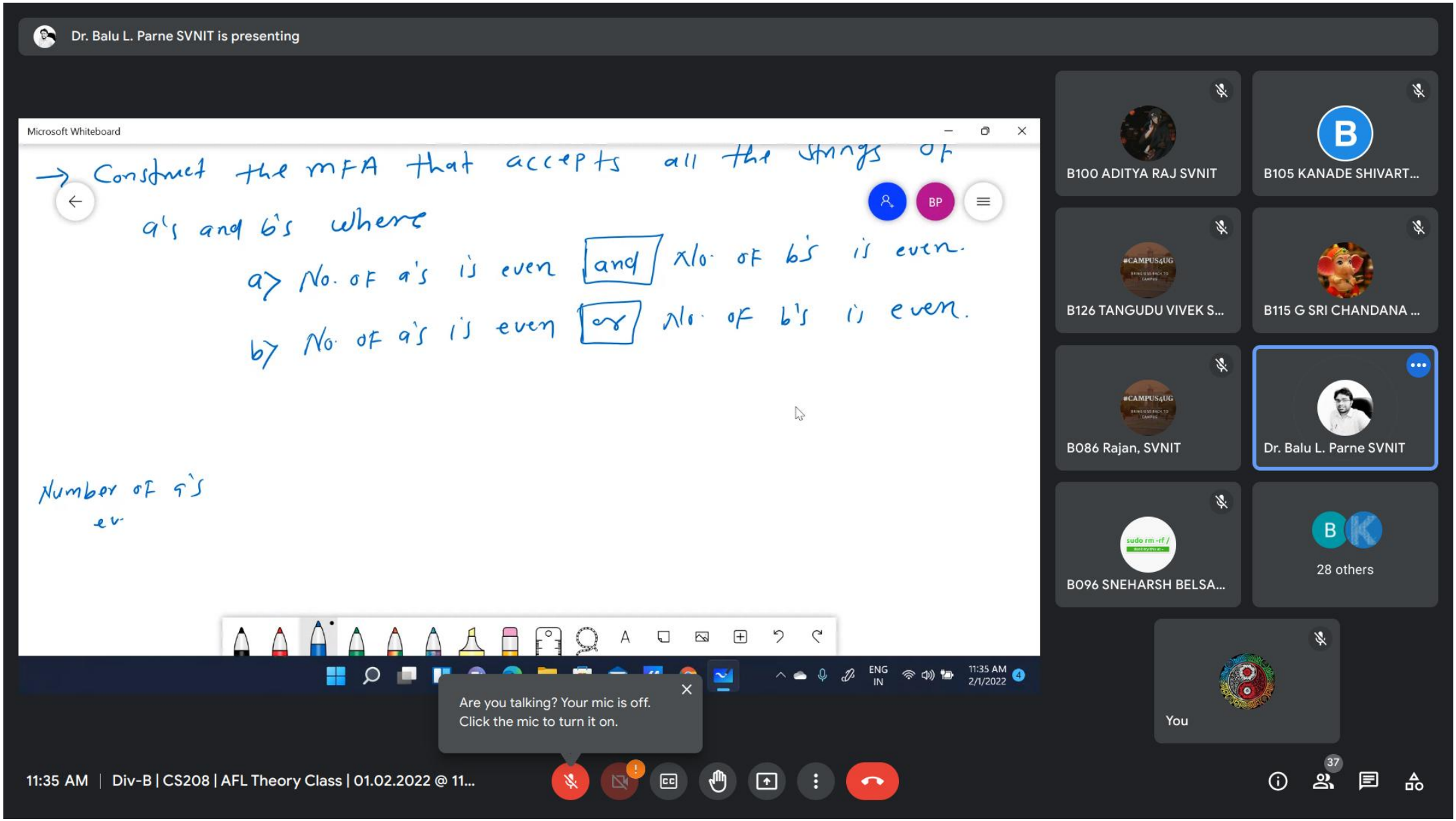
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→ Construct the mFA that accepts all the strings of
a's and b's where
a) No. of a's is even and No. of b's is even.
b) No. of a's is even or No. of b's is even.
Number of a's
ev
BP
B100 ADITYA RAJ SVNIT
B105 KANADE SHIVART...
B126 TANGUDU VIVEK S...
B115 G SRI CHANDANA ...
B086 Rajan, SVNIT
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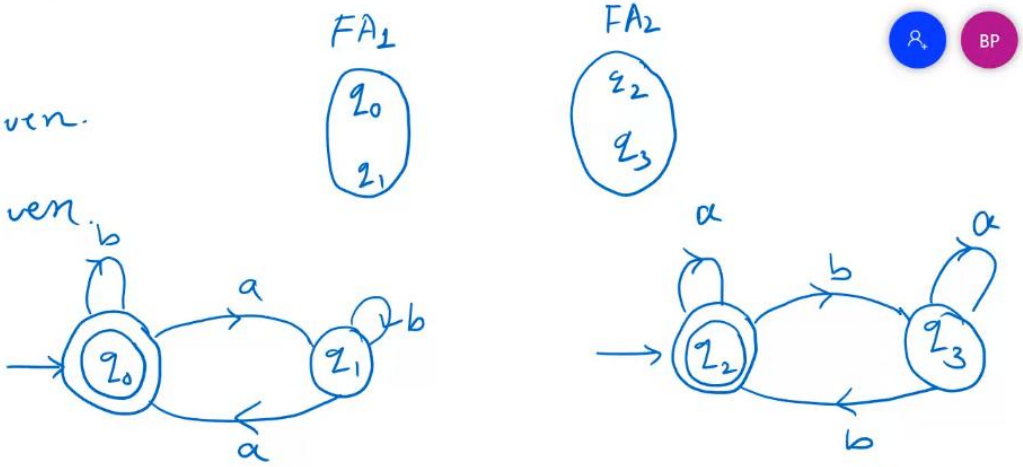
all the strings of

