TOA Assignment 01

20k-0190
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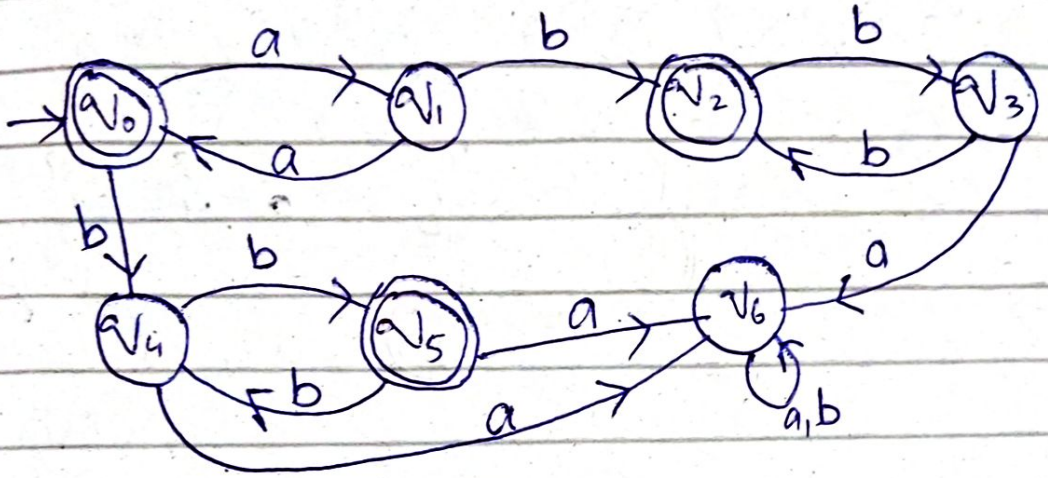
$L1 = \{ a^n b^m : (n+m) \text{ is even} \}$

$RE = (aa)^* (bb)^* + a(aa)^* b(bb)^*$

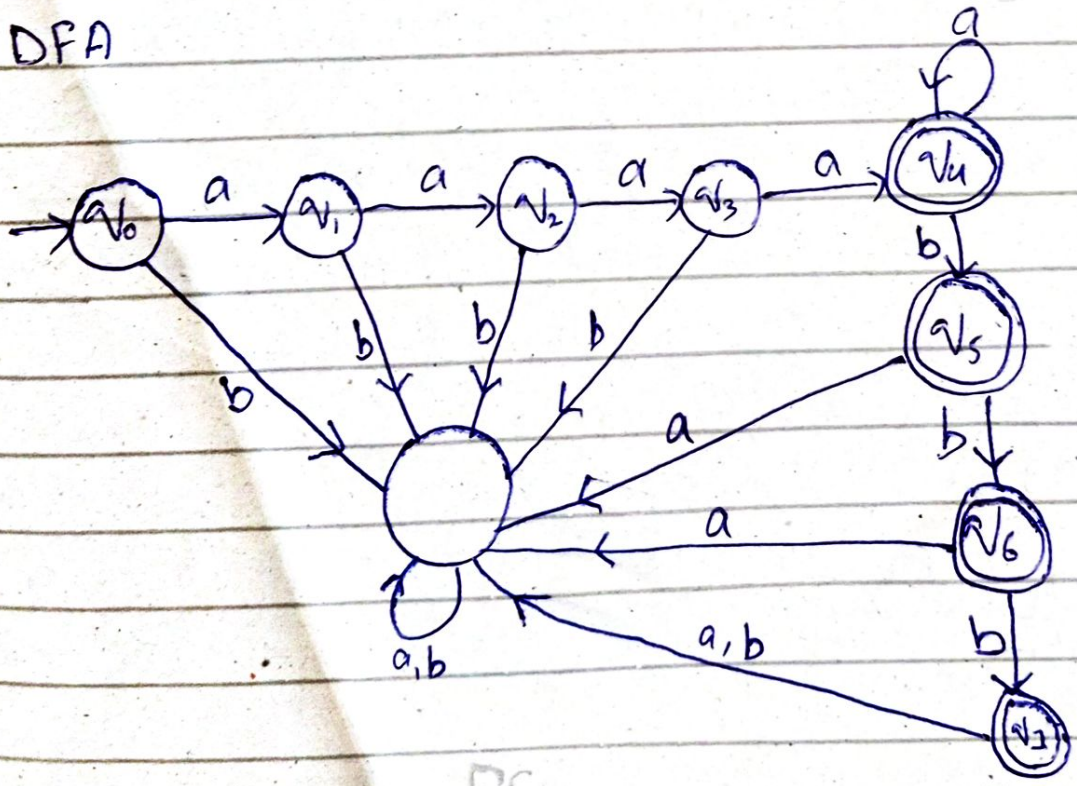
DFA



$L2 = \{ a^n b^m : n \geq 4 \; ! \; m \leq 3 \}$

$RE = aaaa^+ (\lambda + b + bb + bbb)$

DFA



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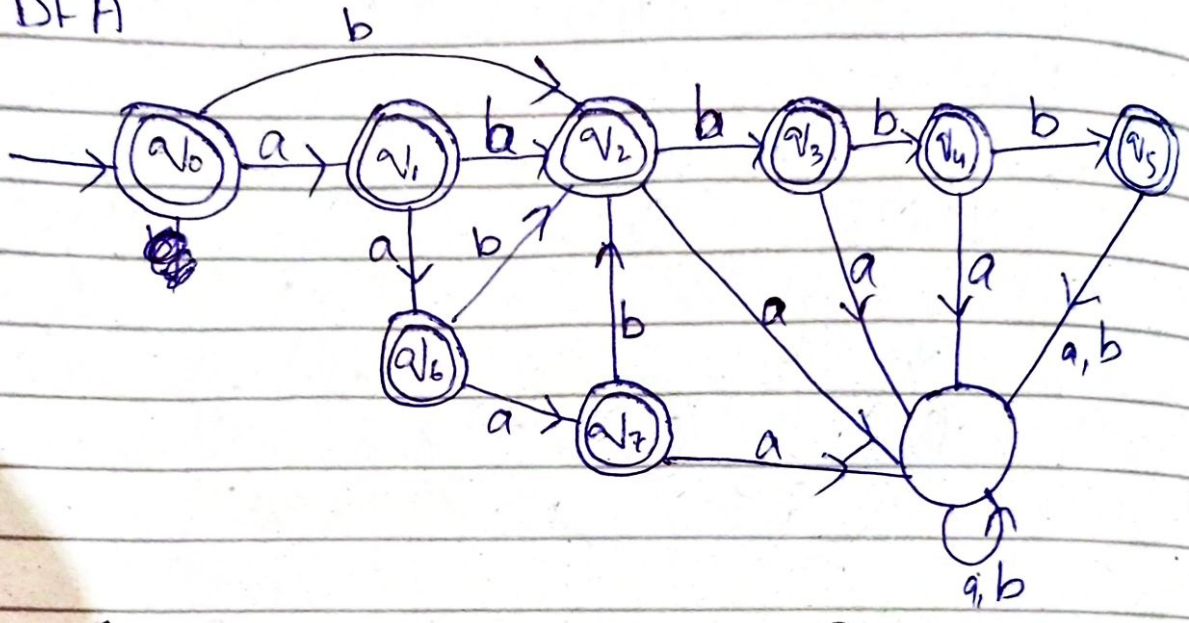
$L3 = \{a^n b^m,\ n < 4,\ m \leq 4\}$

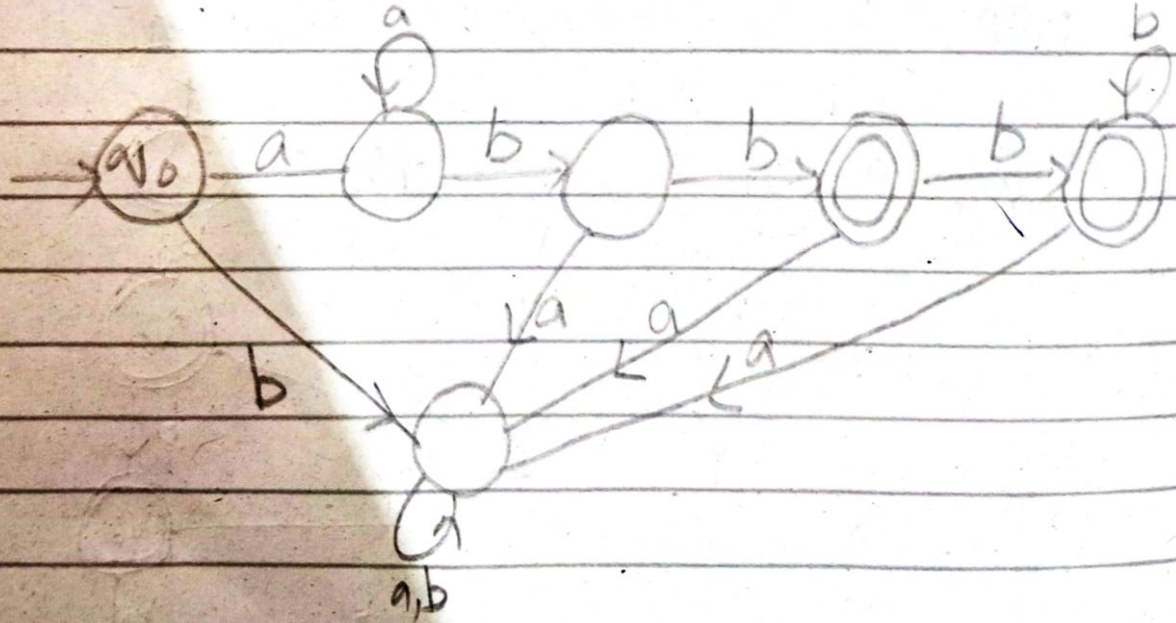
RE: $(\lambda + a + aa + aaa)(\lambda + b + bb + bbb + bbbb)$

DFA



$L4 = \{a^n b^m : n \geq 1, m \geq 1, nm \geq 3\}$

RE: $a^+bbb^+ + aaa^+b^+ + aa^+bb^+$



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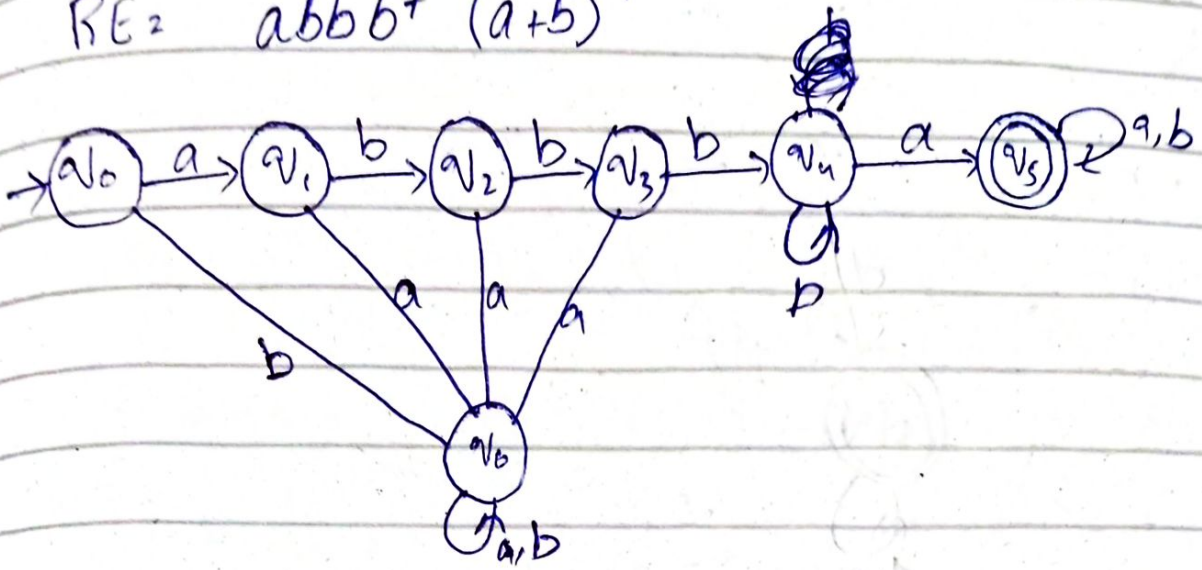
L5 = { ab^n w: $n \geq 3$, $w \in \{a,b\}^+$ }

RE = $abbb^+(a+b)^+$



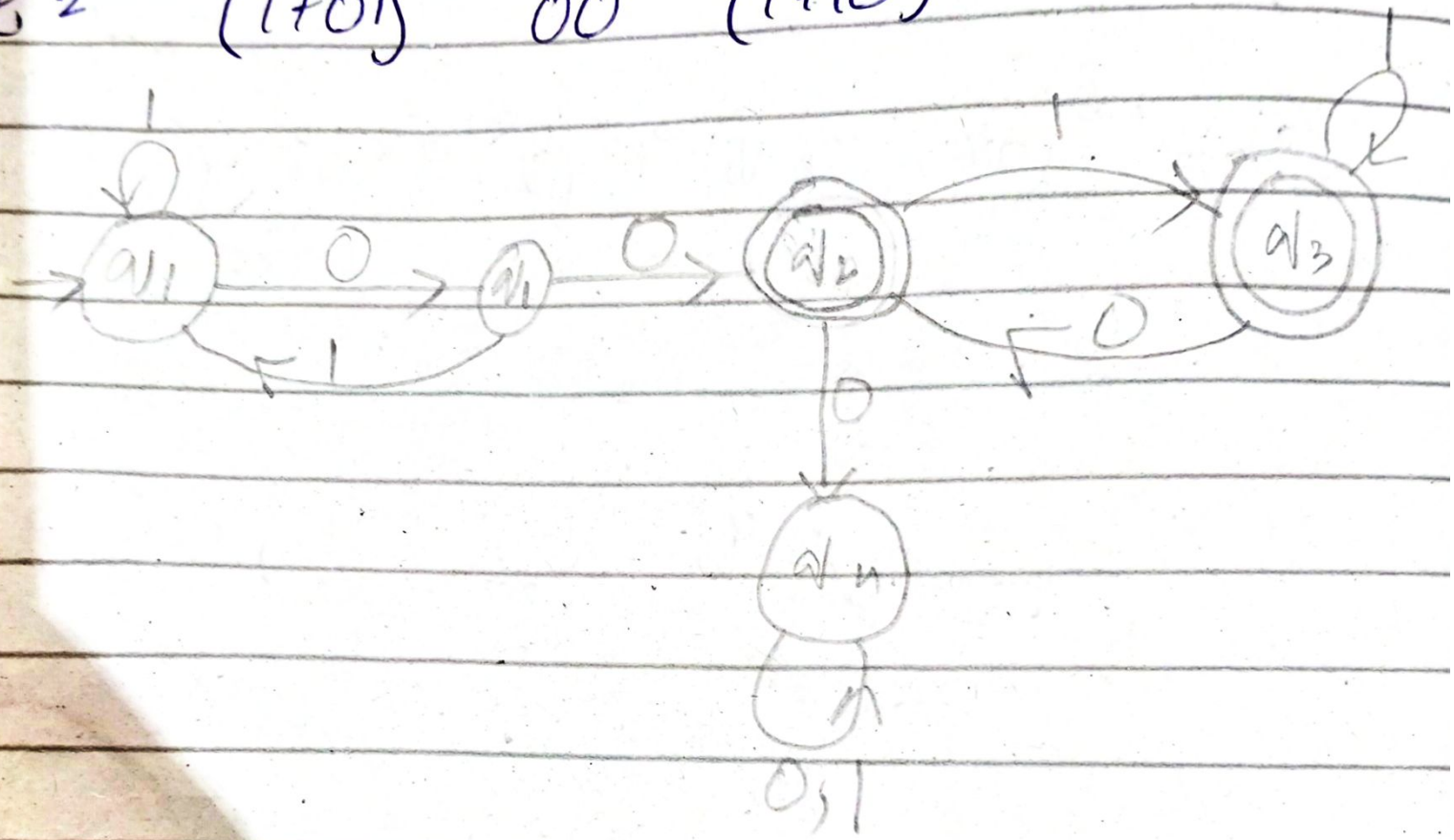
L6 = { vwv : v, w $\in \{a,b\}^*$, |v| = 2 }

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

No.

