COL215L: Digital Logic & System Design

Lecture 22: Finite State Machines (Cont.)

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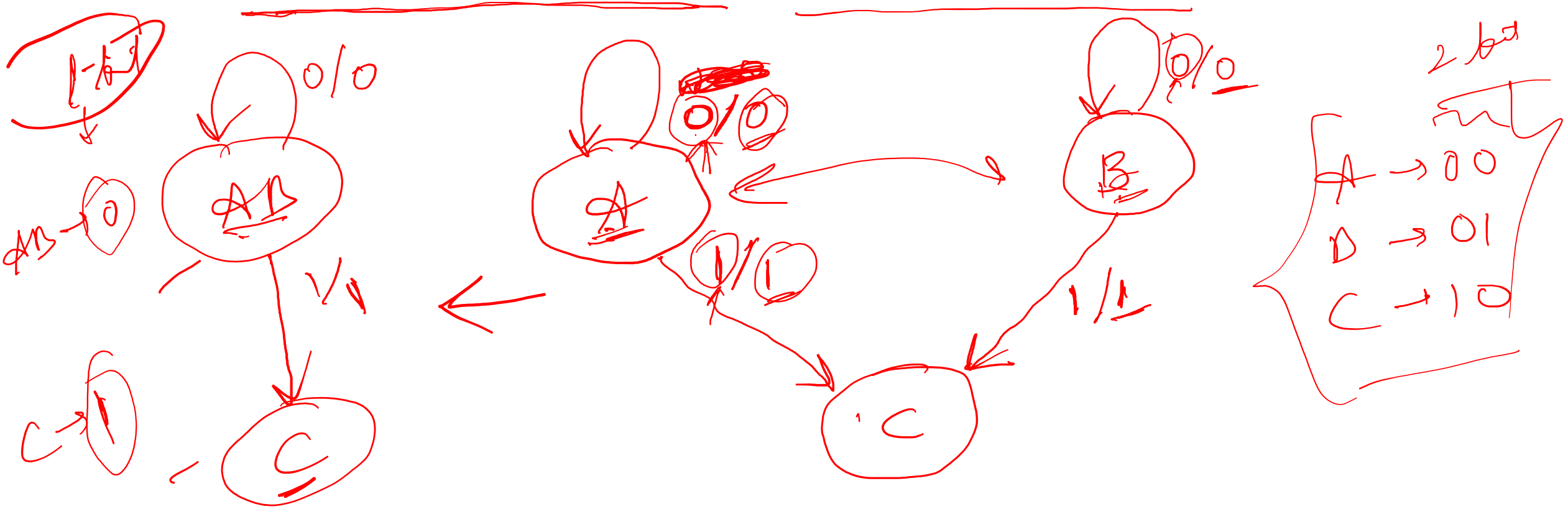
Handling Suspicious Cases in Minor

- There is a direct correlation between those who are suspicious and those who used only one device
  - Penalty - TBD

- Suspicious cases
  - Viva related to all topics discussed before Minor
  - Disproportionate performance in the Viva and the Minor Exam
    - Penalty – TBD

State Minimization

- State A – equivalent to – State B
  - Every possible input sequence – the same output sequence



Minimization Procedure - Example

- P1 = (ABCDEFG)
- P2 = (ABD)(CEFG)
- P3 = (ABD)(CEG)(F)
- P4 = (AD)(B)(CEG)(F)
- P5 = (AD)(B)(CEG)(F)

Present state	Next state $w=0$	Next state $w=1$	Output z
A	B	C	1
B	D	F	1
C	F	E	0
D	B	G	1
E	F	C	0
F	E	D	0
G	F	G	0

Minimized State

Present state	Next state $w=0$	Next state $w=1$	Output z
A	B	C	1
B	D	F	1
C	F	E	0
D	B	G	1
E	F	C	0
F	E	D	0
G	F	G	0

Present state	Next state $w=0$	Next state $w=1$	Output z
A	B	C	1
B	A	F	1
C	F	C	0
F	C	A	0

Incompletely Specified FSM

- z=0
  - P1 = (ABCDEFG)
  - P2 = (ABDG)(CEF)
  - P3 = (AB)(D)(G)(CE)(F)
  - P4 = (A)(B)(D)(G)(CE)(F)
  - P5 = (A)(B)(D)(G)(CE)(F)

- z=1
  - P1 = (ABCDEFG)
  - P2 = (AD)(BCEFG)
  - P3 = (AD)(B)(CEFG)
  - P4 = (AD)(B)(CEG)(F)
  - P5 = (AD)(B)(CEG)(F)

Present state	Next state		Output z	
	$w = 0$	$w = 1$	$w = 0$	$w = 1$
A	B	C	0	0
B	D	—	0	—
C	F	E	0	1
D	B	G	0	0
E	F	C	0	1
F	E	D	0	1
G	F	—	0	—