NOTRE DAME UNIVERSITY BANGLADESH

Theory of Computation

Submitted to: Dr. Fernaz Narin Nur

Submitted by: Shazidul Alam

Subject: Theory of Computation

Student ID: 069222005101009

Batch: CSE-19

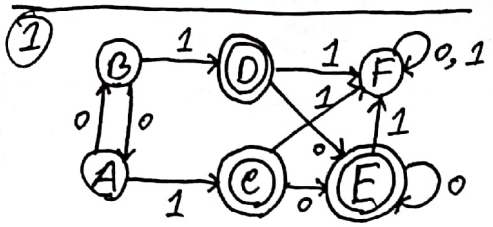
Assignment – 1

(22-08-2023)

CSE-19
Id: 0692220005101009

Minimization of DFA (Table Filling Method) → Myhil Nerode Theorem

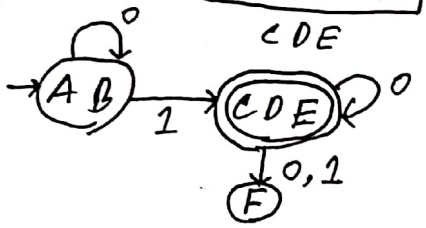
①



	A	B	C	D	E	F
B	AB					
C	✓	✓				
D	✓	✓	CD			
E	✓	✓	CE	DE		
F	✓	✓	✓	✓	✓	

AB | CD | CE | DE

CDE



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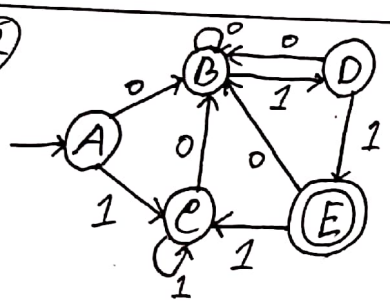
②



	A	B	C	D	E
B	✓				
C	·	✓			
D	✓	✓	✓		
E	✓	✓	✓	✓	

AB

$\delta(A,0) \to B$
$\delta(B,0) \to B$
$\delta(A,1) \to C$
$\delta(B,1) \to D$

AC

$\delta(A,0) \to B$
$\delta(C,0) \to B$
$\delta(A,1) \to C$
$\delta(C,1) \to C$

BC

$\delta(B,0) \to B$
$\delta(C,0) \to B$
$\delta(B,1) \to D$
$\delta(C,1) \to C$

AD

$\delta(A,0) \to B$
$\delta(D,0) \to B$
$\delta(A,1) \to C$
$\delta(D,1) \to E$

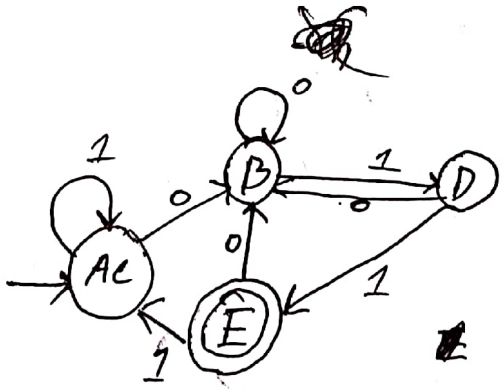
BD

$\delta(B,0) \to B$
$\delta(D,0) \to B$
$\delta(B,1) \to D$
$\delta(D,1) \to E$

CD

$\delta(C,0) \to B$
$\delta(D,0) \to B$
$\delta(C,1) \to C$
$\delta(D,1) \to E$

	0	1
AC	B	AC
B	B	D
D	B	E
E	B	AC



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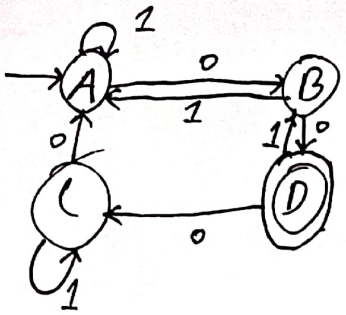
(3)



(E)

(Dead state)

	A	B	C	D	E
A					
B	✓				
C	✓	✓			
D	✓	✓	✓		
E					

	0	1
A	B	A
B	D	A
C	A	C
*D	e	B
E	ϕ	ϕ

AB

$\delta(A,0) \to B$

$\delta(B,0) \to D$

$\delta(A,1) \to BA$

$\delta(B,1) \to A$

AC

$\delta(A,0) \to B$

$\delta(C,0) \to A$

$\delta(A,1) \to A$

$\delta(C,1) \to C$

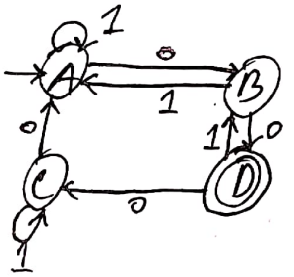
BC

$\delta(B,0) \to D$

$\delta(C,0) \to A$

$\delta(B,1) \to A$

$\delta(BC,1) \to C$



(E)

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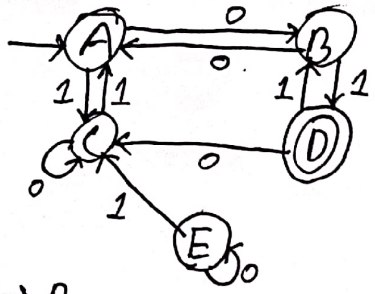
(Unreachable State)

④



AB
$\delta(A,0) \to B$
$\delta(B,0) \to A$
$\delta(A,1) \to C$
$\delta(B,1) \to D$

AC
$\delta(A,0) \to B$
$\delta(C,0) \to C$
$\delta(A,1) \to C$
$\delta(C,1) \to A$

BC
$\delta(B,0) \to A$
$\delta(C,0) \to C$
$\delta(B,1) \to D$
$\delta(C,1) \to A$

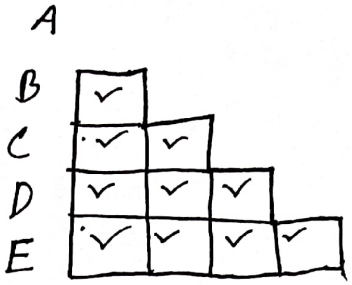
AE
$\delta(A,0) \to B$
$\delta(E,0) \to E$
$\delta(A,1) \to C$
$\delta(E,1) \to C$

BE
$\delta(B,0) \to A$
$\delta(E,0) \to E$
$\delta(B,1) \to D$
$\delta(E,1) \to C$

CE
$\delta(C,0) \to C$
$\delta(E,0) \to E$
$\delta(C,1) \to A$
$\delta(E,1) \to C$

DE
$\delta(D,0) \to C$
$\delta(E,0) \to E$
$\delta(D,1) \to B$
$\delta(E,1) \to C$

A B C D E



A B C D E

	0	1
A	B	C
B	A	D
C	C	A
* D	C	B
E	E	C