Compiler Design

Exp–3 NFA To DFA

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Branch:- CSE-SE

CODE:

import pandas as pnds

nondeterministic={}

sts=int(input("No. of States: "))

trns=int(input("No. of Transitions: "))

for i in range(sts):

    state=input("State: ")

    nondeterministic[state]={}

    for j in range(trns):

        path=input("Track: ")

        print("Enter next state from state {} navigating through track {}: ".format(state, path))

        transitionstate=[x for x in input().split()]

        nondeterministic[state][path]=transitionstate

print("\nNFA: \n")

print(nondeterministic)

print("\nPrinting NFA Transition Table:- ")

ntable=pnds.DataFrame(nondeterministic)

print(ntable.transpose())

print("Enter Final State of NFA: ")

nfstate=[x for x in input().split()]

nwstate=[]

deterministic={}

val=list(

    list(nondeterministic.keys())[0])

tstate=list(nondeterministic[val[0]].keys())

deterministic[val[0]]={}

for rw in range(trns):

    cl="".join(nondeterministic[val[0]][

                      tstate[rw]])

    deterministic[val[0]][tstate[rw]]=cl

    if cl not in val:

        nwstate.append(cl)

        val.append(cl)

while len(nwstate) != 0:

    deterministic[nwstate[0]] = {}

    for \_ in range(len(nwstate[0])):

        for i in range(len(tstate)):

            flg=[]

            for j in range(len(nwstate[0])):

                flg+=nondeterministic[nwstate[0][j]][tstate[i]]

            a=""

            a=a.join(flg)

            if a not in val:

                nwstate.append(a)

                val.append(a)

            deterministic[nwstate[0]][tstate[i]]=a

    nwstate.remove(nwstate[0])

print("\nDFA: \n")

print(deterministic)

print("\nPrinting DFA Transition Table: ")

dtable=pnds.DataFrame(deterministic)

print(dtable.transpose())

dlst=list(deterministic.keys())

dfstate=[]

for x in dlst:

    for i in x:

        if i in nfstate:

            dfstate.append(x)

            break

print("\nFinal States of DFA: ", dfstate)

OUTPUT:

