lecture 6:-

I²A.

1- There must be a Starting State.
2. " may be 0, 1, 2 ... final states.
3. for each state - there must be exactly one transition for each alphabet.

ab
a, aa, aaa
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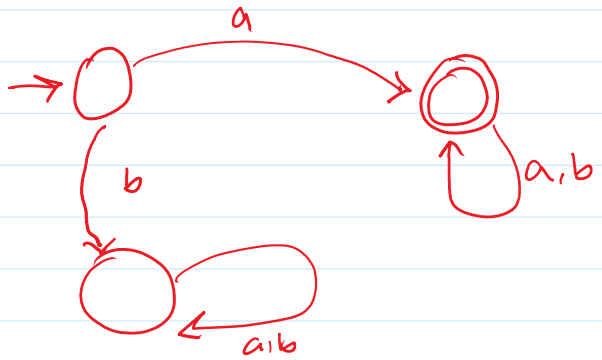
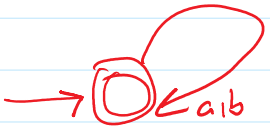


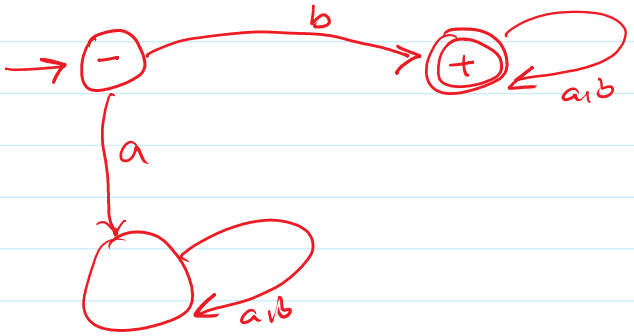

$\Sigma = \{a, b\}$.

Question.
$a(a+b)^*a$.

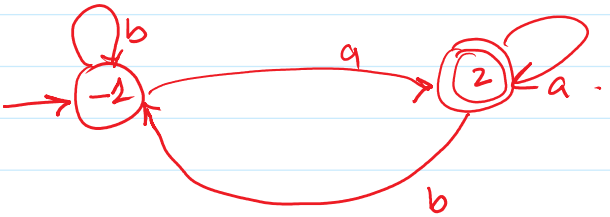



$\Sigma^* = \{\Lambda, a, b, aa, ab, ba, bb$
$---\}$.

All strings starting with b.
Ex:- $b(a+b)^*$ = b, ba, bb, baa, bab, bba, bbb.

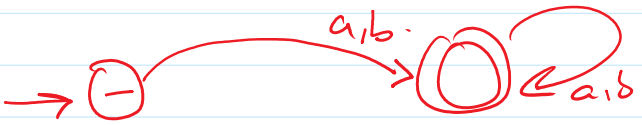



Ex $(a+b)^*a$ All strings ending in a.
$= \{a, aa, ba, aaa, aba, baa, bba, ---\}$.

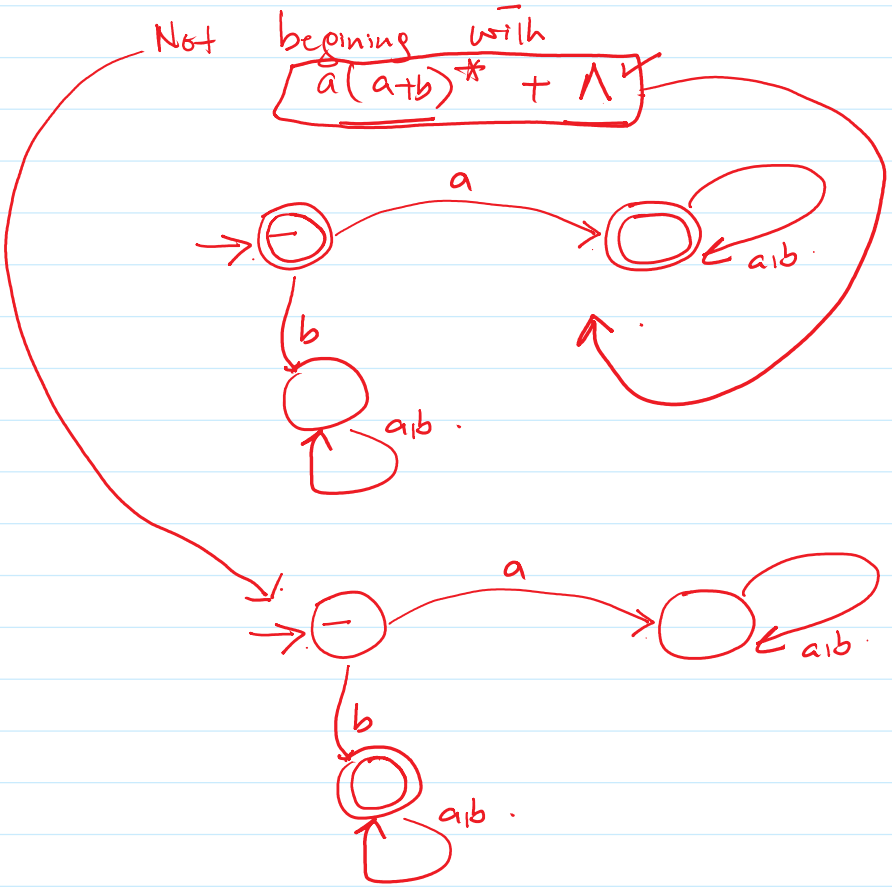



bb = ?
ab = ? X.
aaaaab. X

Ex $(a+b)(a+b)^*$ $= \{a, b, aa, ab, ba, bb, aaa, aab, aba, abb, baa, bab, bba, bbb \dots\}$