n_a of b's is even.

n_b of b's is even.

$A_1 \cap FA_2$

$A_1 \cup FA_2$



states:- { q_0q_2, q_0q_3, q_1q_2, q_2q_3 }

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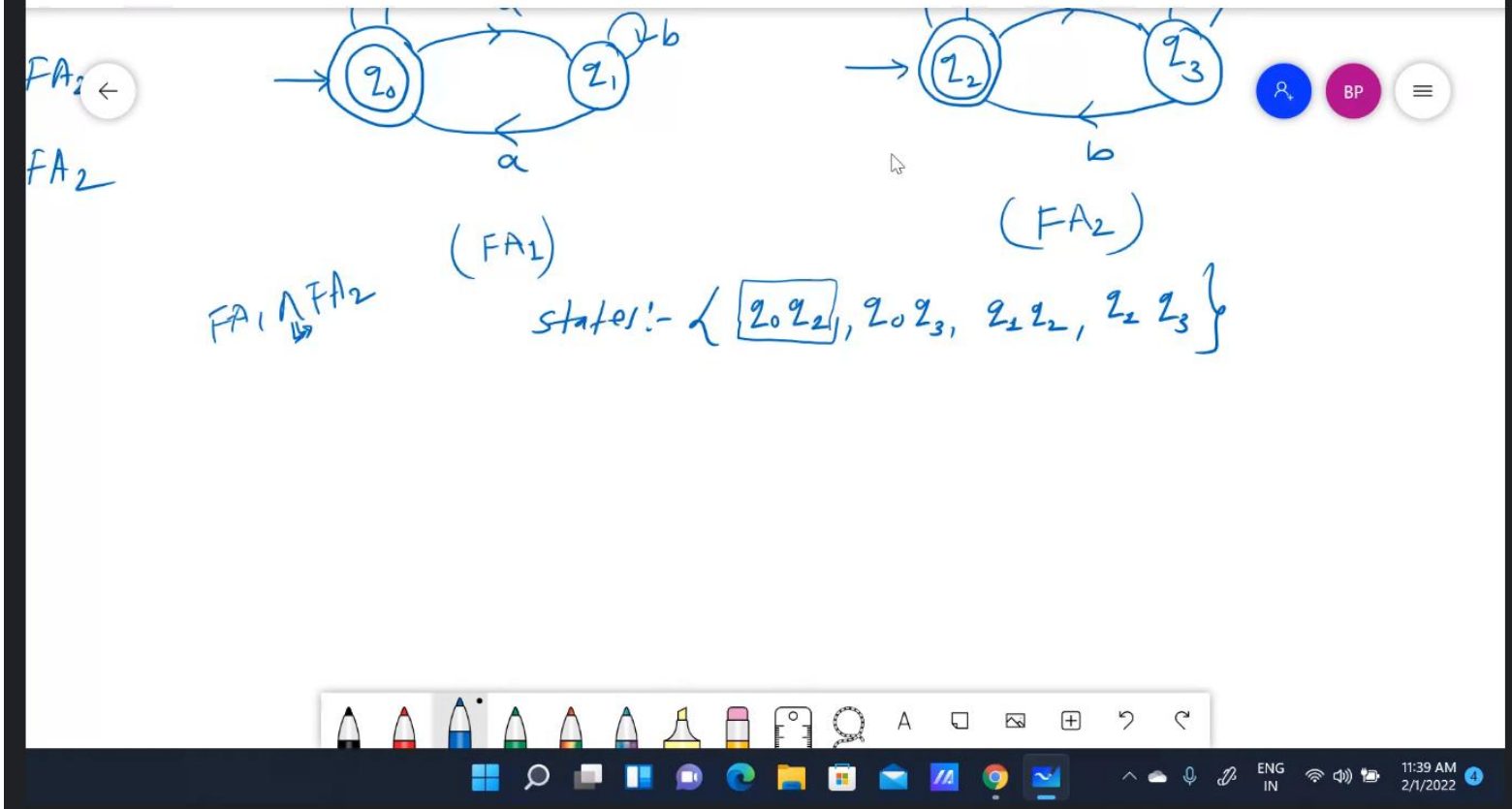