L7 Having exactly one pair of consecutive zeros

RE = $(1+01)^*\ 00\ (1+10)^*$



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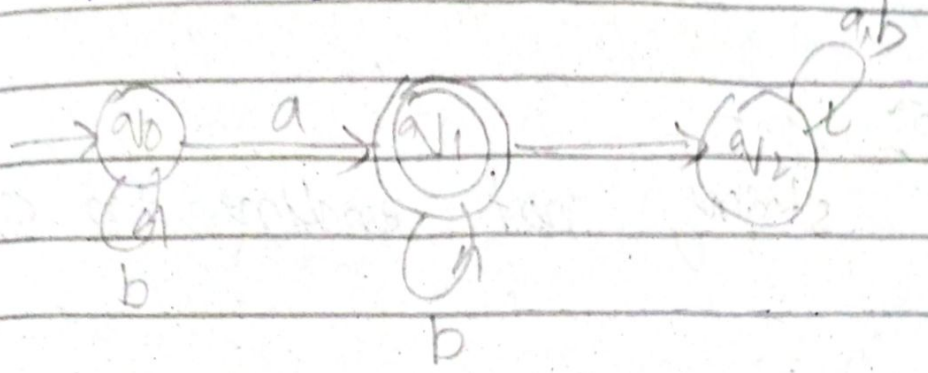
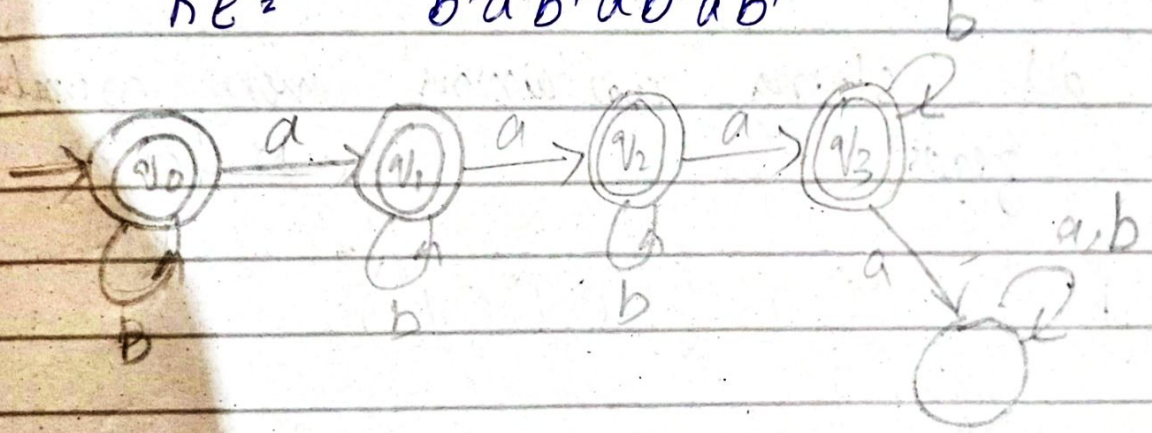
L8 having excatly one a

RE = $b^* a b^*$



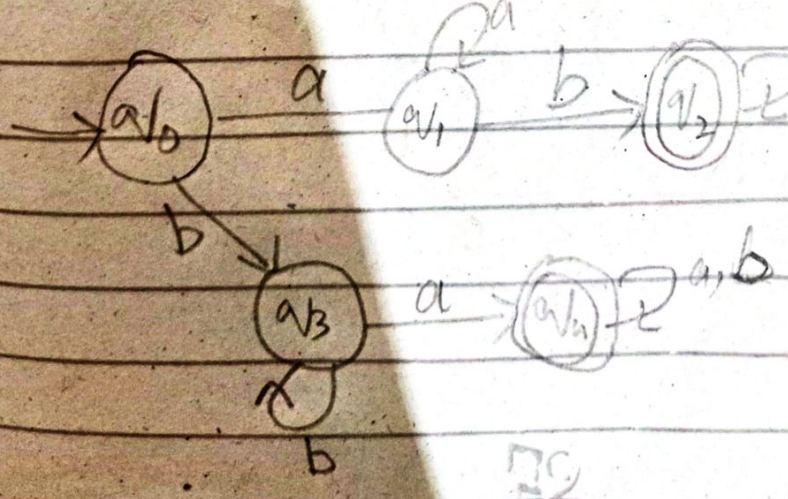
L9 Strings Containing no more than 3 a's

