Q1)

#design a program for creating a machine which count number

#of 1's and 0's in a given string in python.

```python
def stateq0(n,countzero,countone):
    print("Q0->",end="")
    if (len(n)==0):
        print("\n total no of 0: ",len(countzero))
        print("\n total no of 1: ",len(countone))
    else:
        if(n[0]=='0'):
            countzero.append('0')
            stateq0(n[1:],countzero,countone)
        elif (n[0]=='1'):
            countone.append('1')
            stateq1(n[1:],countzero,countone)


def stateq1(n,countzero,countone):
    print("Q1->",end="")
    if (len(n)==0):
        print("\n total no of 0: ",len(countzero))
        print("\n total no of 1: ",len(countone))
    else:
        if(n[0]=='0'):
            countzero.append('0')
            stateq0(n[1:],countzero,countone)
        elif (n[0]=='1'):
            countone.append('1')
            stateq1(n[1:],countzero,countone)
```

countzero=[]
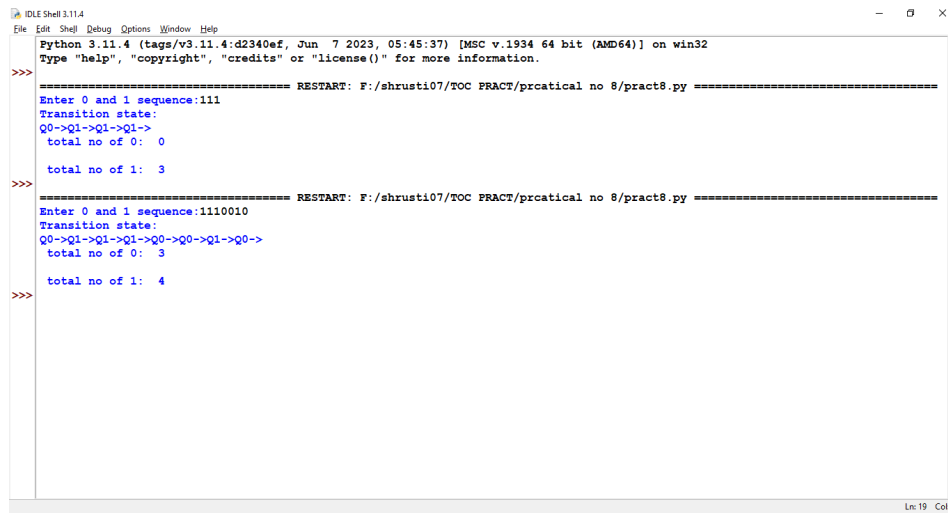
countone=[]

#take 0 and 1 sequence from user

n=input("Enter 0 and 1 sequence:")

print("Transition state:")

stateq0(n,countzero,countone)

o/p: