DHA SUFFA UNIVERSITY

COMPILER CONSTRUCTION

COURSE INSTRUCTOR: MISS RAZIA SOSAN

CONVERTING RE TO NFA AND DFA

Group members

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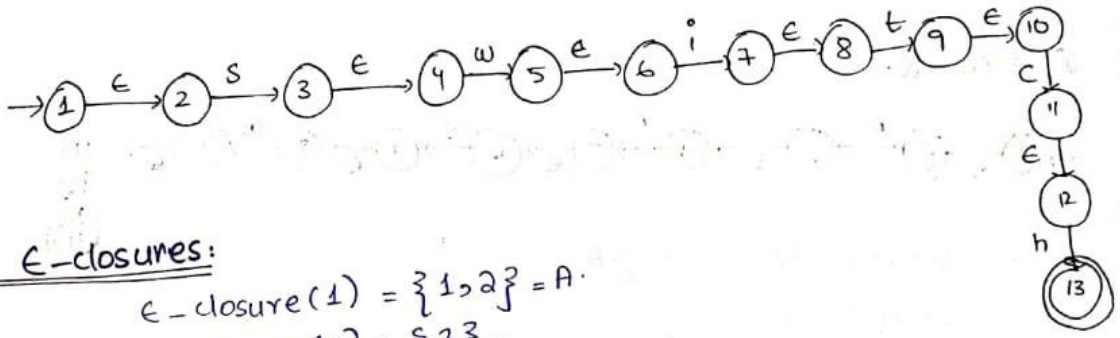
Section 5B

RE to NFA AND NFA to DFA.

(KEYWORDS).

1) Switch:



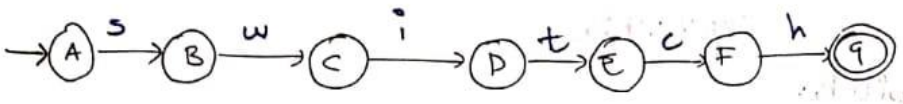
ε-closures:

ε-closure(1) = {1,2} = A.
ε-closure(2) = {2}.
ε-closure(3) = {3,4}.
ε-closure(4) = {4}.
ε-closure(5) = {5,6}.
ε-closure(6) = {6}.
ε-closure(7) = {7,8}.
ε-closure(8) = {8}.
ε-closure(9) = {9,10}.
ε-closure(10) = {10}.
ε-closure(11) = {11,12}.
ε-closure(12) = {12}.
ε-closure(13) = {13}.

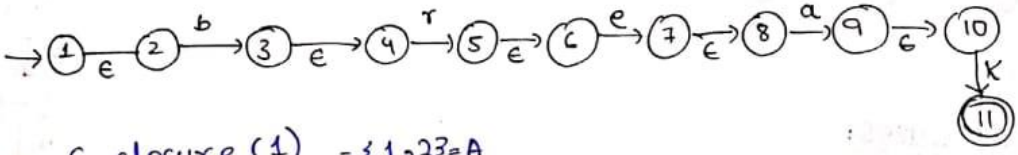
Move:

ε-closure(1) move(A,S) = ε-closure(3) = {3,4} = B.
ε-closure(3) move(B,W) = ε-closure(5) = {5,6} = C
ε-closure(5) move(C,i) = ε-closure(7) = {7,8} = D
ε-closure(7) move(D,t) = ε-closure(9) = {9,10} = E
ε-closure(9) move(E,C) = ε-closure(11) = {11,12} = F.
ε-closure(11) move(F,h) = ε-closure(13) = {13} = G

DFA:



② Break



ε-closure (1) $= \{1, 2\} = A$

ε-closure (2) $= \{2\}$.

ε-closure (3) $= \{3, 4\}$

ε-closure (4) $= \{4\}$.

ε-closure (5) $= \{5, 6\}$.

ε-closure (6) $= \{6\}$.

ε-closure (7) $= \{7, 8\}$.

ε-closure (8) $= \{8\}$.

ε-closure (9) $= \{9, 10\}$.

ε-closure (10) $= \{10\}$.

ε-closure (11) $= \{11\}$.

Move:

ε-closure (1) move (A, b) = ε-closure (3) $= \{3, 4\} = B$.

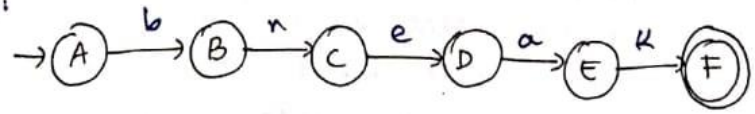
ε-closure (3) move (B, r) = ε-closure (5) $= \{5, 6\} = C$.

ε-closure (5) move (C, e) = ε-closure (7) $= \{7, 8\} = D$.

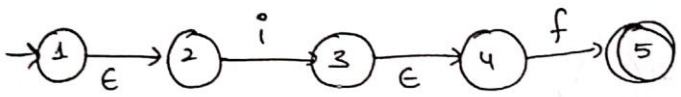
ε-closure (7) move (d, a) = ε-closure (9) $= \{9, 10\} = E$

ε-closure (9) move (E, K) = ε-closure (11) $= \{11\} = F$.

DFA:



③ IF



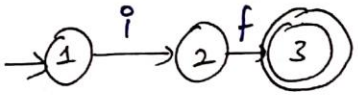
ϵ-closures:

ϵ-closure(1) = {1,2} = A.
ϵ-closure(2) = {2}
ϵ-closure(3) = {3,4}.
ϵ-closure(4) = {4}.
ϵ-closure(5) = {5}.

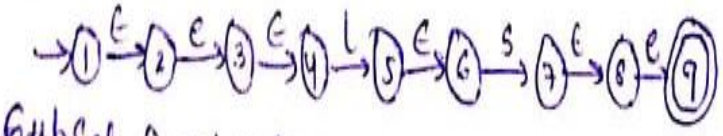
Move:

ϵ-closure(1) = {1,2}.
ϵ-closure(3)move(A,i) = ϵ-closure(3) = {3,4} = B.
ϵ-closure(5)move(B,F) = ϵ-closure(5) = {5} = C.

DFA:



4) else



Subset Construction:-

ε-Closure (1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}
(5) = {5, 6}
(6) = {6}

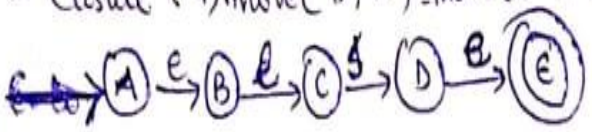
ε-Closure (7) = {7, 8}
(8) = {8}
(9) = {9}

ε-Closure(1) move (A, e) = move {(1, 2), e} = ε-Closure (3) = {3, 4} — (B)

ε-Closure (3) move (B, l) = move {(3, 4), l} = ε-Closure (5) = {5, 6} — (C)

ε-Closure (5) move (C, s) = move {(5, 6), s} = ε-Closure (7) = {7, 8} — (D)

ε-Closure (7) move (D, e) = move {(7, 8), e} = ε-Closure (9) = {9} — (E)



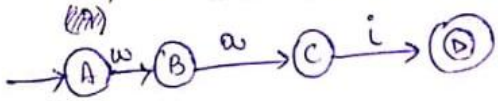
5) wai

ε-Closure (1) = {1, 2}
" (2) = {2}
" (3) = {3, 4}
" (4) = {4}

ε-Closure (5) = {5, 6}
ε-Closure (6) = {6}

Subset Construction:

ε-Closure (1), move (A, w) = move {(1,2), w} = ε-closure (3) = {3,4} - (B)
(3), move (B, a) = move {(3,4), a} = ε-closure (5) = {5,6} - (C)
(5), move (C, i) = move {(5,6), i} = ε-Closure (7) = {7, 8} - (D)



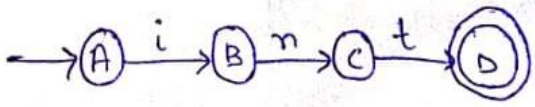
Datatypes:-

1) int

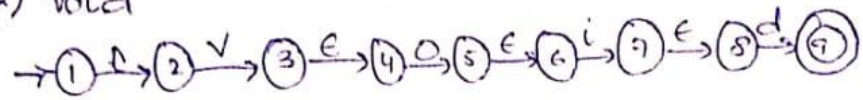
ε-Closure (1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}

ε-Closure (5) = {5, 6}
(6) = {6}
(7) = {7}

ε-Closure (1) move (A, i) = move {(1,2), i} = ε-Closure (3) = {3,4} (B
" (3) move (B, n) = move {(3,4), n} = ε-Closure (5) = {5,6} (C
" (5) move (C, t) = move {(5,6), t} = ε-Closure (7) = {7} - (D



