Math 322

(Network crashed? Yeah!)

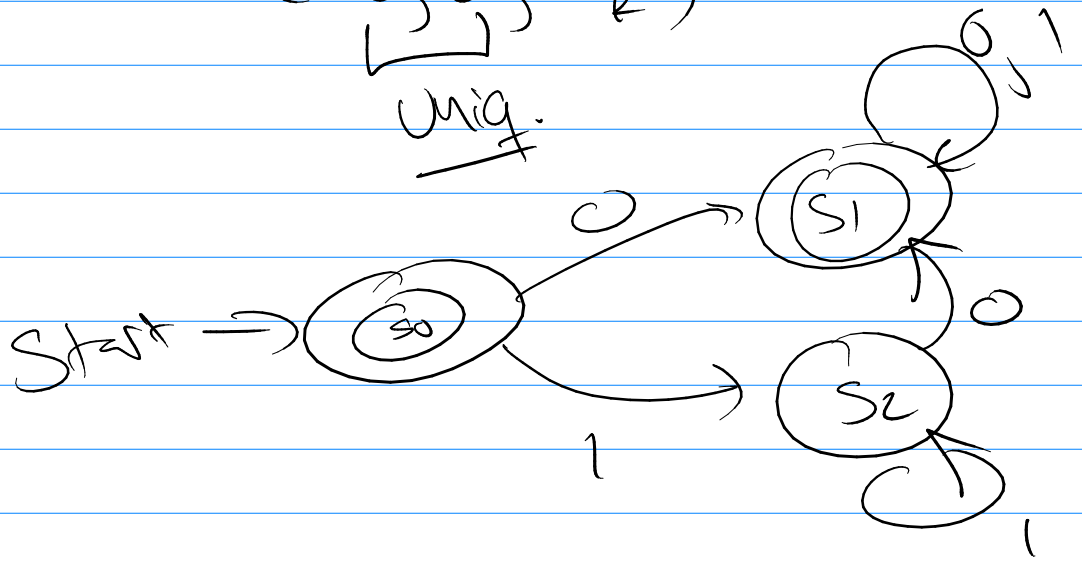
F.S.M with no output

→ Automata

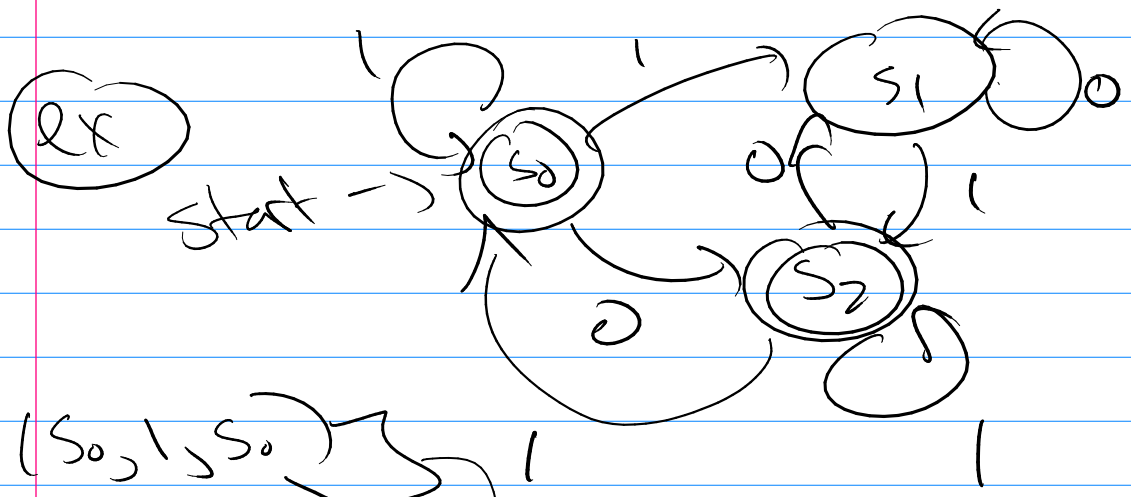
Deterministic $M = (S, I, f, s_0, F)$

$f : S \times I \to S$

(s_i, i, s_k) uniq.



