

Dr. Balu L. Parne SVNIT is presenting

Microsoft Whiteboard

Convert the DFA to a GNFA in the appropriate form.

$\rightarrow q_5$



B129 K SACHIN NAIK SVNIT has left the meeting

11:37 AM | Div-B | CS208 | AFL Theory Class | 15.03.2022 @ 11...



B106 PARIL SVNIT



B079 MIHIR GANDHI SV...



Dr. Balu L. Parne SVNIT



B109 CH ADITHYA SVNIT



B096 SNEHARSH BELSA...



B110 Krishna Pandey SV...



B126 TANGUDU VIVEK S...



B094 MANAN GANDEC...



21 others



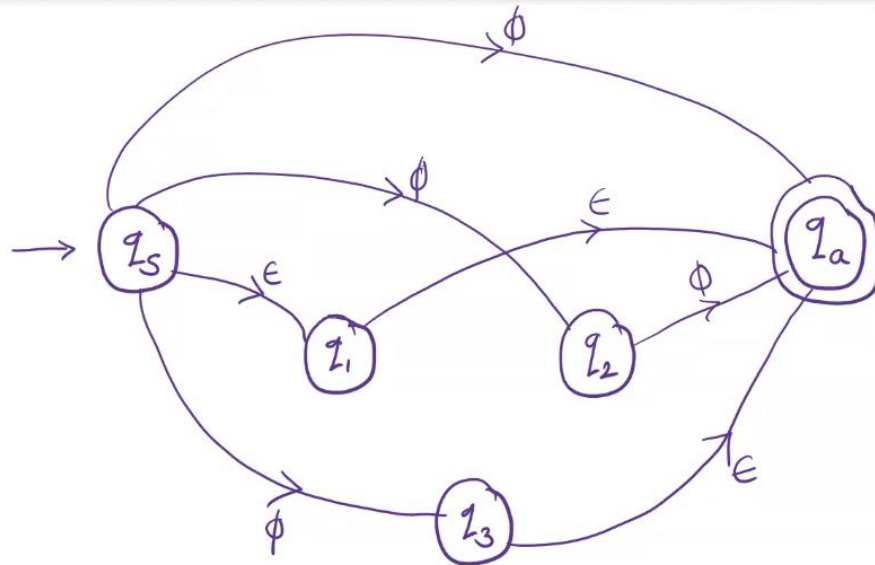
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ENG
IN

11:42 AM
3/15/2022

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You

25 others

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B095 AARTI OTARI SVNIT

B096 SNEHARSH BELSA...

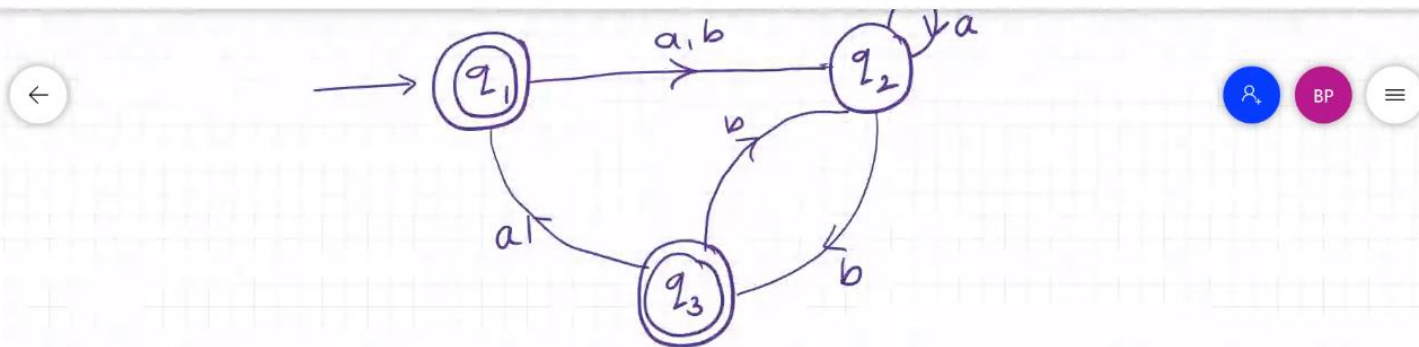
B110 Krishna Pandey SV...

B126 TANGUDU VIVEK S...