2) void

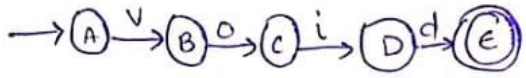


Sub Set Construction:-

ε-Closure(1) = {1, 2}
" (2) = {2}
" (3) = {3, 4}
" (4) = {4}
" (5) = {5, 6}

ε-Closure(6) = {6}
" (7) = {7, 8}
" (8) = {8}
" (9) = {9}

ε-Closure(1) move (A, V) = move{(1, 2), V} = ε-Closure(3) = {3, 4} - (B)
" (3) " (B, O) = move{(3, 4), O} = " (5) = {5, 6} - (C)
" (5) " (C, i) = move{(5, 6), i} = " (7) = {7, 8} - (D)
" (7) " (D, d) = move{(7, 8), d} = " (9) = {9} - (E)



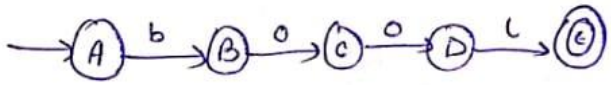
3) bool

Sub Set Construction:

ε-Closure(1) = {1, 2}
" (2) = {2}
" (3) = {3, 4}
" (4) = {4}
" (5) = {5, 6}

ε-Closure(6) = {6}
" (7) = {7, 8}
" (8) = {8}
" (9) = {9}

ε-Closure(1) move (A, b) = move{(1, 2), b} = ε-Closure(3) = {3, 4} - (B)
" (3) move (B, O) = move{(3, 4), O} = " (5) = {5, 6} - (C)
" (5 move (C, O) = move{(5, 6), O} = " (7) = {7, 8} - (D)
" (7) move (D, l) = move{(7, 8), l} = " (9) = {9} - (E)



4) Special Character:

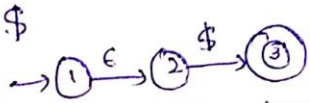
1) @

Subset Construction

ϵ-Closure (1) = {1, 2}
(2) = {2}
(3) = {3}

ϵ-Closure (1) move (A, @) = move {A, (1, 2), @} = ϵ-Closure (3) = {3} - (B)

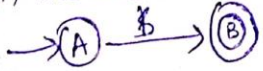
2) $



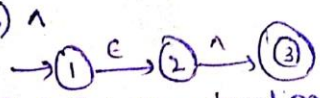
Subset Construction

ϵ-Closure (1) = {1, 2}
(2) = {2}
(3) = {3}

ϵ-Closure (1) move (A, $) = move {(1, 2), $} = ϵ-Closure (3) = {3} - (B)



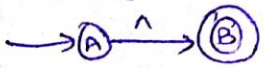
3) ^



Subset Construction

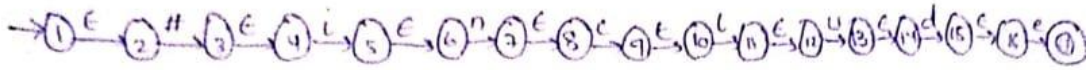
ϵ-Closure (1) = {1, 2} ϵ-Closure (2) = {2} ϵ-Closure (3) = {3}

ϵ-Closure (1) move (A, ^) = move {(1, 2), ^} = ϵ-Closure (3) = {3} - (B)



5) Pre Processor - Directives :-

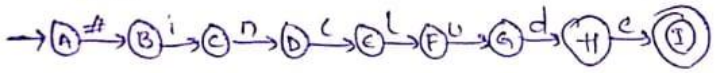
include



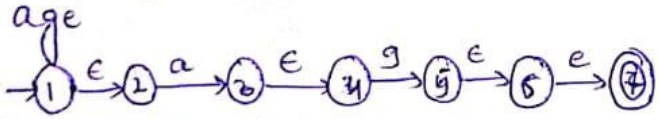
ε-Closure (1) = {1, 2}
" (2) = {2}
" (3) = {3, 4}
" (4) = {4}
" (5) = {5, 6}
" (6) = {6}
" (7) = {7, 8}
" (8) = {8}
" (9) = {9, 10}

ε-Closure (10) = {10}
" (11) = {11, 12}
" (12) = {12}
" (13) = {13, 14}
" (14) = {14}
" (15) = {15, 16}
" (16) = {16}
" (17) = {17}