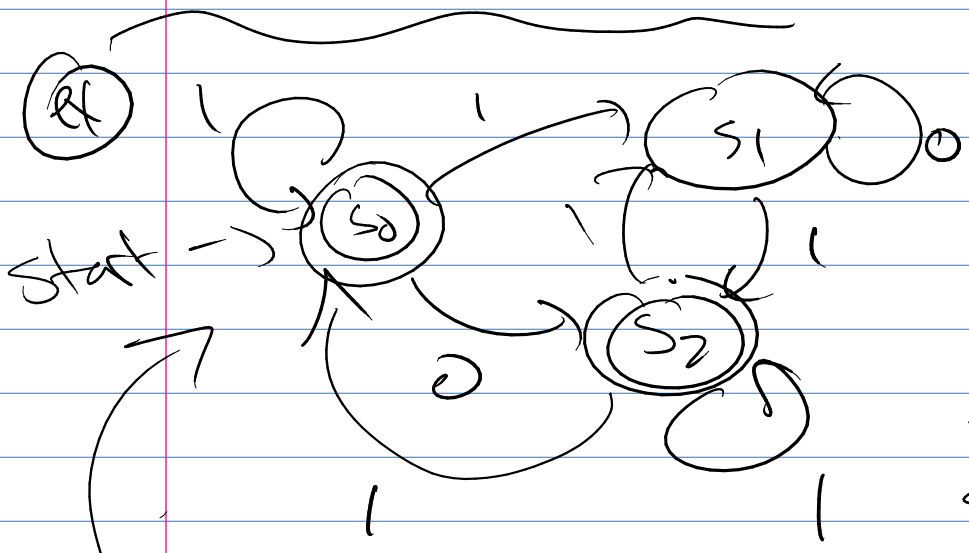
Nondeterministic F.S.A.



$(s_0, 1, s_0)$
$(s_0, 1, s_1)$
$(s_2, 1, s_0)$
$(s_2, 1, s_2)$

Nondeterministic

$S \times I \to S$ Not a function



Not sure ex as above.

