord(a)-97]),len(l2[ord(b)-97]))

return(d-len(lst)+1)

l5.sort(key=apna\_fun)

for i in range(k):

l6.append(l5[i][0])

print(l6)

def apna\_fun(lst):