PES UNIVERSITY, Bangalore

(Established under Karnataka Act No. 16 of 2013)

Department of Computer Science & Engineering

Automata Formal Languages & Logic

Question Bank - Unit 2

Questions from the Prescribed Textbook

Topic	Exercise No.	Question No's
Regular Grammar	**3.3**	**Q2-Q7, Q10-Q13, Q16**
Finite automata to regular grammar	**3.3**	**Q2-Q7, Q10-Q13, Q16**
Regular grammar to finite automata	**3.3**	**Q1**
Regular Expression to regular grammar	**3.3**	**Q2-Q7, Q10-Q13, Q16**

Extra Questions

1. Construct right-linear or left-linear grammars for the regular language of binary strings in which every 0 is followed by 11. Construct a parse tree for the string 0111011.

2. Construct right-linear or left-linear grammars for the regular language of binary strings starting with 000 or ending with 111 (or both). Show the derivation of 00010111.

3. Construct right-linear or left-linear grammars for the regular language of binary strings in which the sum of the last three digits is even (e.g., 00101011 but not 00101001).

PES UNIVERSITY, Bangalore

(Established under Karnataka Act No. 16 of 2013)

Department of Computer Science & Engineering

Automata Formal Languages & Logic

4. Construct right-linear or left-linear grammars for the regular language of strings over {*a*, *b*, *c*} that contain at least one *a* and at least one *b*.

5. Construct right-linear or left-linear grammars for the regular language of strings over {*a*, *b*} that contain at least three *a* s or at least two *b* s.

6. Construct right-linear or left-linear grammars for the regular language of strings over {*a*, *b*} in which some number of *a* s is followed by some number of *b* s with the total length of the string being divisible by 3. Show the parse tree for *aabbbb*.

7. Construct right-linear or left-linear grammars for the regular language of strings over the alphabet {*a*, *b*} of the form $(ab)^n$, e.g., *ababab*.

8. Match the Regular expression with regular grammar.

Regular Expression	**Regular Grammar**
(0+10*10*)*	S->0S|1A| λ A->1S|0B B->0A|1B
(1+0)*10(1+0)*	S->0A A->10A0|B B->1
(0+1(01*0)*1)*	S->0S|A| λ A->1B B->0A|1A|0|1
0*(1(0+1))*	S->1A|0S| λ A->1S|0A
0*(10)*1(0)*	S->0S|1A A->1A|0B B->1A|0B| λ

9. Convert the regular expression b*ab*(ab*ab*)* to right linear grammar .

PES UNIVERSITY, Bangalore

(Established under Karnataka Act No. 16 of 2013)

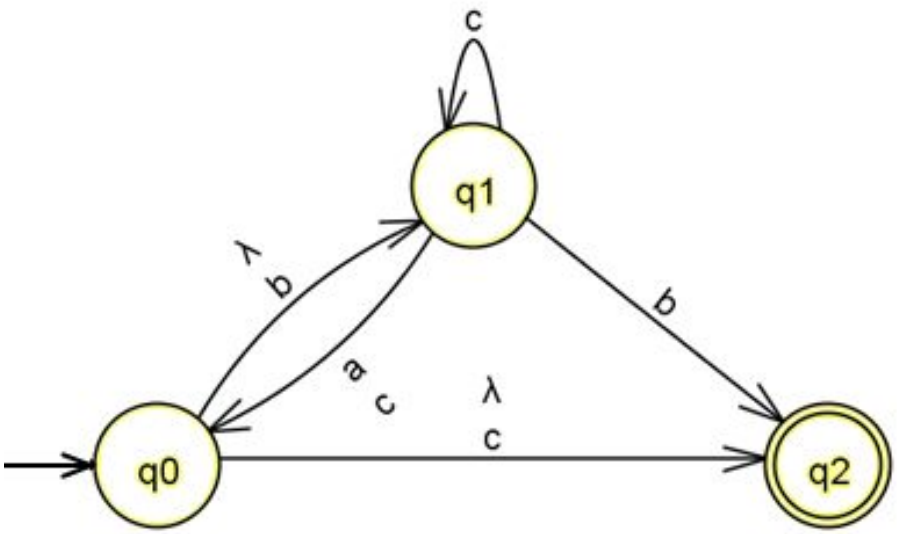
Department of Computer Science & Engineering

Automata Formal Languages & Logic

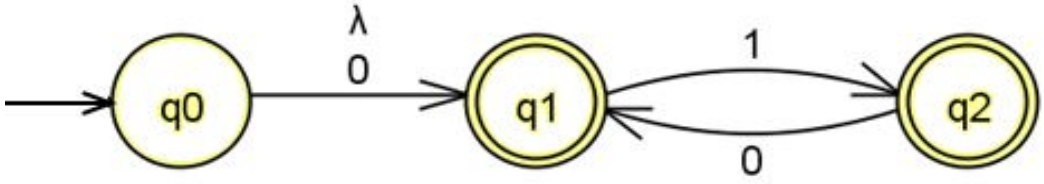
10. Convert the regular expression $((aa)^*(bb)^*b + (aa)^*a(bb)^*)(cc)^*$ to regular grammar.

11. Convert the regular expression $(b + \lambda)(a\ (a + \lambda)^*(b + \lambda))^*(a + \lambda)^*$ to regular grammar.

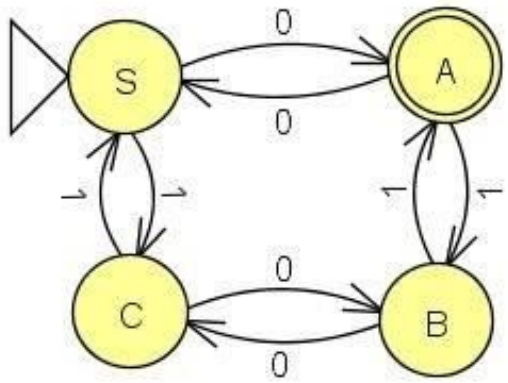
12. Convert the finite automata to regular grammar.



13. Convert the finite automata to regular grammar.



14. Convert the automata to regular grammar.



15. Convert the regular grammar to finite automata.
    S->aaaS|aA|aaB|C
    A->bbC
    B->bC
    C->bbbC| λ

16. Convert the regular grammar to finite automata.
    S->0A|1S| λ
    A->0A|1B| λ
    B->1S|0C| λ
    C->0C|1C

17. Convert the regular grammar to finite automata.
    S->1S|0A| λ
    A->0A|1B| λ
    B->1S|0C| λ
    C->0C|1C