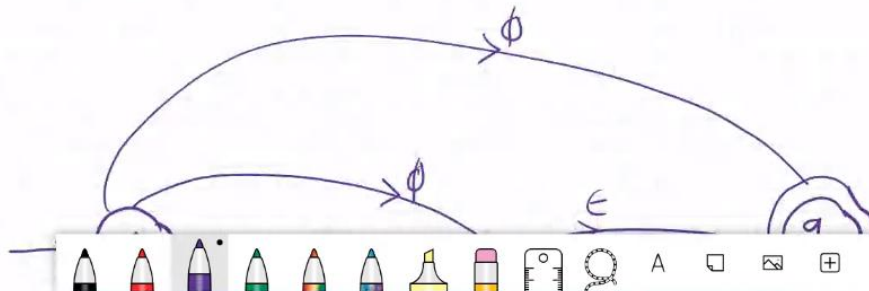
B094 MANAN GANDEC...

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Convert the DFA to a QNFA in the appropriate form.



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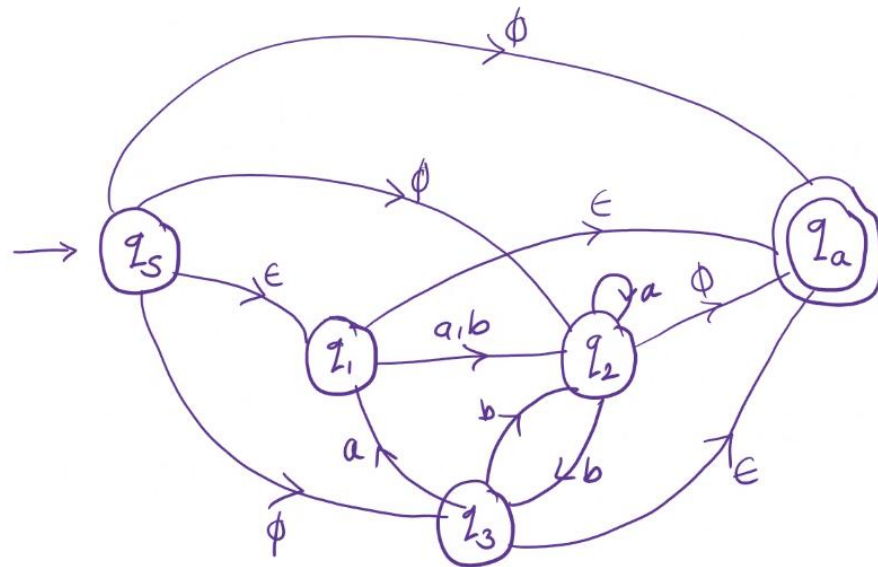
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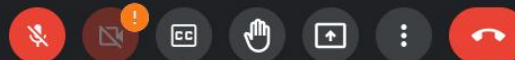


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You

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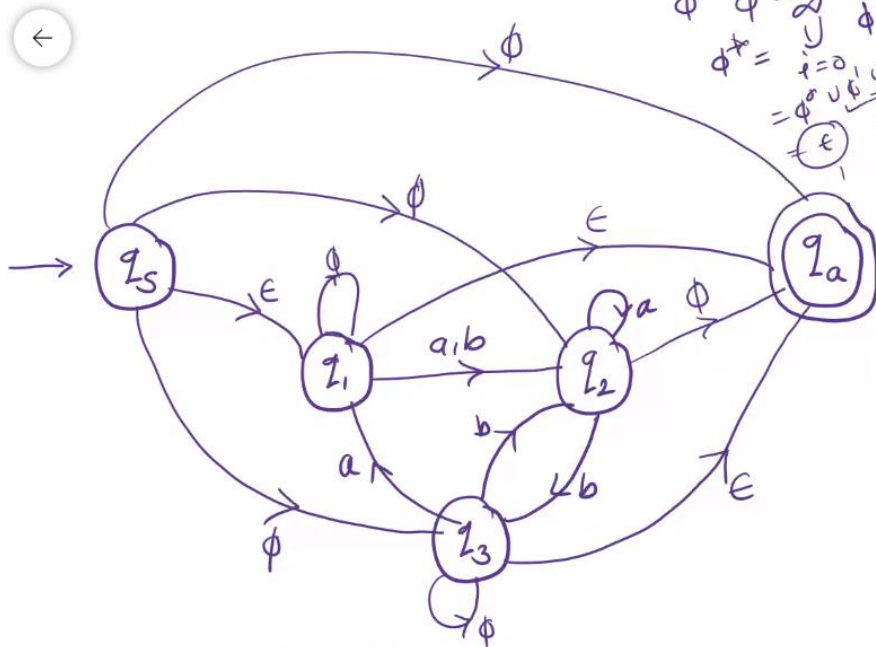




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ert the DFA to a



$$\phi \quad \phi^* = \emptyset \cup \phi \cup \phi^2 \cup \dots$$

Remove $(q_1) \Rightarrow$

$$q_s \rightarrow q_2 : \phi + \epsilon \cdot \phi^* \cdot (a+b) = (a+b)$$



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B126 TANGUDU VIVEK S...