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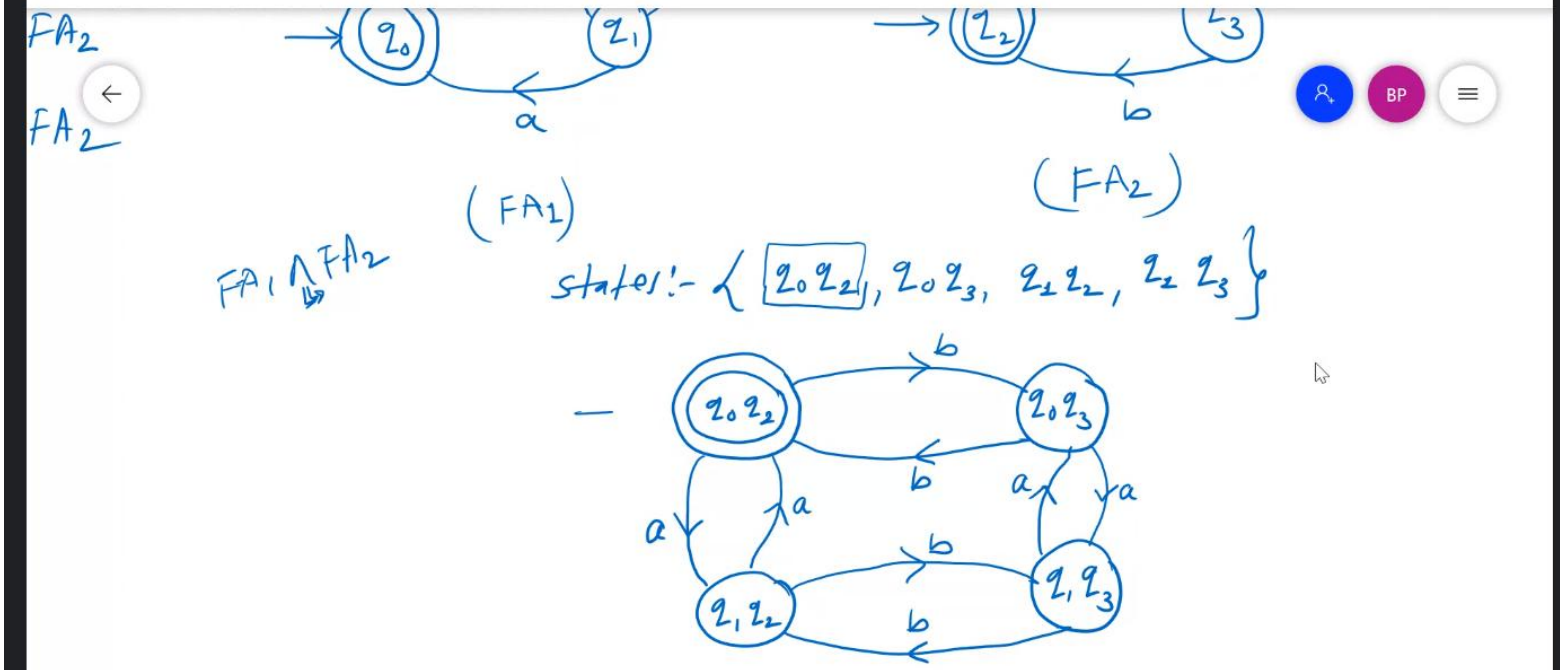

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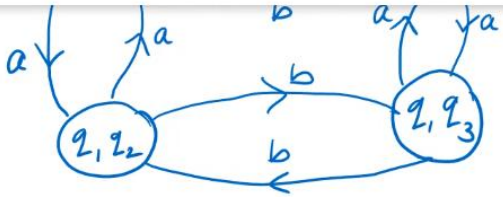

→ Construct the NFA that accepts all the strings of a's and b's where

a) No. of a's is divisible by 2 and No. of b's is divisible by 3.

b) No. of a's is divisible by 2 or No. of b's is divisible by 3

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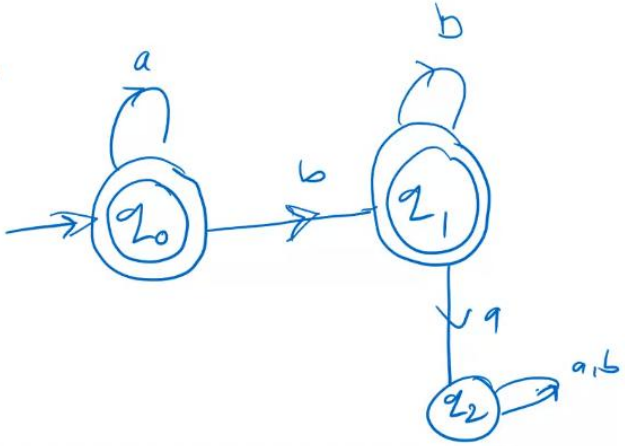
a) [No. of a's is divisible by 2] [and] [No. of b's is divisible by 3]

b) No. of a's is divisible by 2 [or] No. of b's is divisible by 3

$L = \{ a^m b^n \mid m, n \geq 0 \}$



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Non-Deterministic Finite Automata (NFA) :=>

→ For a given input symbol, there can be more than one transition from a state. Such automaton is called non-deterministic finite automaton.