RE = $b^* a b^* a b^* a b^*$



L10 All string contain at least one occurase of each symbol in alphabet

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



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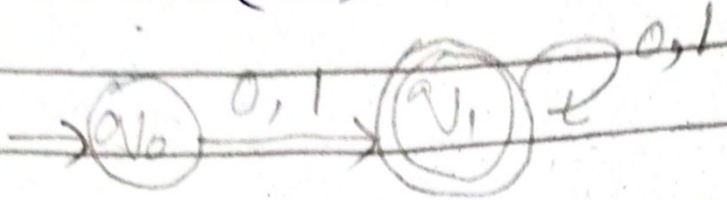
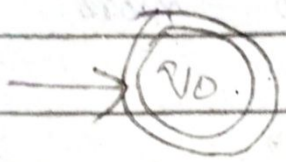
L11 all string ending in 0,1

RE = $(1+0)^+0$



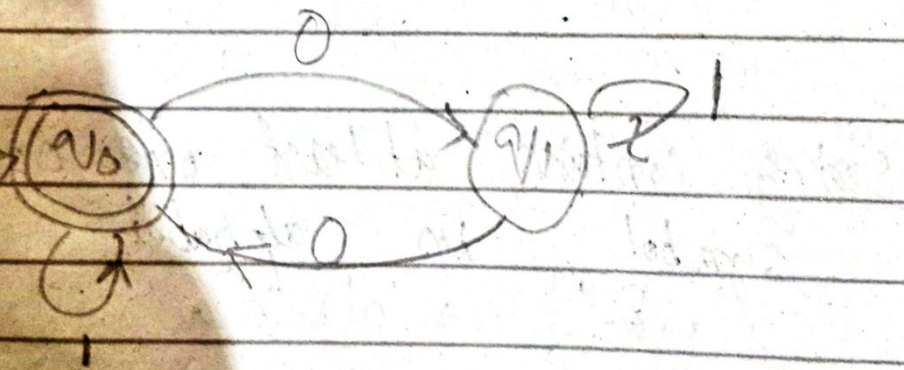
L12 all string not ending in 0,1

RE = λ



L13 all string containing even number of zeros

RE = $1^* + (1^*01^*01^*)^*$



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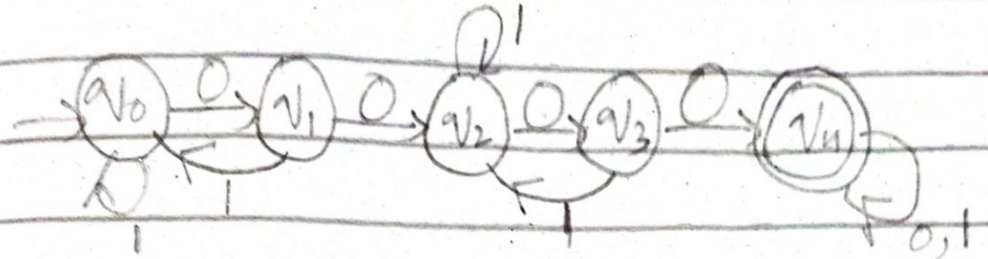
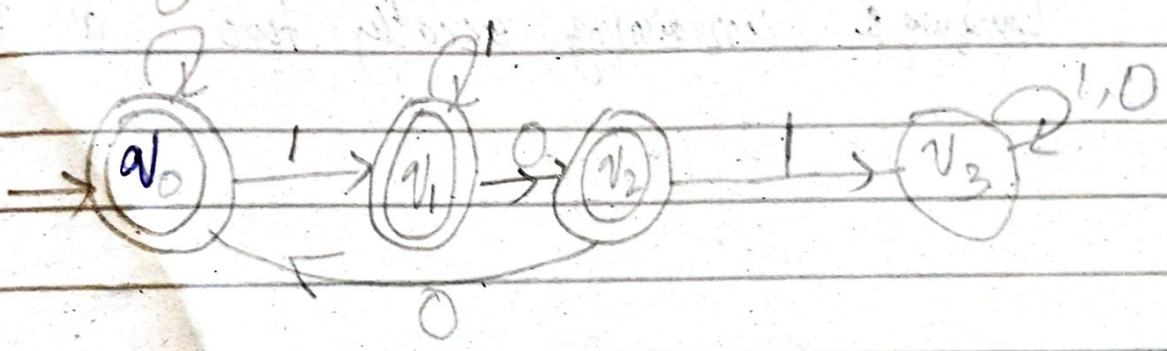
L14 Strings having at least two occurrence of substring 00