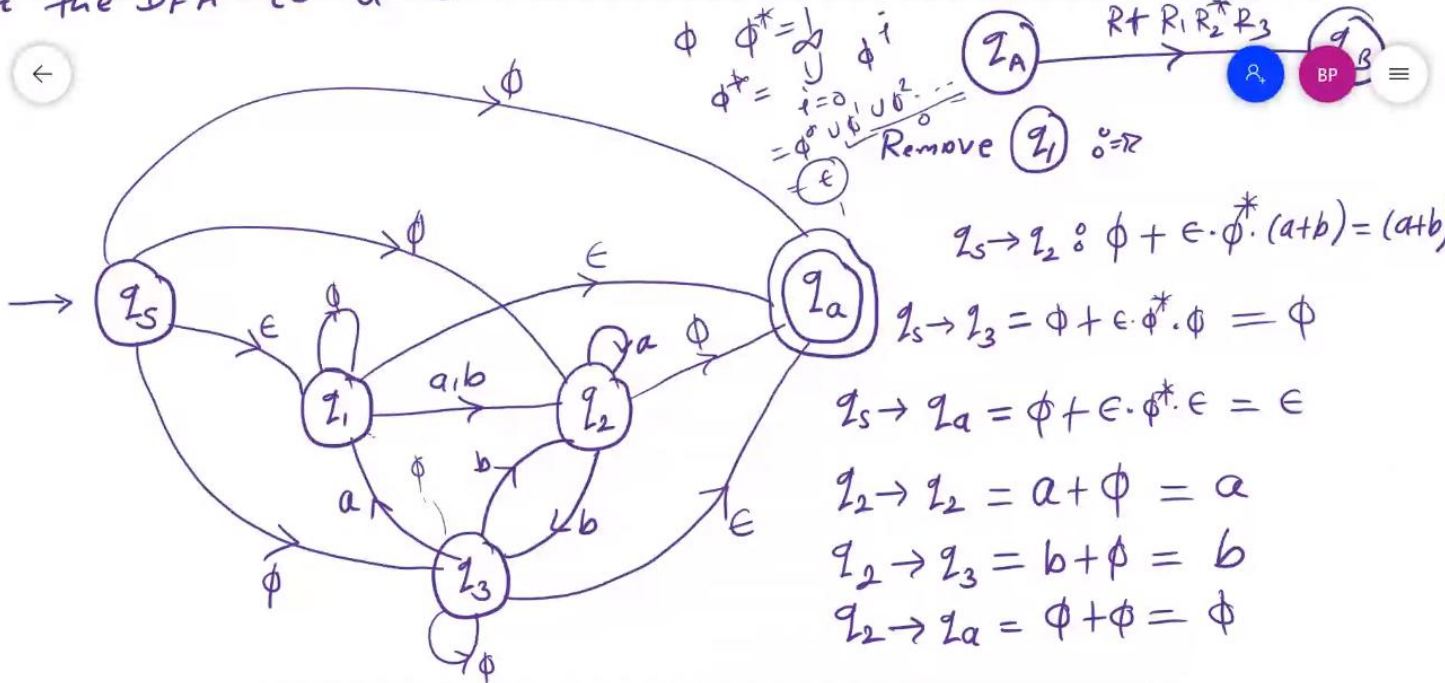
B098 Neelagiri Vijay



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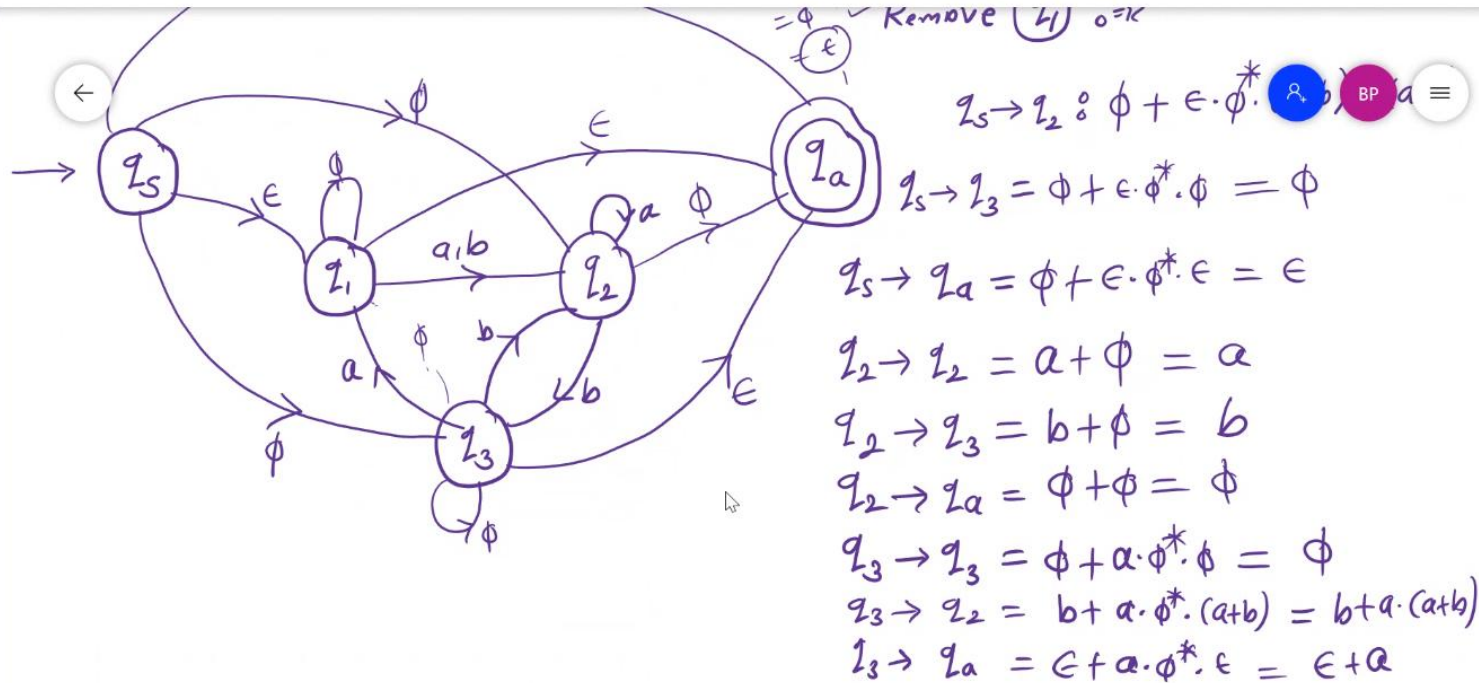


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Navigation icons for the presentation, including back, forward, and search.