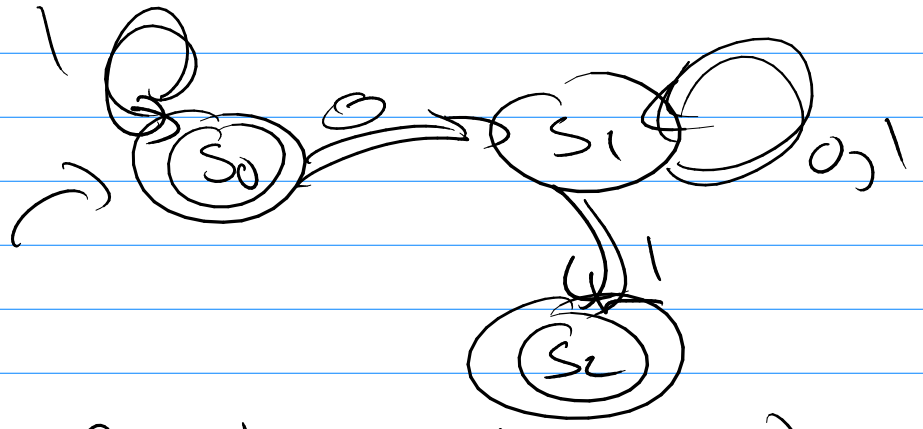
state table

	0	1
s_0	s_2	s_0, s_1
s_1		s_2
s_2	s_1	s_1, s_0, s_2

Non-Det. F.S.A $M = (S, I, f, s_0, F)$

$f: S \times I \to P(S)$

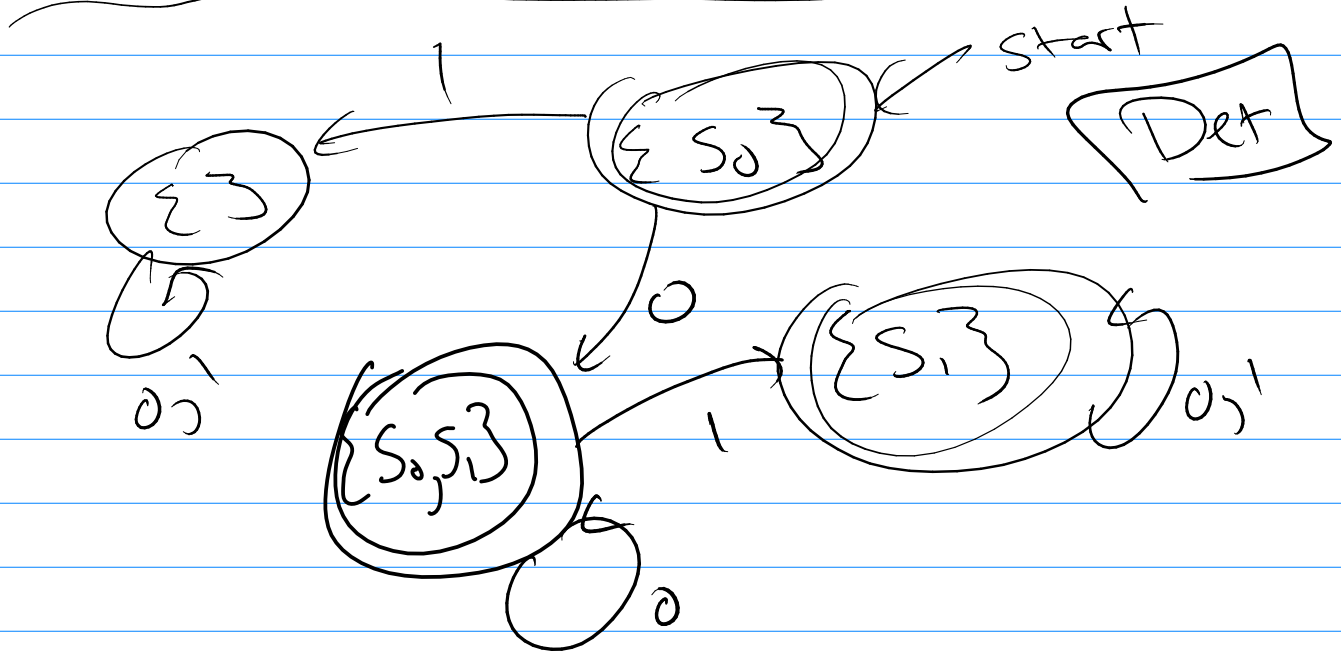
If M_1 is nondeterministic then should $x \in I^*$ be recognized?



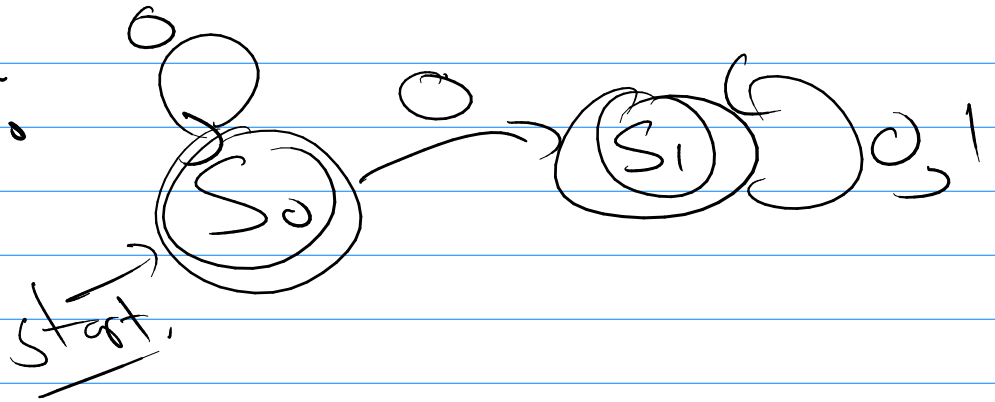
If the machine ends in a final state for any of the possible end states $\rightarrow$ M_1 recog. x

Def: $L(M_1)$ is all $x \in I^*$ that the non-det. Machine recognizes.

Th^{m}: if M_1 is non-det. then $L(M_1)$ has a det. f.s.a. (M_2) where $L(M_1) = L(M_2)$



Ex M:



$$L(M) = 0^* \cup 0^n \{0,1\}^* \mid n \geq 1$$

Language Recognition (12.4)

F.S.A. w/ Recognition

Th 1 & Th 2

(1) A set is generated by a regular grammar

iff

(2) It is a regular set

iff

(3) It is recognized by a F.S.A.

Th 1 is #2

#1

Regular Set (Inductively Def.)

a) Basis: $\{\varepsilon\}, \{\lambda\}, \{x\}$

$x \in I$

are regular

b) Inductive: AB, $A \cup B$, A^*

are regular

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$0^n 1^n$