→ A finite automata which has zero or one or more than one transition from a state is called as NFA.

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Σ = input alphabets.

q_0 = Initial (start state

F = set of final states

δ = transition function that takes two arguments a state and input symbol and returns output as state

$\delta : Q \times \Sigma$

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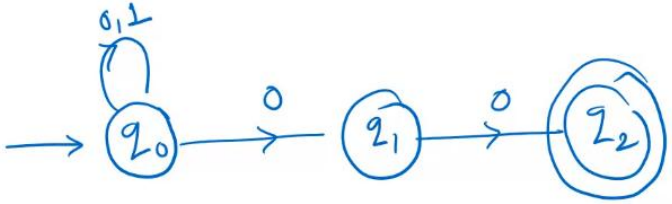
δ = transition function that takes a state and input symbol and returns output as state

$\delta : Q \times \Sigma \rightarrow 2^Q$



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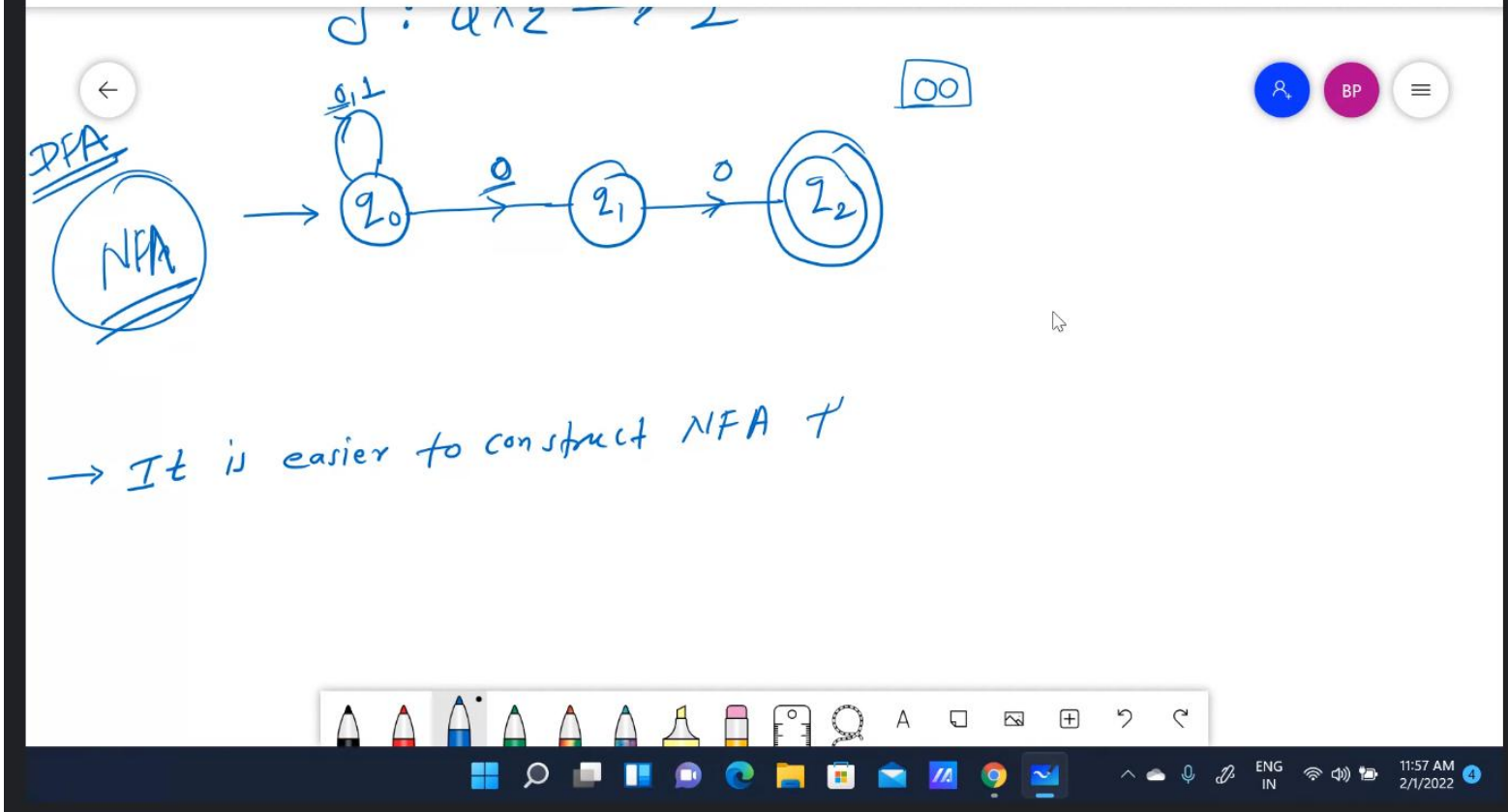