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B096 SNEHARSH BELSA...

B110 Krishna Pandey SV...

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B098 Neelagiri Vijay

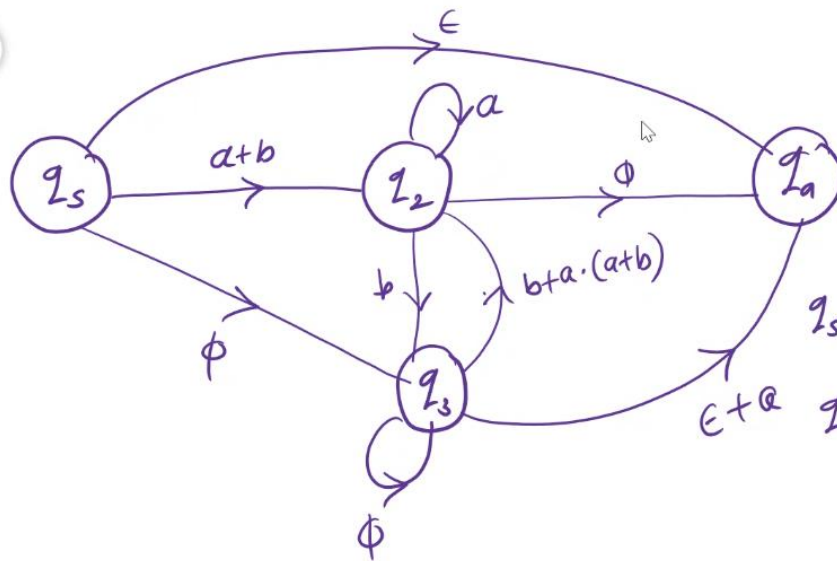
26 others

You

36 participants icon and other controls.

