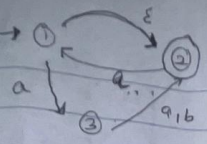
Lec 2

NFA

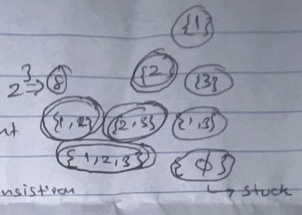
convert NFA to DFA



$\Sigma = \{a, b\}$

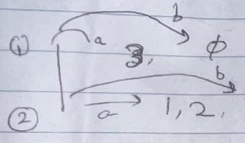
Power of element

Total Possible Transistion



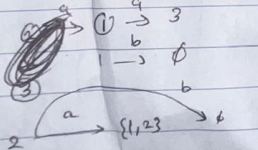
due to ε initial state {1,2}

every state would be accept state where element is ② comes in it



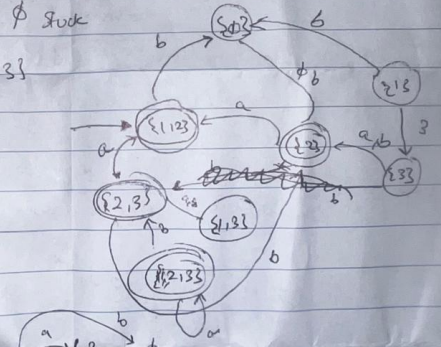
{1,2} —a→ {1,2,3}

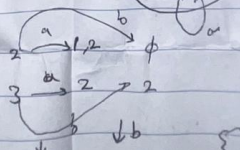
{1,2} —b→ {ϕ}



3 —a→ 2

3 —b→ [redacted] 2





{1,2}

DFA

Mid-term exam Question →

Lecture 6 Equivalance of DFAs and NFAs

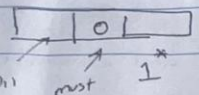
Regular expression

What is Regular expression (RE)? must be representing regular language

Ex: $(0 \cup 1)0 1^*$

union says 0 or 1 — must have 0 — 1^* → all possible but must finite.

union mean OR



Ex: $\{w : w$ 1st bit $==$ last bit$\}$

$0(0 \cup 1)^*0 \cup 1(0 \cup 1)^*1$

if

$0(0 \cup 1)^*0 \cup 1(0 \cup 1)^*1 \cup 00 \cup 11$ if one kind of string

Midterm grade

Ex1 $\Sigma = \{0,1\}$ A: $\{w : w$ contains two 0's$\}$

$1^*01^*01^*$ assume 1^* as ε

Ex2 if A = $\{w : w$ has atleast $\geq$ two 0's$\}$

$(0 \cup 1)^* \; 0 \; (0 \cup 1)^* \; 0 \; (0 \cup 1)^*$

Ex3 $A = \{w : w$ contains 1011 as substring atleast$\}$

$(0 \cup 1)^* \; 1011 \; (0 \cup 1)^*$

Ex4 Ex A = $\{w : w$ must be even$\}$

$((0 \cup 1)(0 \cup 1))^*$

Ex5 Ex = A $\{w : w$ is odd$\}$

$(0 \cup 1)((0 \cup 1)(0 \cup 1))^*(0 \cup 1)$