

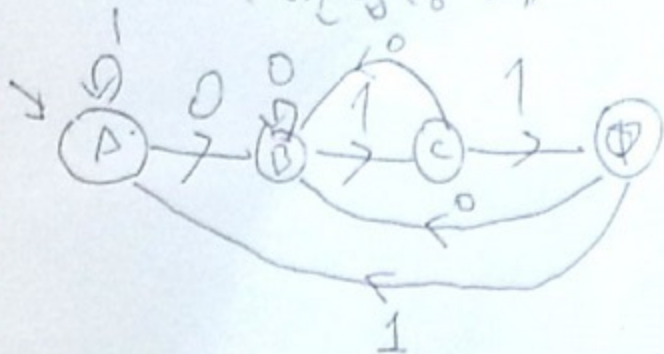
10/17 미로 강. ~~FA~~ Regular Languages

$\overline{FA} \rightarrow RE$

1. Recursive def. — Easy to understand by!
(prove) program

Difficult to implement.
(~~program~~) by human being.

2. Simultaneous equation
(미로 방정식)



$(0|1)^* 0|1$

$$A \rightarrow 1A | 0B$$

$$B \rightarrow 0B | 1C$$

$$C \rightarrow 0B | 1D$$

$$D \rightarrow 0B | 1A | \epsilon$$

regular grammar

$$A \Rightarrow 0B$$

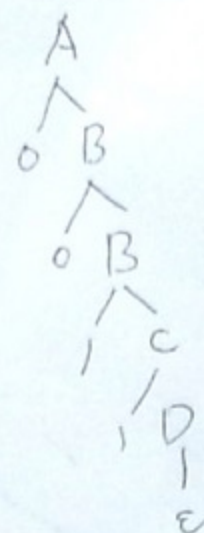
$$\Rightarrow 00B$$

$$\Rightarrow 001C$$

$$\Rightarrow 0011D$$

$$\Rightarrow 0011\epsilon$$

derivation



deri. tree

regular equation

$$A = 1A + 0B$$

$$B = 0B + 1C$$

$$C = 0B + 1D$$

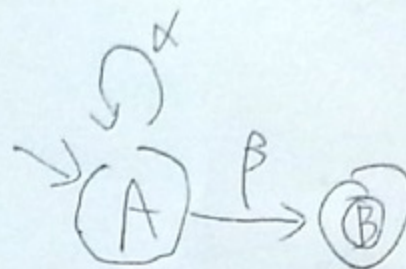
$$D = 0B + 1A + \epsilon$$

$$\epsilon = A + \epsilon$$

4개의 미지수 (A, B, C, D)

4개의 식

\therefore 변형식 풀이 가능.
(R.E.)



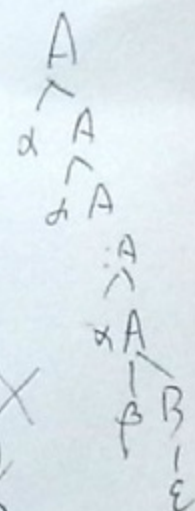
$$A = \alpha A + \beta$$

Sol. $A = \alpha^* \beta$

$$A = \frac{1}{1-\alpha} A \cdot \beta$$

$$= (1 + \alpha + \alpha^2 + \dots) \beta$$

$$= \alpha^* \beta$$



$$A = 1A + 0B$$

$$B = 0B + 1C$$

$$= 0B + 1(0+10)B + 111A + 11$$

$$= 111A + (0+10+110)B + 11$$

$$A = 1A + 0 \left(\underline{(0|10|110)}^* (111A + 11) \right) C = 0B + 1D \quad \times$$

$$= (0|10|110)^* (111A + 11)$$

$$D = 0B \times (1A + \epsilon)$$

$$= (1 | 0 | 0 | 10 | 110)^* 111 A + 0 (0 | 10 | 110)^* 11$$

$$= (1 | 0 | (0|10|110)^* 111)^* 0 (0|10|110)^* 11$$

$$\stackrel{?}{=} (0|1)^* 0||$$

2/0/0