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Remove q_2

$$q_1 \rightarrow q_a: \epsilon + (a+b) \cdot a^* \cdot \phi = \epsilon$$

$$q_1 \rightarrow q_3 = \phi + (a+b) \cdot a^* \cdot b$$

$$q_3 \rightarrow q_3 = \phi + (b+a \cdot (a+b) \cdot a^* \cdot b)$$

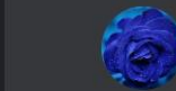


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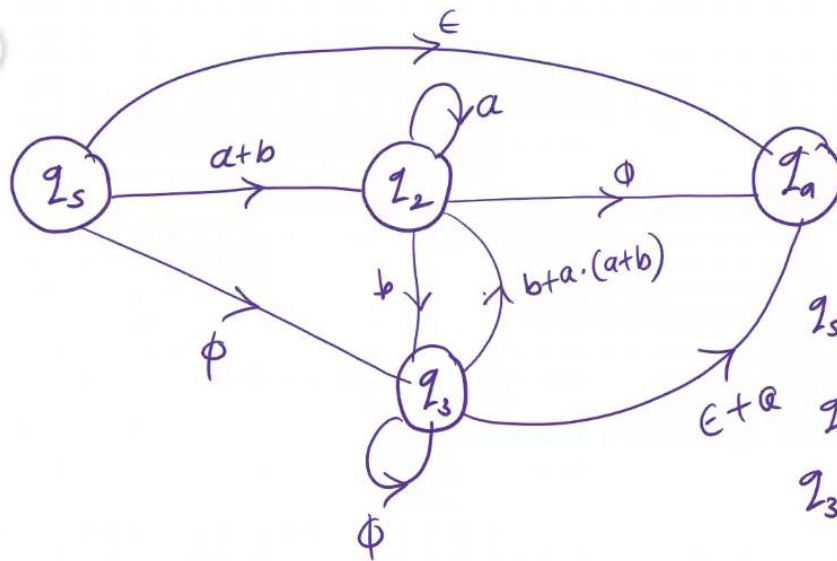


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Remove q_2

$$q_1 \rightarrow q_a: \epsilon + (a+b) \cdot a^* \cdot \phi = \epsilon$$

$$q_1 \rightarrow q_3 = \phi + (a+b) \cdot a^* \cdot b$$

$$q_3 \rightarrow q_3 = \phi + (b+a \cdot (a+b) \cdot a^* \cdot b)$$

$$q_3 \rightarrow q_a = (\epsilon + a) + (b+a \cdot (a+b) \cdot a^* \cdot \phi) = \epsilon + a$$