RE = $(0+1)^* 00 (0+1)^* 00 (0+1)^*$



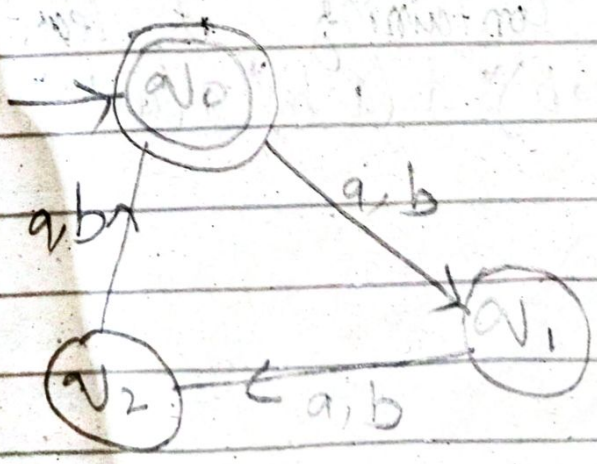
L15 all string not containing 101

RE = $0^* (1^+ 00^*)^* 1^* 0^*$



L16 $\{w : |w| \bmod 3 = 0\}$

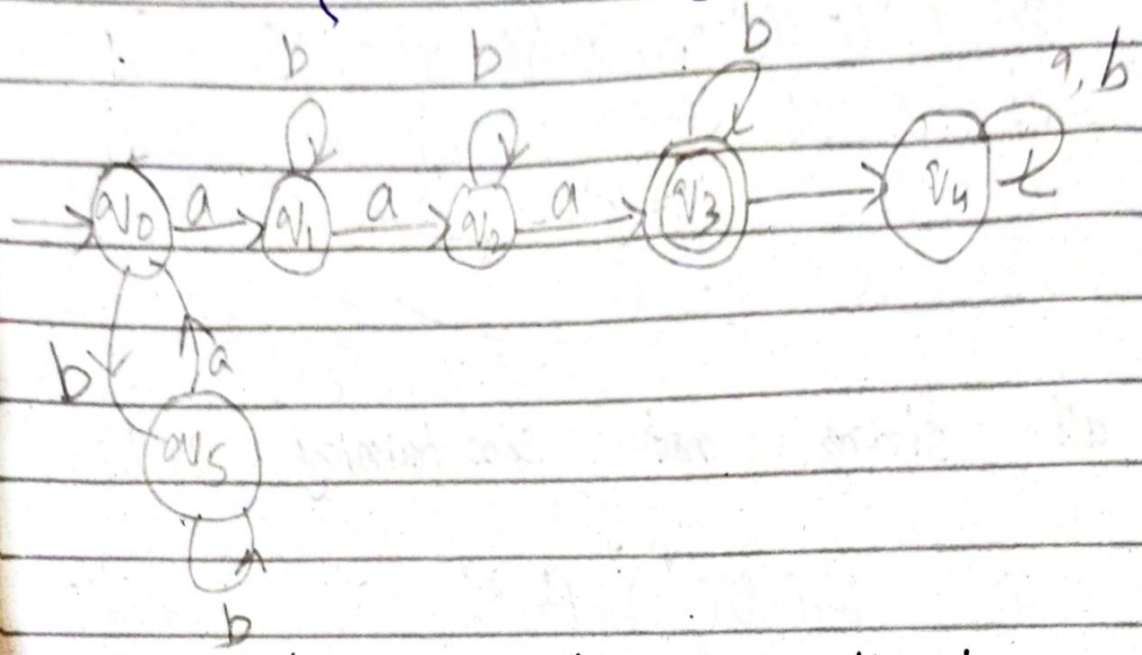
RE = $((a+b)^3)^*$



Date

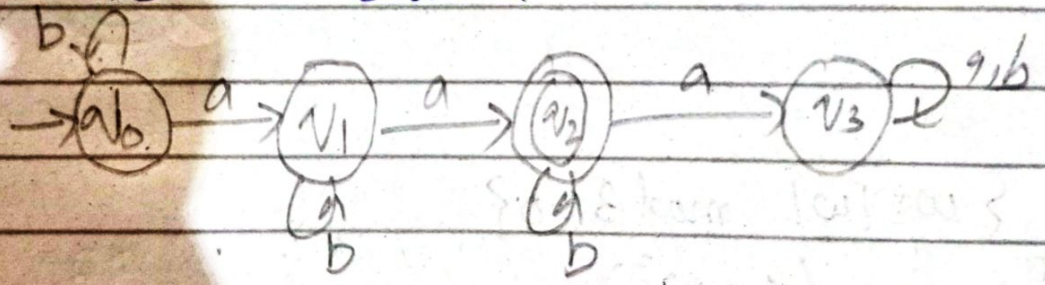
L17 $\{w : n_a(w) \bmod 3 = 0\}$

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



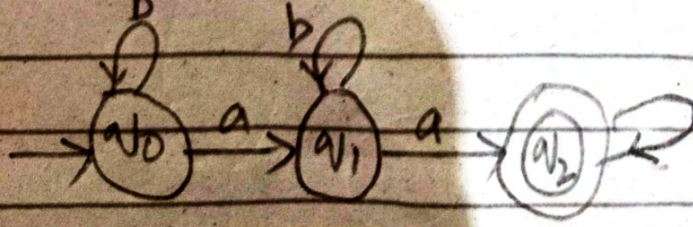
L18 Language containing excatly two a's

RE = $b^* a b^* a b^*$



L19 Language containing at least 2 a's