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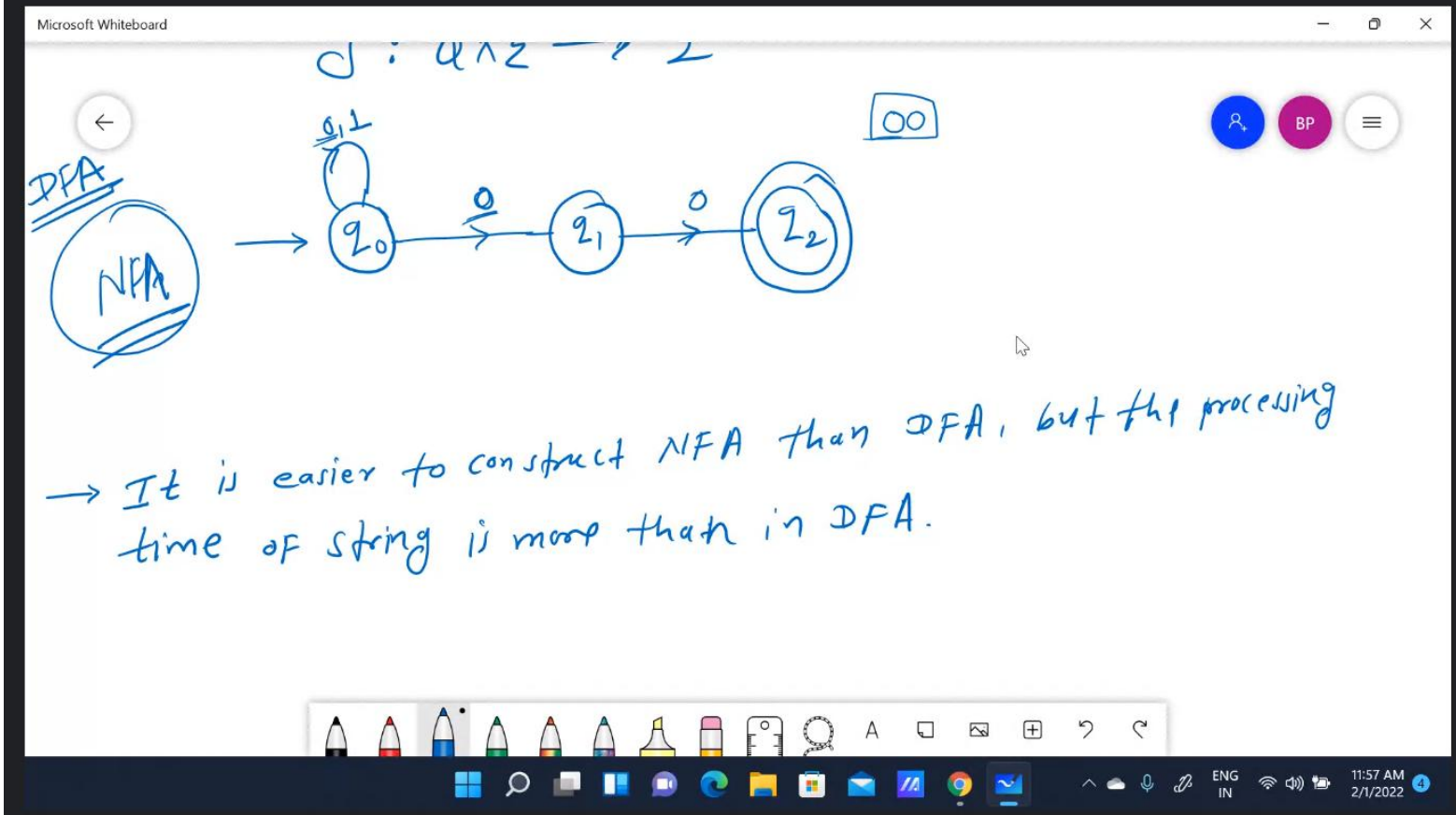

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→ It is easier to construct NFA than DFA, but [illegible]
time of string is more than in DFA.

→ Design a NFA and DFA accepting all strings ending with 01 over $\Sigma = \{0, 1\}$.

→

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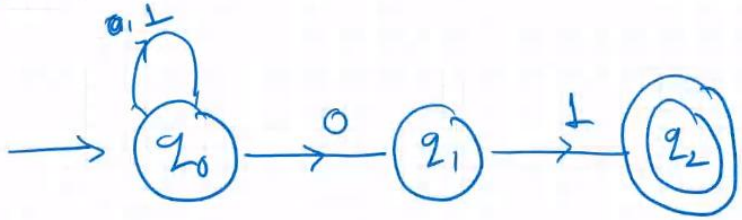
ending with 01 over $\Sigma = \{0,1\}$