ε-Closure (1) move (A, #) = move {(1,2) #} = ε-Closure (3) = {3, 4} - (B)
ε-Closure (3) move (B, i) = move {(3,4) i} = ε-Closure (5) = {5, 6} - (C)
ε-Closure (5) move (C, n) = move {(5,6), n} = ε-Closure (7) = {7, 8} - (D)
ε-Closure (7) move (D, c) = move {(7,8), c} = ε-closure (9) = {9, 10} - (E)
ε-Closure (9) move (E, l) = move {(9,10), l} = ε-Closure (11) = {11, 12} - (F)
ε-Closure (11) move (D, u) = move {(11,12), u} = ε-Closure (13) = {13, 14} - (G)
ε-Closure (13) move (E, d) = move {(13,14), d} = ε-closure (15) = {15, 16} - (H)
ε-closure (15) move (F, e) = move {(15,16), e} = ε-Closure (17) = 17 - (I)



6) Identifier : [Aa-Zz] [0-9]

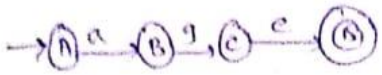


ε-closure (1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}
(5) = {5, 6}
(6) = {6}
(7) = {7}

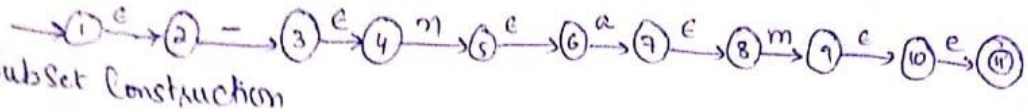
ϵ-Closure (1) move (A, a) = move {(1,2), a} = ϵ-Closure (3) = {3, 4} - (B)

ϵ-Closure (3) move (B, g) = move {(3,4), g} = ϵ-Closure (5) = {5,6} - (C)

ϵ-Closure (5) move (C, e) = move {(5,6), e} = ϵ-Closure (7) = {7} - (D)



2) -name



Subset Construction

ϵ-Closure (1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}
(5) = {5, 6}
(6) = {6}

ϵ-Closure (7) = {7, 8}
(8) = {8}
(9) = {9, 10}
(10) = {10}
(11) = {11}

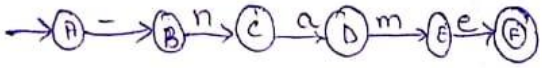
ϵ-Closure (1) move (A, –) = move {(1,2), –} = ϵ-Closure (3) = {3,4} - (

ϵ-Closure (3) move (B, n) = move {(3,4), n} = ϵ-Closure (5) = {5,6} - (

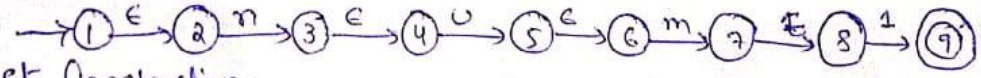
ϵ-Closure (5) move (C, a) = move {(5,6), a} = ϵ-closure (7) = {7,8} - (

ϵ-Closure (7) move (D, m) = move {(7,8), m} = ϵ-Closure (9) = {9,10} - (

ϵ-Closure (9) move (E, e) = move {(9,10), e} = ϵ-Closure (11) = {11} - (



3) num 1

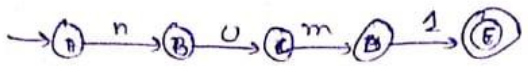


Subset Construction:

ϵ-Closure (1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}
(5) = {5, 6}
(6) = {6}

ϵ-Closure (7) = {7, 8}
(8) = {8}
(9) = {9}

ϵ-Closure(1) move(A, n) = move{(1, 2), n} = ϵ-Closure(3) = {3, 4} - (B)
ϵ-Closure(3) move(B, U) = move{(3, 4), U} = ϵ-Closure(5) = {5, 6} - (C)
ϵ-Closure(5) move(C, m) = move{(5, 6), m} = ϵ-Closure(7) = {7, 8} - (D)
ϵ-closure(7) move(D, 1) = move{(7, 8), 1} = ϵ-Closure(9) = {9} - (E)



1) Single Comment

//

ϵ-Closure(1) = {1, 2}
(2) = {2}
(3) = {3, 4}
(4) = {4}
(5) = {5}

ϵ-Closure(1) move(A, /) = move{(1, 2), /} = ϵ-Closure(3) → B
ϵ-Closure(3) move(B, /) = move{(3, 4), /} = ϵ-Closure(5) = {5} → (C)