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SUBJECT

COMPILER CONSTRUCTION.

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

(a) All words having even length

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

(b) All words having at least 3a & 3b

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

(c) All words having at least double 'a' or triple 'b'

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

(d) All words start with four 'a' or triple 'b'.

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

QUESTION # 2

For figure '3' if q_0 is the initial state then draw a transition table for it.

	0	1
$\rightarrow q_0$	q_1 q_2	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

QUESTION # 3

Define what is the finite automaton
 What can be the regular expression of given
 diagram given in figure 1.

ANSWER:

Finite automata are used to recognise pattern it takes, the string of input as symbol. As input change its state accordingly. When the design symbol is found the transition occur. In the time of transition the automata can be either move to next state or stay in same state. Finite automata have 2 more state.

Accept state

Reject state

When input string is processed successfully & automata reach final state then it will accept.

A finite automata is a collection of five tuple.

$$(Q, \Sigma, q_0, F, \delta)$$

QUESTION # 4

Draw a transition for a diagram given fig. 2
 (0) is the starting state & dotted line are
 dead transition.

	a	b	c	d	e	f	g	h
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	-
10	-	-	-	-	9	-	10	13
11	6	-	6	-	7	-	-	-
12	14	-	15	-	16	-	-	-
13	8	-	-	-	9	-	10	-
14	14	-	15	-	16	-	17	-
15	-	-	15	18	-	-	17	-
16	14	-	15	-	16	-	17	-
17	14	-	15	-	16	-	17	14
18	14	-	15	-	16	-	17	-
19	14	-	15	-	16	-	17	-