NFA

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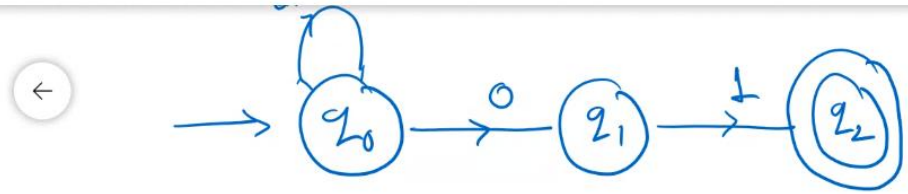
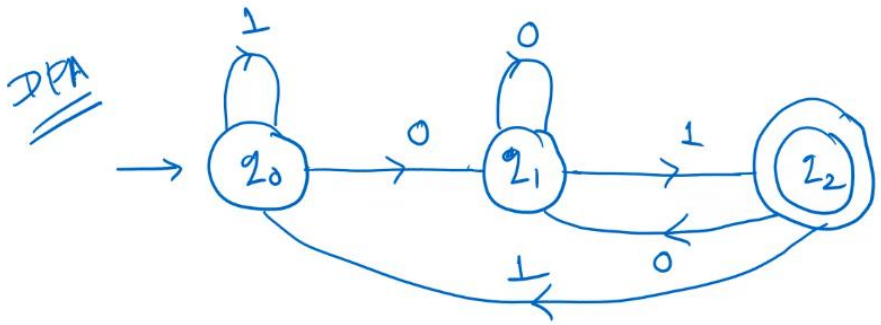


NFA



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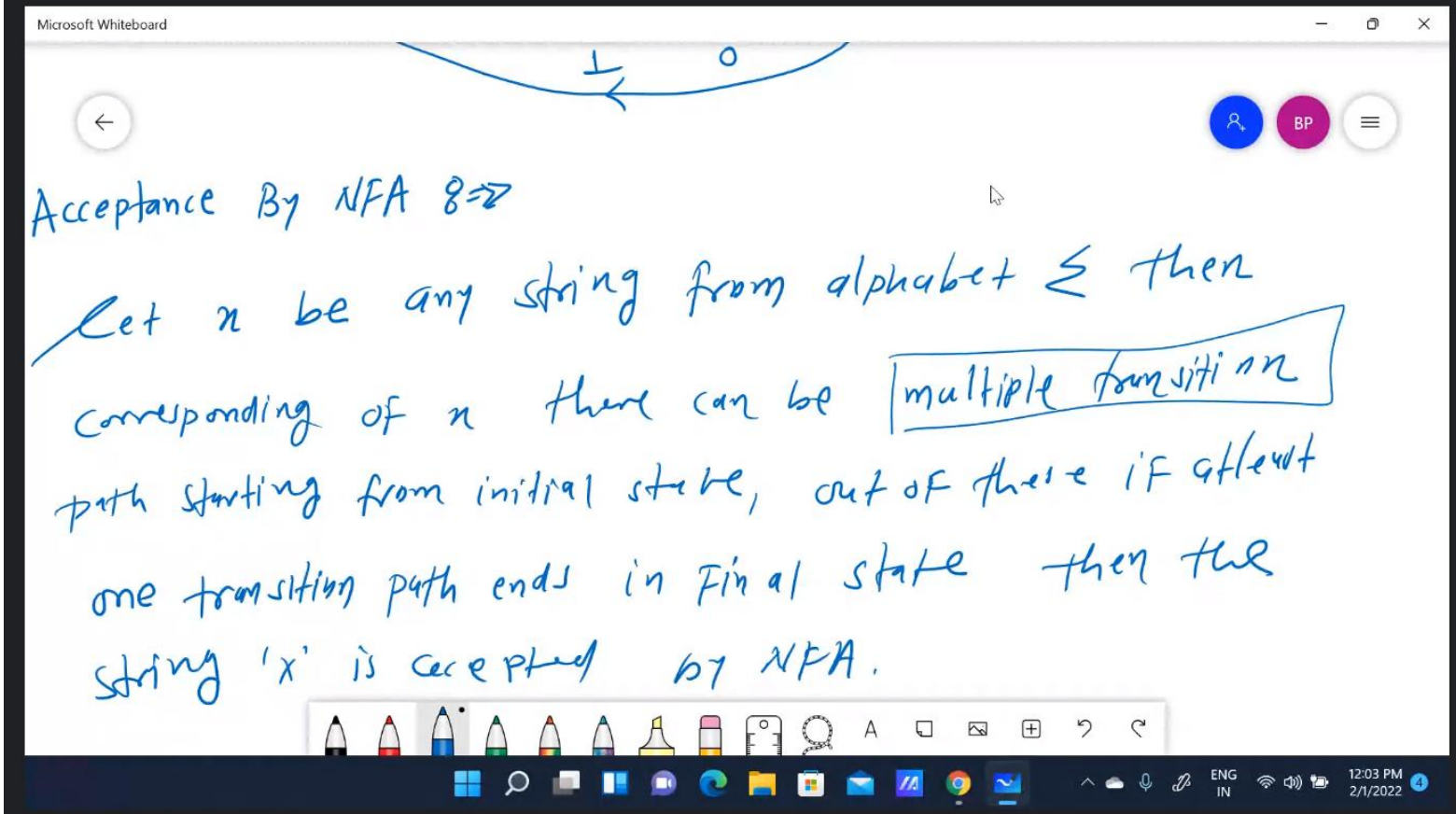

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→ The capabilities of NFA & DFA is

$L(NFA) = L(DFA)$

→ Construction of NFA is easier than DFA.