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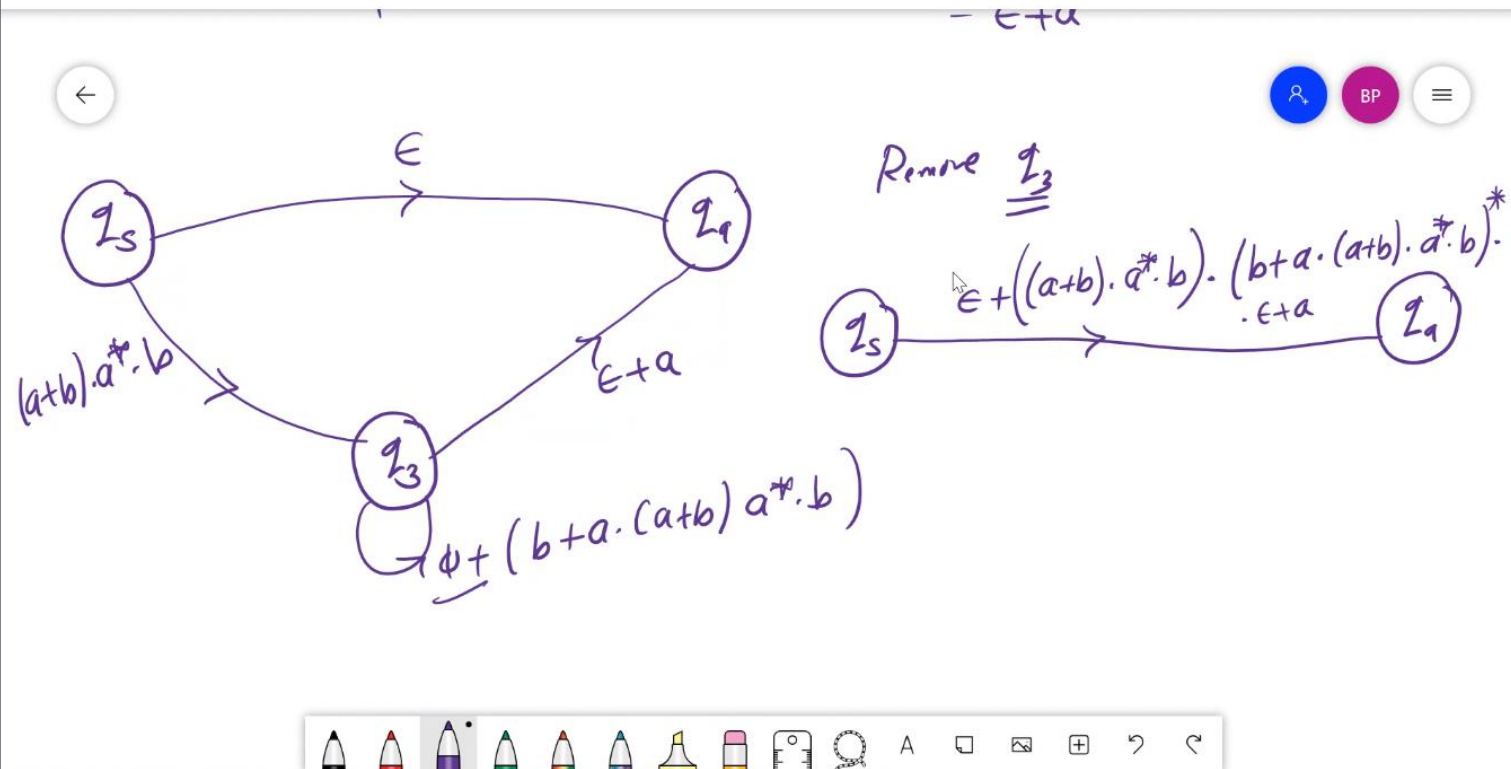
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Arden's Theorem

← If P and Q are two regular expressions over Σ and if P does not contain ϵ , then the following equation in R given by $R = Q + RP$ has a unique solution

i.e. $\underline{R = QP^*}$

$$R = Q + RP \implies R = QP^*$$



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i.e. $R = QP^+$

$$R = Q + RP \implies R = QP^*$$

$$R = Q + \underset{\downarrow}{RP}$$

replace R with QP^*

$$R = Q + QP^*P$$

$$R = Q(\epsilon + P^*P)$$

Identities.

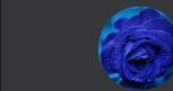
$$\epsilon + R^*R = R$$

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Windows taskbar icons: Start, Search, Task View, Edge, File Explorer, Mail, OneDrive, Teams, Word, Excel, PowerPoint, PDF Reader, Browser, and system tray icons for network, volume, and battery.

12:06 PM | Div-B | CS208 | AFL Theory Class | 15.03.2022 @ 11...

Zoom meeting controls: Mute, Video, Chat, Share Screen, Hand, and End Meeting.



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35 participants, chat icon, and screen sharing icon.

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replace R with QP^*
 $R = \emptyset + QP^*P$
 $R = \emptyset (\epsilon + P^*P)$

$R = QP^*$

Identities.

$$\epsilon + R^*R = R^*$$



BP



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3/15/2022

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$$R = QP$$

$$R = Q + RP$$

replace R with $Q + RP$

$$R = Q + (Q + RP)P$$
$$= Q + QP + RP^2$$

$$R = Q + QP + (Q + RP) \cdot P^2$$
$$= Q + Q$$

B110 Krishna Pandey SVNIT has left the meeting

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$$R = Q + RP$$

replace R with $Q + RP$

$$R = Q + (Q + RP)P$$
$$= Q + QP + RP^2$$

$$\downarrow$$
$$R = Q + QP + (Q + RP) \cdot P^2$$
$$= Q + QP + QP^2 + RP^3$$



BP



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$$R \leftarrow Q \left(\epsilon + P + P^2 + P^3 + \dots + P^n + P^* P^{n+1} \right)$$

