**1.To create the chat .**

print("----------CHAT BOT----------")

#Declare variables and Get Input Message

a,li,l,s,i=input("Ping Enter The Message :"),[],[],"",1

#Get Input till Quit

while a!="quit" and a!="Quit":

i+=1

#Check Ping or Pong Message

if a=="Ping" or a=="ping":

#Append Ping Message

li.append(a)

else:

#Append Pong Message

l.append(a)

if i%2==0:

#Get Input Message

a=input("Pong Enter The Message :")

else:

#Get Input Message

a=input("Ping Enter The Message :")

for i in li:

s+=i.upper()

for j in l:

s+=j.upper()

se=list(set(s))

se.sort()

print("----------REPETITION OF A CHARACTER----------")

#Calculate Repetition Of Characters

for i in se:

print("Count Of {}:".format(i),s.count(i))

print("----------REPETITION OF A WORD----------")

#Calculate Repetition Of Word

print("Count Of Ping : ",len(li))

print("Count Of Pong : ",len(l))

print("----------LENGTH OF CONVERSATION----------")

print("Length Of the Coversation : ",str(((len(li)+len(l)+1)//2)))

**2.LOGIC:**

#To get User Input

n=int(input())

#where as a=1 & b=n\*n

a,b=1,n\*n

# to iterate upto n

for i in range(n):

#a multiply with n

a\*=n

#add a & b

print(a+b)

**3.MINIMUM PATH**

#four stations

global N

N = 4

#min

def minCostRec(cost, s, d):

if s == d or s+1 == d:

return cost[s][d]

min = cost[s][d]

for i in range(s+1, d):

c = minCostRec(cost,s, i) + minCostRec(cost, i, d)

if c < min:

min = c

return min

#min path & distance

def minCost(cost):

return minCostRec(cost, 0, N-1)

cost = [ [0,100,150,150],[float("inf"),0,50,float("inf")],

[float("inf"),float("inf"),0,100],[float("inf"),float("inf"),float("inf"),0]]

print("The Minimum disstance to reach station is",N,minCost(cost))

#min Cost

def minCost(cost):

return minCostRec(cost1, 0, N-1)

#print("The Minimum cost to reach station is",N,minCost(cost1))

cost1=[[0,50,75,150],[float("inf"),0,100,float("inf")],

[float("inf"),float("inf"),0,50],

[float("inf"),float("inf"),float("inf"),0]]

print("The Minimum cost to reach station is",N,minCost(cost1))