CSC 220

11/12/2020

RE

Expression	strings
10^*	a 1 followed by any # of 0's
$0\cdot(0+1)^*$	All strings begining by at least one zero.
$0+1$	0 or 1
$(1\cdot1)^*$	even # of 1's

RE: $(aa)^* . (bb)^* b$

what is L?

# of a's even

# of b's odd

$$L_1 = \{ a^{2n} b^{2m+1} \mid m, n \geq 0 \}$$

$$L_2 = \{ a^{2n} b^{2n+1} \mid n \geq 0 \}$$

$L_1 \neq L_2$

in L_2 $n=0$ $a^0 b^1$

$n=1$ $a^2 b^3$

$n=2$ $a^4 b^5$

$aa.b \notin L_2$

2

RE: Set of strings of one or more 0's followed by a 1.

$$0 \cdot 0^* \cdot 1.$$

Contain at least 2 0's

$$(0+1)^* \cdot 0 \cdot (0+1)^* \cdot 0 \cdot (0+1)^*$$

not consecutive

RE: bit strings that begin and end with the same symbol.

$$\lambda + 0.(0+1)^*.0 + 1.(0+1)^*.1$$

$0+1$.

should be here too

$$L(0+1^*.01) = L(0) \cup L(1^*.01)$$

$$= \{0\} \cup \left(L(1^*) . L(0) . L(1)\right)$$

$$= \{0\} \cup \left(\{\lambda, 1, 11, 111, \ldots\} . \{0\} . \{1\}\right)$$

$$= \{0\} \cup \left(\{0, 10, 110, 1110, \ldots\}\{1\}\right)$$

$$= \{0\} \cup \{01, 101, 1101, 11101, \ldots\}$$

$$= \{0, 01, 101, 1101, 11101, \ldots\}$$

$$L(\lambda + 1) = L(\lambda) \cup L(1)$$
$$= \{\lambda\} \cup \{1\}$$
$$= \{\lambda, 1\}$$

$$L(\lambda \cdot 1) = L(1) = \{1\}$$

or

$$L(\lambda \cdot 1) = L(\lambda) \cdot L(1)$$
$$= \{\lambda\} \cdot \{1\} = \{1\}$$

$$L(\emptyset + 1) = L(\emptyset) \cup L(1)$$
$$= \emptyset \cup \{1\} = \{1\}$$

$$L(\emptyset \cdot 1) = L(\emptyset) \cdot L(1)$$
$$= \emptyset \cdot \{1\} = \emptyset$$

$$L(\emptyset + \lambda + 1 + 01) = ?$$

$$L(\emptyset) \cup L(\lambda) \cup L(1) \cup L(01)$$
$$= \emptyset \cup \{\lambda\} \cup \{1\} \cup \{01\} = \{\lambda, 1, 01\}$$

$1^{*}.0^{*}$

$$L(1).L(0)^{*} = \{1\}.\{\lambda, 0, 00, 000, \ldots\}$$