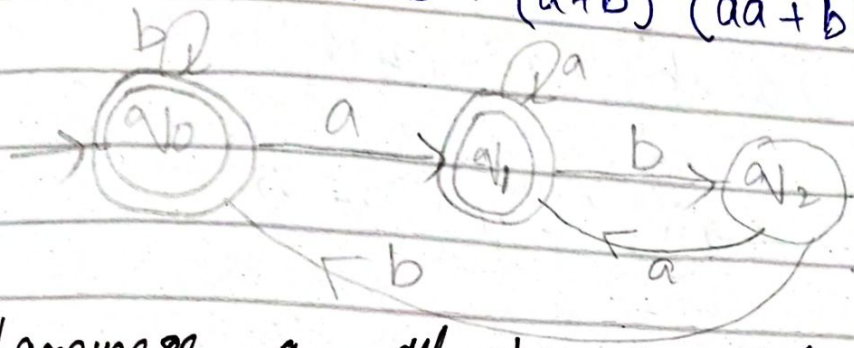
RE = $(a+b)^* a (a+b)^* a (a+b)^*$



Date

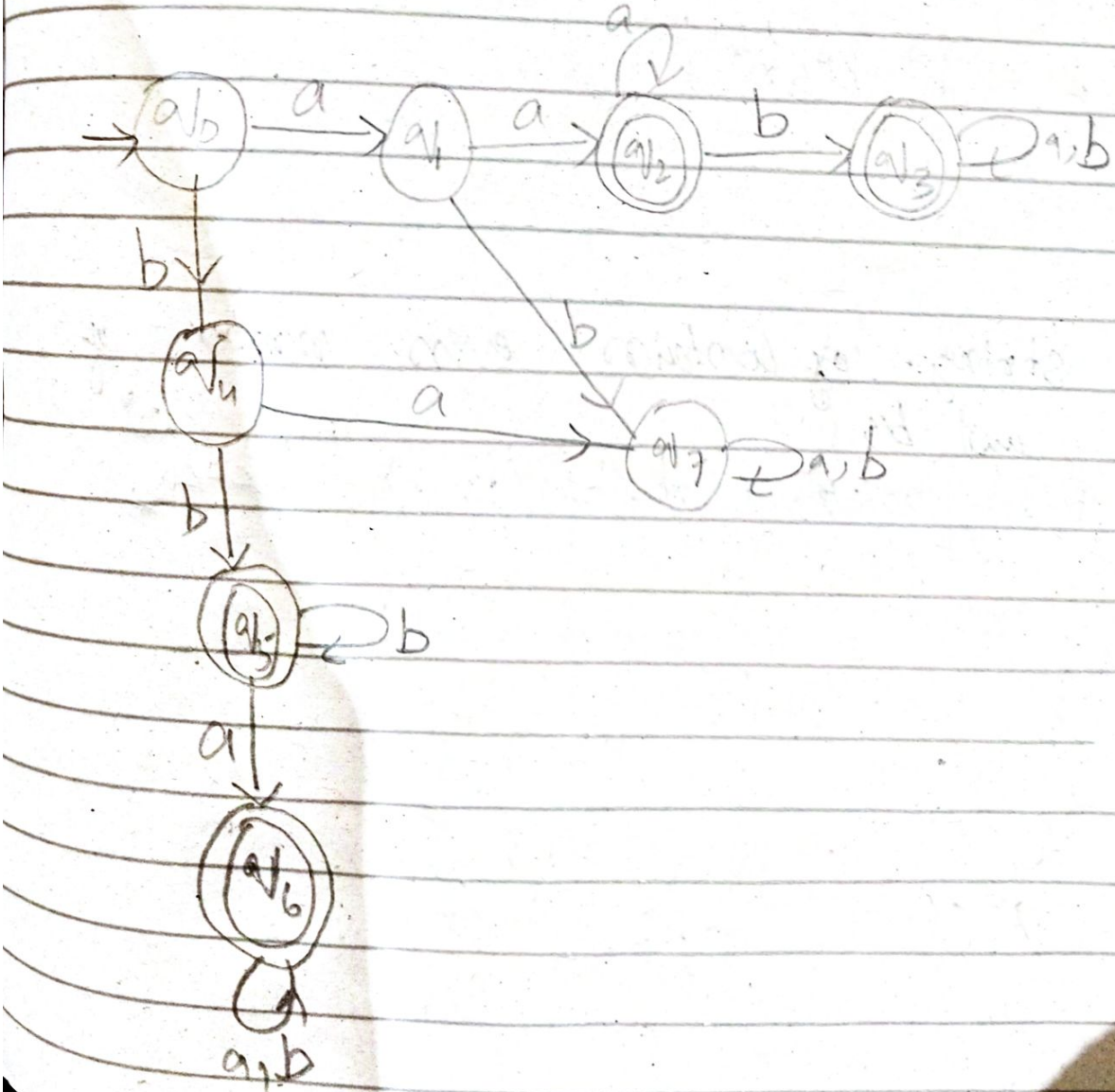
L20 Language of all strings do. not end with ab.

RE = $\lambda + a + b + (a+b)^*(aa+bb+ba)$



L21 Languages of all strings that begin or end with aa or bb

RE = $aa+b^* + bb+a^*$



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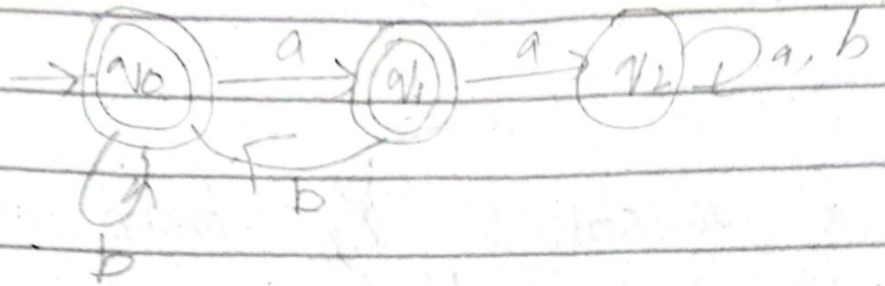
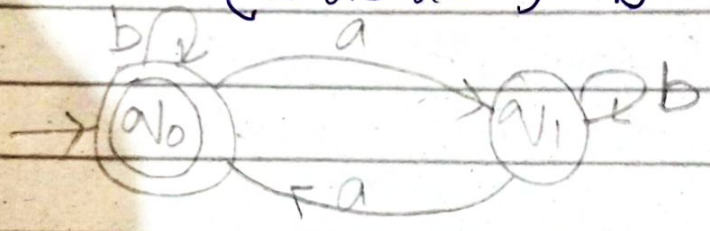
L22 Language of all strings not containing substring aa

