

procedure NFAtoDFA(N an NFA)

Let $T[\text{row}][\text{col}]$ be an empty transition table defining D . $T[\text{row}][\cdot]$ is uniquely identified by a set of states from N , each $T[\cdot][\text{col}]$ uniquely identifies a character $c \in \Sigma$.

let L be an empty stack

let A be the set of accepting states for N

let i be the starting state of N

$B \leftarrow \text{FollowLamda}(\{i\})$

initialize row $T[B][\cdot]$

mark $T[B][\cdot]$ as the starting state of D

if ($A \cap B \neq \emptyset$) **then** (

mark $T[B][\cdot]$ as an accepting state of D

)

push B onto L

repeat (

$S \leftarrow \text{pop } L$

foreach ($c \in \Sigma$) **do** (

$R \leftarrow \text{FollowLambda}(\text{FollowChar}(S, c))$

$T[S][c] \leftarrow R$

if ($|R| > 0$ **AND** $T[R][\cdot]$ does not exist) **then** (

initialize row $T[R][\cdot]$

if ($A \cap R \neq \emptyset$) **then** (

mark $T[R][\cdot]$ as an accepting state of D

)

push R onto L

)

)

) **while** ($|L| > 0$)

T now defines a DFA D equivalent to N

procedure FollowLambda (S a \subseteq of NFA N states)
returns the set of NFA states encountered by
recursively following only λ transitions
from states in S

Let M be an empty stack

foreach (state $t \in S$) push t onto M

while ($|M| > 0$) **do** (

$t \leftarrow$ pop M

foreach (λ transition from t to state q) **do** (

if ($q \notin S$) **then** (

 add q to S

 push q onto M

)

)

)

return S

procedure FollowChar(S a \subseteq of NFA N states, $c \in \Sigma$)
returns the set of NFA states obtained from following
all c transitions from states in S

Let F be an empty set

```
foreach ( state  $t \in S$  ) do (  
    foreach (  $c$  transition from  $t$  to state  $q$  ) do (  
        add  $q$  to  $F$   
    )  
)  
return  $F$ 
```