

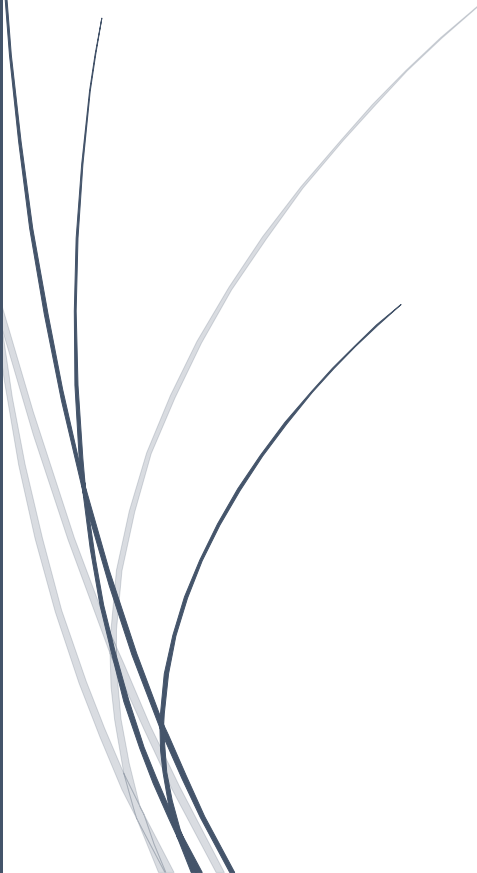
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Compiler construction

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Question No: 1 and 2

M. Abdullah Mintas F.D: 13864 Subject: Compiler Construction

Q1) Construct a regular expression defining each of the following languages over the alphabet $\Sigma = \{a, b\}$

1) All words having even length.

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

2) All words having atleast three a and three b.

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

3) All words having at least double a and triple b.

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

4) All word start with four a or triple b.

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

Q2) for figure 3 if q_0 is the initial state, draw a transition table?

	0	1
$\rightarrow q_0$	q_1	q_2
q_1	q_3	q_2
q_2	q_1	q_4
q_3	q_3	q_2
q_4	q_1	q_4

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Question No: 3

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Q3) Define what is the finite automation, what can be regular expression of the given diagram given in figure (1)?

Ans) The basic function of finite automation is to recognize the patterns. It takes symbol as a type of string or in the form of string as an input and it changes the state accordingly. When the required symbol is found, then the transition occurs. At the time of the process, transition, the automata can either move to next state or will stay its initial state. finite automation has two states, Accept state, Reject state. When the execution of the processed string is successful, and the automata reached its final state, then it will be accepted.

A finite automation is a collection of 5-tuple $(Q, \Sigma, \delta, q_0, F)$, where:-

- 1) Q : finite set of state
- 2) Σ : finite set of input symbol
- 3) q_0 : initial state
- 4) F : final state
- 5) δ : transition function.

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Question No: 4

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Q4) Draw a transition table for a diagram given figure 2-(0) is the starting state and dotted lines are dead transition.

	a	b	c	d	e	f	g	k
0	1	-	-	-	2	-	-	-
1	1	3	-	-	2	-	-	-
2	1	-	-	-	2	4	-	-
3	5	-	6	-	7	-	-	-
4	8	-	-	-	9	-	10	-
5	5	-	6	-	7	-	-	-
6	-	-	6	11	7	-	-	-
7	-	-	6	-	7	12	-	-
8	8	-	-	-	9	-	10	-
9	8	-	-	-	9	-	10	13
10	-	-	-	-	9	-	10	13
11	5	-	6	-	7	-	-	-
12	14	-	15	-	16	-	-	-
13	8	-	-	-	9	-	10	-
14	14	-	15	-	16	-	17	-
15	-	-	15	-	16	-	17	-
16	14	-	15	-	16	-	17	-
17	14	-	15	-	16	-	17	14
18	14	-	15	-	16	-	17	-
19	14	-	15	-	16	-	9	-

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