→ No concept of dead state in NFA.

→ Eu

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→ NFA is a kind of parallel comput... multiple threads can run concurrently.

→ Construct a NFA for a set strings such that the 5th symbol from the r.h.s. is 1

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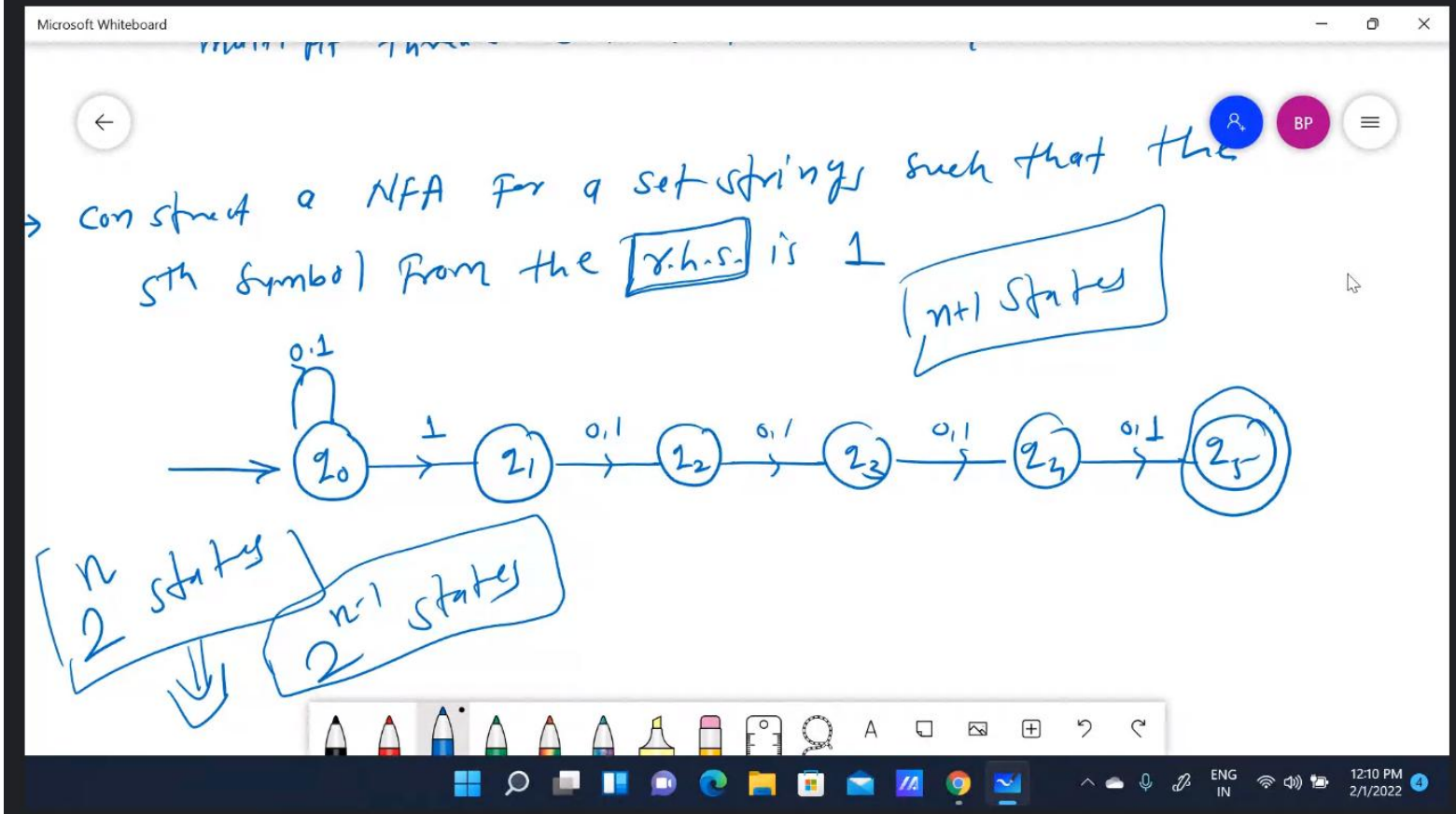

