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**Experiment 2 - Regular Expression to NFA conversion**

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CSE A2

Aim:

Write A Program to convert given regular expression to NFA.

Algorithm:

Step 1: Draw e-NFA for the given expressions individually

Step 2: Combine both to form NFA for b(a.b)\*

Step 3: Produce NFA transition table for the corresponding expression

Code:

transition\_table = [ [0]\*3 for \_ in range(20) ]

re = input("Enter the regular expression : ")

re += " "

i = 0

j = 1

while(i<len(re)):

if re[i] == 'a':

try:

if re[i+1] != '|' and re[i+1] !='\*':

transition\_table[j][0] = j+1

j += 1

elif re[i+1] == '|' and re[i+2] =='b':

transition\_table[j][2]=((j+1)\*10)+(j+3)

j+=1

transition\_table[j][0]=j+1

j+=1

transition\_table[j][2]=j+3

j+=1

transition\_table[j][1]=j+1

j+=1

transition\_table[j][2]=j+1

j+=1

i=i+2

elif re[i+1]=='\*':

transition\_table[j][2]=((j+1)\*10)+(j+3)

j+=1

transition\_table[j][0]=j+1

j+=1

transition\_table[j][2]=((j+1)\*10)+(j-1)

j+=1

except:

transition\_table[j][0] = j+1

elif re[i] == 'b':

try:

if re[i+1] != '|' and re[i+1] !='\*':

transition\_table[j][1] = j+1

j += 1

elif re[i+1]=='|' and re[i+2]=='a':

transition\_table[j][2]=((j+1)\*10)+(j+3)

j+=1

transition\_table[j][1]=j+1

j+=1

transition\_table[j][2]=j+3

j+=1

transition\_table[j][0]=j+1

j+=1

transition\_table[j][2]=j+1

j+=1

i=i+2

elif re[i+1]=='\*':

transition\_table[j][2]=((j+1)\*10)+(j+3)

j+=1

transition\_table[j][1]=j+1

j+=1

transition\_table[j][2]=((j+1)\*10)+(j-1)

j+=1

except:

transition\_table[j][1] = j+1

elif re[i]=='e' and re[i+1]!='|'and re[i+1]!='\*':

transition\_table[j][2]=j+1

j+=1

elif re[i]==')' and re[i+1]=='\*':

transition\_table[0][2]=((j+1)\*10)+1

transition\_table[j][2]=((j+1)\*10)+1

j+=1

i +=1

print ("Transition function:")

for i in range(j):

if(transition\_table[i][0]!=0):

print("q[{0},a]-->{1}".format(i,transition\_table[i][0]))

if(transition\_table[i][1]!=0):

print("q[{0},b]-->{1}".format(i,transition\_table[i][1]))

if(transition\_table[i][2]!=0):

if(transition\_table[i][2]<10):

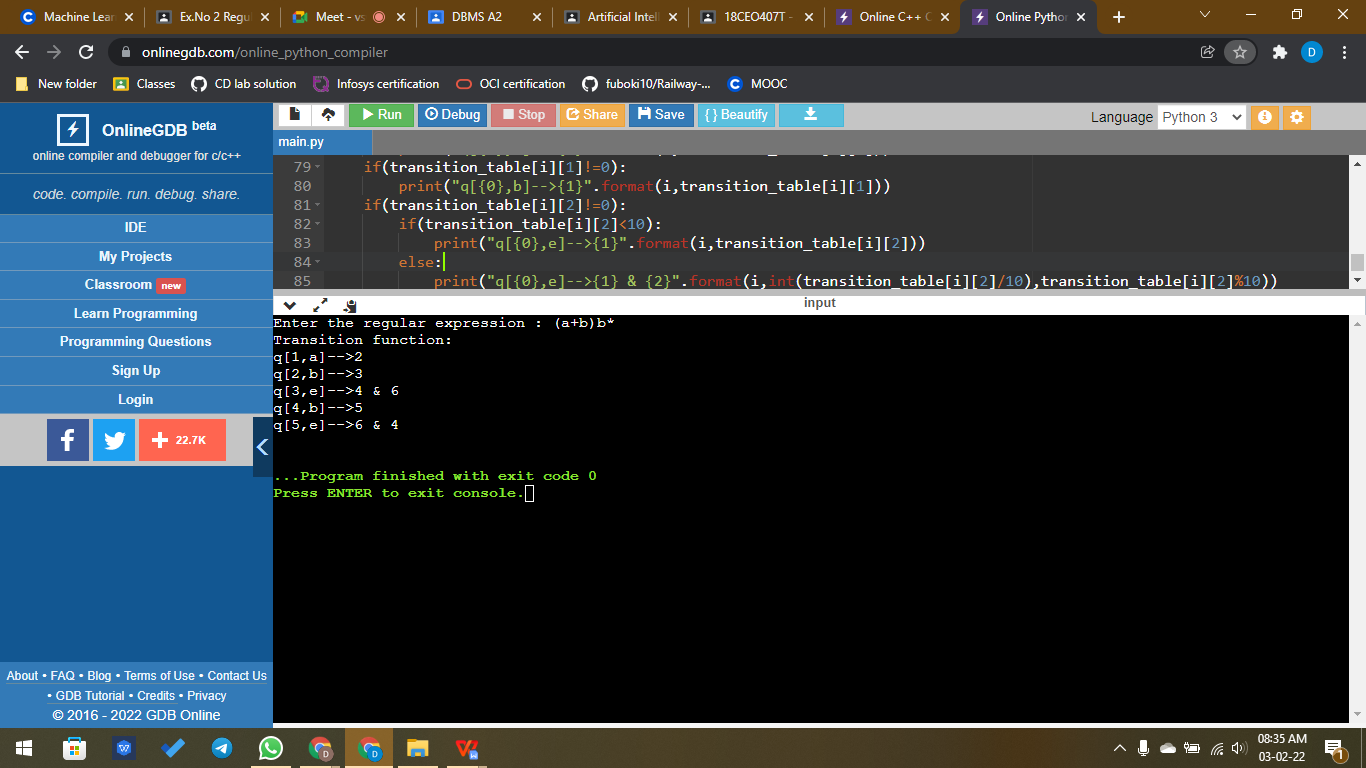
print("q[{0},e]-->{1}".format(i,transition\_table[i][2]))

else:

print("q[{0},e]-->{1} & {2}".format(i,int(transition\_table[i][2]/10),transition\_table[i][2]%10))

Screenshots:

Output:



Result:

Hence conversion of regular expression to NFA was successfully completed and the desired result was obtained.