P^*

$$R = Q P^*$$



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←
DFA to Regular Expression :

→ 2,



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34

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B095 AARTI OTARI SVNIT

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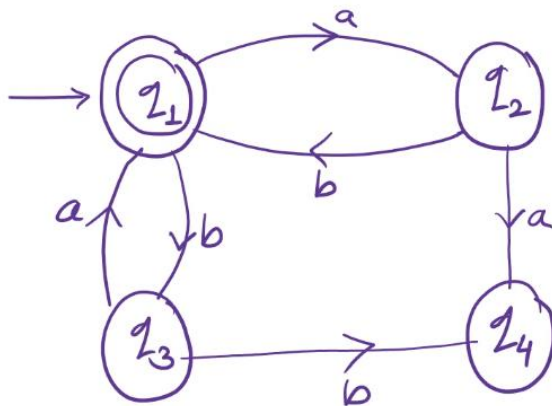
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←
DFA to Regular Expression :



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You

34
Zoom meeting controls: info, participants, chat, and gallery view buttons.

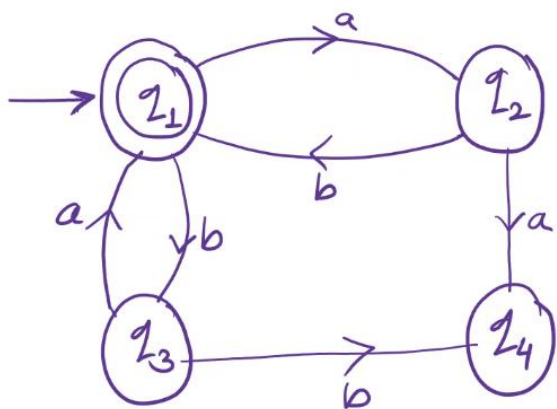
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Microphone on

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←
DFA to Regular Expression :



$$r_1 = \epsilon + r_2 b + r_3 a$$

$$r_2 = r_1 a$$

$$r_3 = r_1 b$$

$$r_4 = r_2 a + r_3 b$$



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3/15/2022

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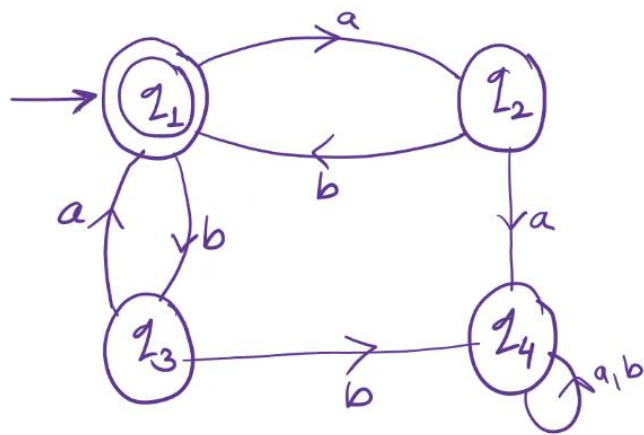
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DFA to Regular Expression :



$$r_1 = \epsilon + r_2 b + r_3 a \quad \text{--- I}$$

$$r_2 = r_1 a$$

$$r_3 = r_1 b$$

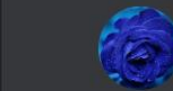
$$r_4 = r_2 a + r_3 b + r_4 a + r_4 b$$

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Windows taskbar with various application icons and system tray showing time 12:14 PM and date 3/15/2022.

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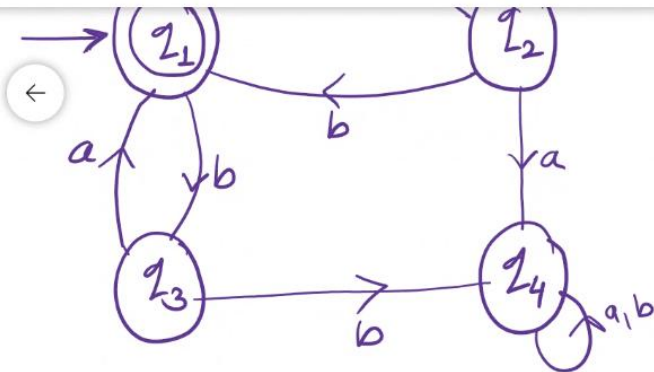