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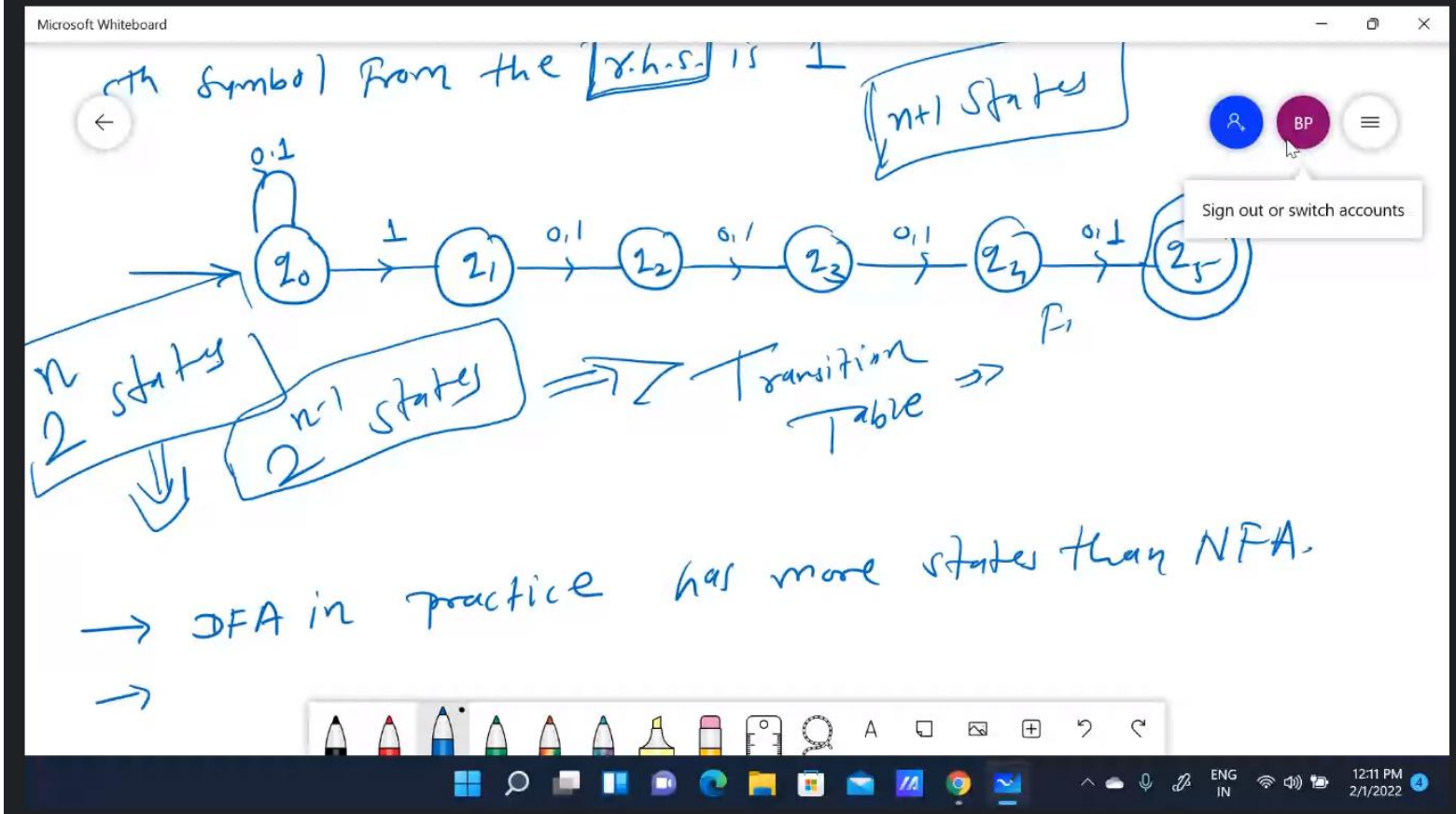

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→ DFA in practice has more

⇒ Equivalence of DFA's and NFA's :⇒

let $M = (Q, \Sigma, \delta, q_0, F)$ be an NFA accepting L.

Define DFA $M' = (Q', \Sigma', \delta', q_0', F')$

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let $M = (Q, \Sigma, \delta, q_0, F)$

Define DFA $M' = (Q', \Sigma', \delta', q_0', F')$

The states of M' are all the subsets of the set of states of M i.e. $Q' = 2^Q$

If $Q = \{A, B\}$ then $Q' = \{[\epsilon], [A], [B], [AB]\}$

F' is the set of all states in Q' containing a final state of M

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States of M i.e. $Q' = 2^Q$

If $Q = \{A, B\}$ then $Q' = \{[\epsilon], [A], [B], [AB]\}$

F' is the set of all states in Q' containing a final state of M

If $F = \{B\}$ then $F' = \{[B], [AB]\}$

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F' is the set of all [illegible]
Final state of M

If $F = \{B\}$ then $f' = \{[B], [AB]\}$

An element of Q' will be denoted by $[q_1, q_2, q_3 \ldots q_i]$
where $q_1, q_2 \ldots q_i$ are in Q.

$q_0' = [q_0]$

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An element of Q' will be denoted by $[q_1, q_2, q_3 \ldots q_i]$ where $q_1, q_2 \ldots q_i$ are in Q.

$q_0' = [q_0]$

⇒ Converting NFA (M_N) to DFA (M_D) ⇒ Subject Construction

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