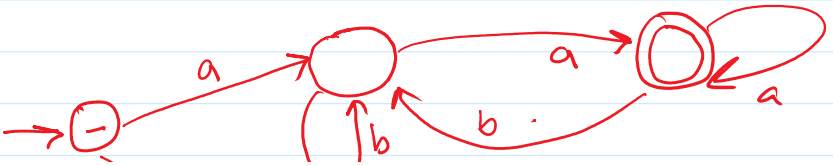



Not beginning with $a(a+b)^* + \Lambda$

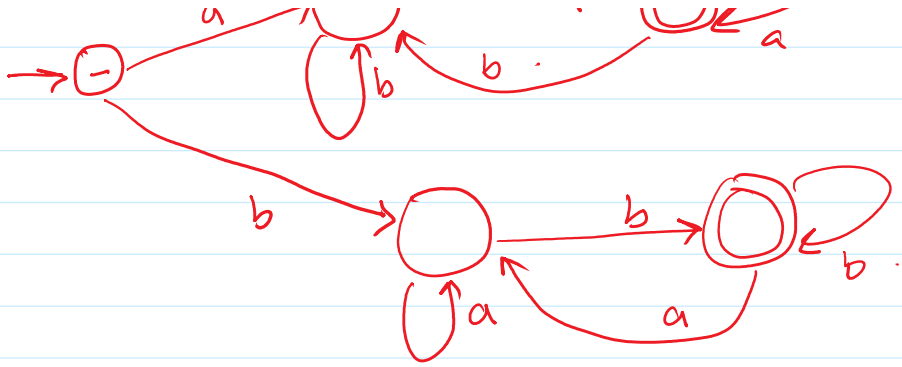



Ex:- Beginning & ending in same letter. length $\geq 2$. $\Sigma = \{a, b\}$.

$a(a+b)^*a + b(a+b)^*b$

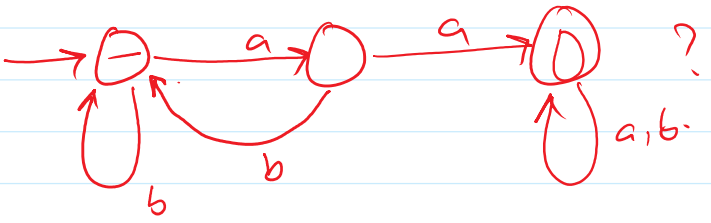



aaba ✓ abb ✗
aa ✓ ababa ✗
aba ✓




aa ✓ abiabx
aba ✓
abaa ✓
aaba ✓
!

Ex. $(a+b)^* aa\ (a+b)^*$




?

ba X.
a X. ab X
bb X.

aa,
aaa ✓ aaa ✓
baa ✓ aab ✓
aba X. bab. X.
abb X. bba. X.

EVEN EVEN.

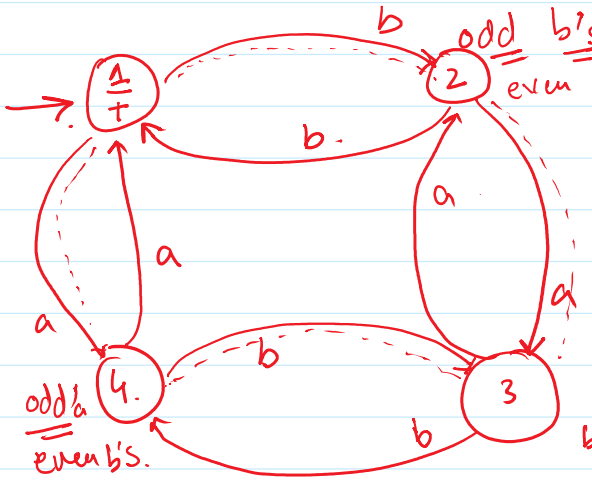
$\Sigma = \{a, b\}$.

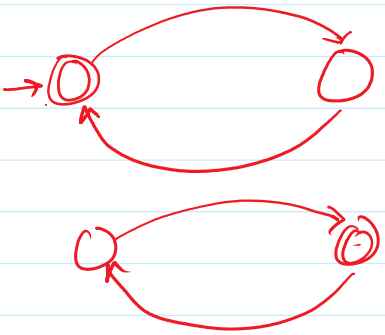
$= \{ \Lambda, aa, bb, aabb, abba, abab, aaaa, bbaa, baab, baba, bbbb \}$.

$((a+a)(a+a))^* ((b+b)(b+b))^*$

$= ?$

$=$ HW. ?



Transition tables. → You can construct one from the other.

Initial Inputs

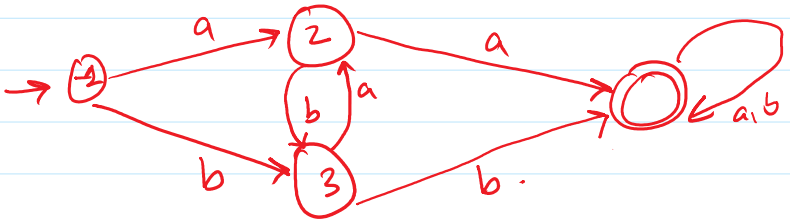
Transition tables. → You can construct one from the other.

| Initial States | Inputs a | b. |
|---|---|---|
| 1 | 4 | 2 |
| 2 | 3 | 1 |
| 3 | 2 | 4 |
| 4 | 1 | 3. |

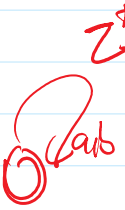
Transition ⟺ Graph.

Ex:- $(a+b)^*(aa+bb)(a+b)^*$.

one a achieved.




$\Sigma^*$.




one b achieved.

Ex: aaa or bbb. Containing atleast this