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$$q_2 = q_1 a \quad \text{--- II}$$

$$q_3 = q_1 b \quad \text{--- III}$$

$$q_4 = q_2 a + q_3 b + q_4 a + q_4 b \quad \text{--- IV}$$

$$q_1 = \epsilon + q_2 b + q_3 a$$

$$= \epsilon + q_1 a b + q_1 b a$$

$$q_1 = \underbrace{\epsilon}_R + \underbrace{q_1}_Q \underbrace{(ab+ba)}_P$$

$$R = \emptyset + RP \\ \Downarrow \\ R = \emptyset P^*$$

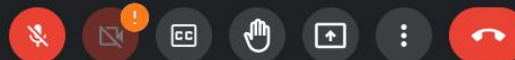


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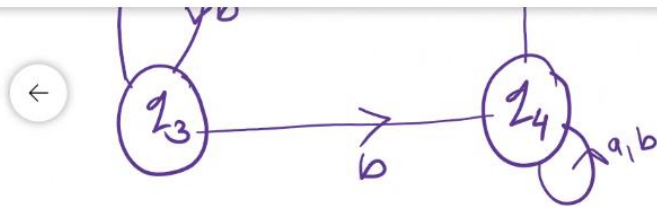


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$$q_4 = q_2a + q_3b + q_4a + q_4b - 1v$$

$$q_1 = \epsilon + q_2b + q_3a$$

$$= \epsilon + q_1ab + q_1ba$$

$$q_1 = \epsilon + q_1(ab + ba)$$

R Q R P

$$q_1 = \epsilon \cdot (ab + ba)^*$$

$$R = Q + RP$$
$$\Downarrow$$
$$R = QP^*$$

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Windows taskbar icons: File Explorer, Edge, Word, PowerPoint, Teams, OneDrive, etc.

12:17 PM
3/15/2022

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Participant list:

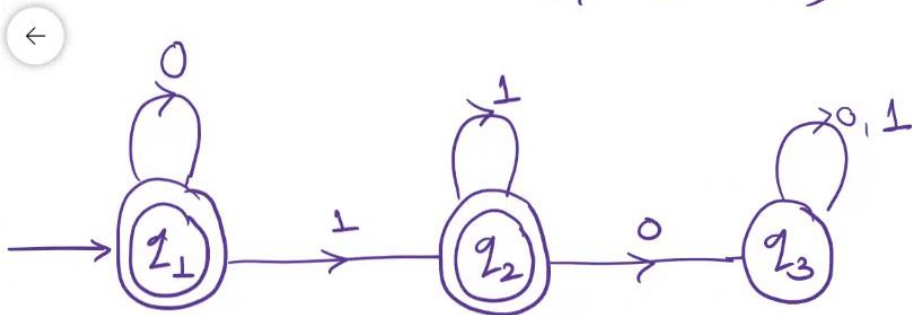
- B106 PARIL SVNIT
- B079 MIHIR GANDHI SV...
- Dr. Balu L. Parne SVNIT** (Active)
- B070 YADAV JAY RAJEN...
- B096 SNEHARSH BELSA...
- B095 AARTI OTARI SVNIT
- B126 TANGUDU VIVEK S...
- B098 Neelagiri Vijay
- 24 others
- You



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$$q_1 = (ab+ba)$$



$$q_1 = \epsilon + q_1 0$$

$$q_2 = q_1 1 + q_2 1$$

$$q_3 = q_2 0 + q_3 0 + q_3 1$$



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$$q_1 = \underset{R}{\epsilon} + \underset{R}{q_1} 0 = \underset{R}{\epsilon} \cdot 0^* = 0^*$$

$$q_2 = q_1 1 + q_2 1 = 0^* 1 + q_2 1 = 0^* 1 1^*$$

$$R \cdot E = 0^*$$

$$q_3 = q_2 0 + q_3 1$$



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$$q_1 = \underset{R}{\epsilon} + \underset{R}{q_1}0 = \underset{R}{\epsilon} \cdot \underset{R}{0}^* = \underset{R}{0}^*$$

$$q_2 = q_11 + q_21 = 0^*1 + q_21 = 0^*11^*$$

$$\begin{aligned} R \cdot E &= 0^* + 0^*11^* \\ &= 0^* (\epsilon + 11^*) \end{aligned}$$

$$R \cdot E = 0^*1^*$$

$$q_3 = q_20 + q_31$$

$$\epsilon + RR^* = R^*$$



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