RE = $(ab+b)^*(ab+ba+bb)$



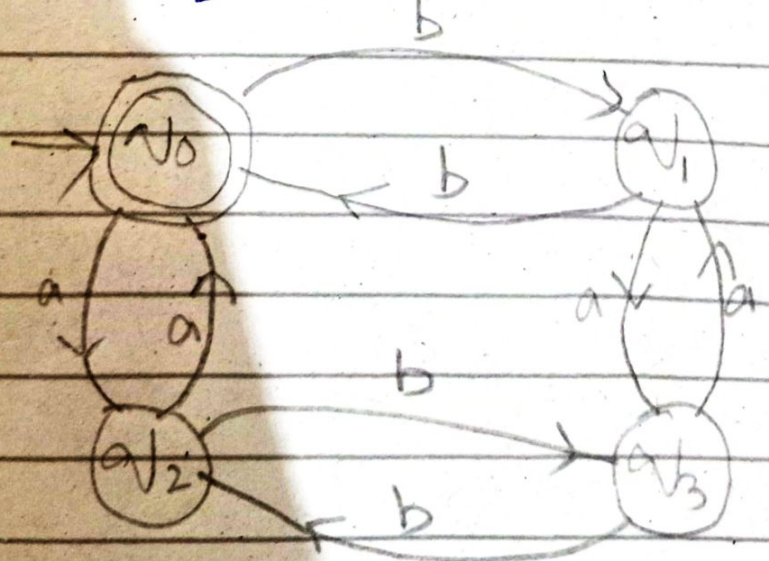
L23 string of even number of a's

RE = $(b^*ab^*ab^*)^*\ b^*$



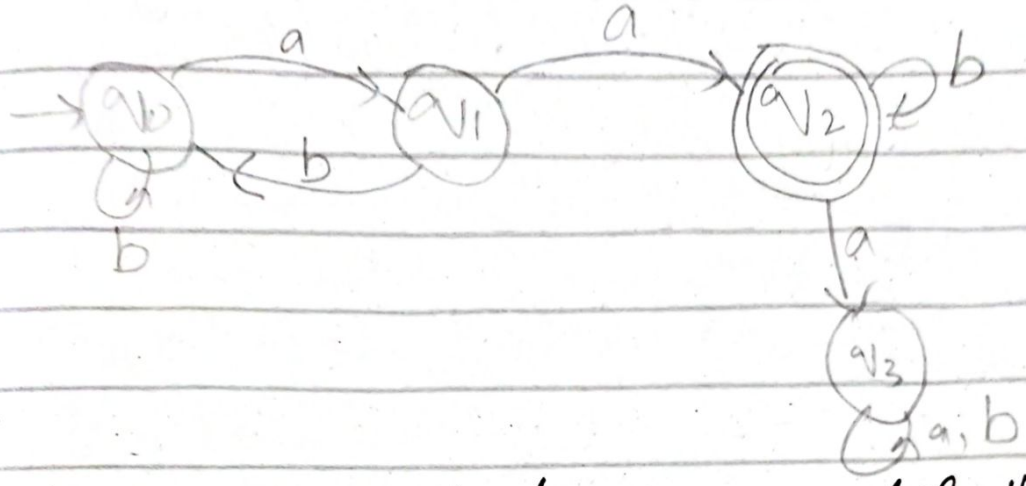
L24 string of contains even number of a's and b's

RE = $[aa+bb+(ab+ba)(aa+bb)^*(ab+ba)]^*$



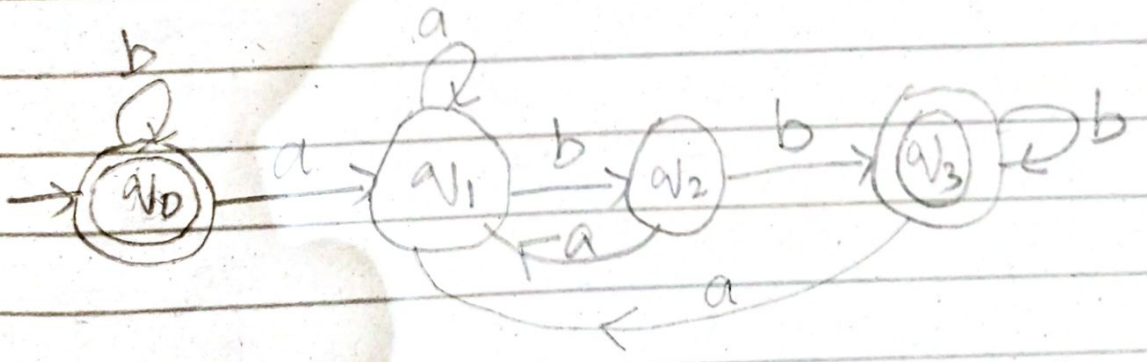
L25 String containing no more than 2 occurance aa

RE = $b^* aa b^*$



L26 String in which every a (if there are any) is followed immediatly by bb

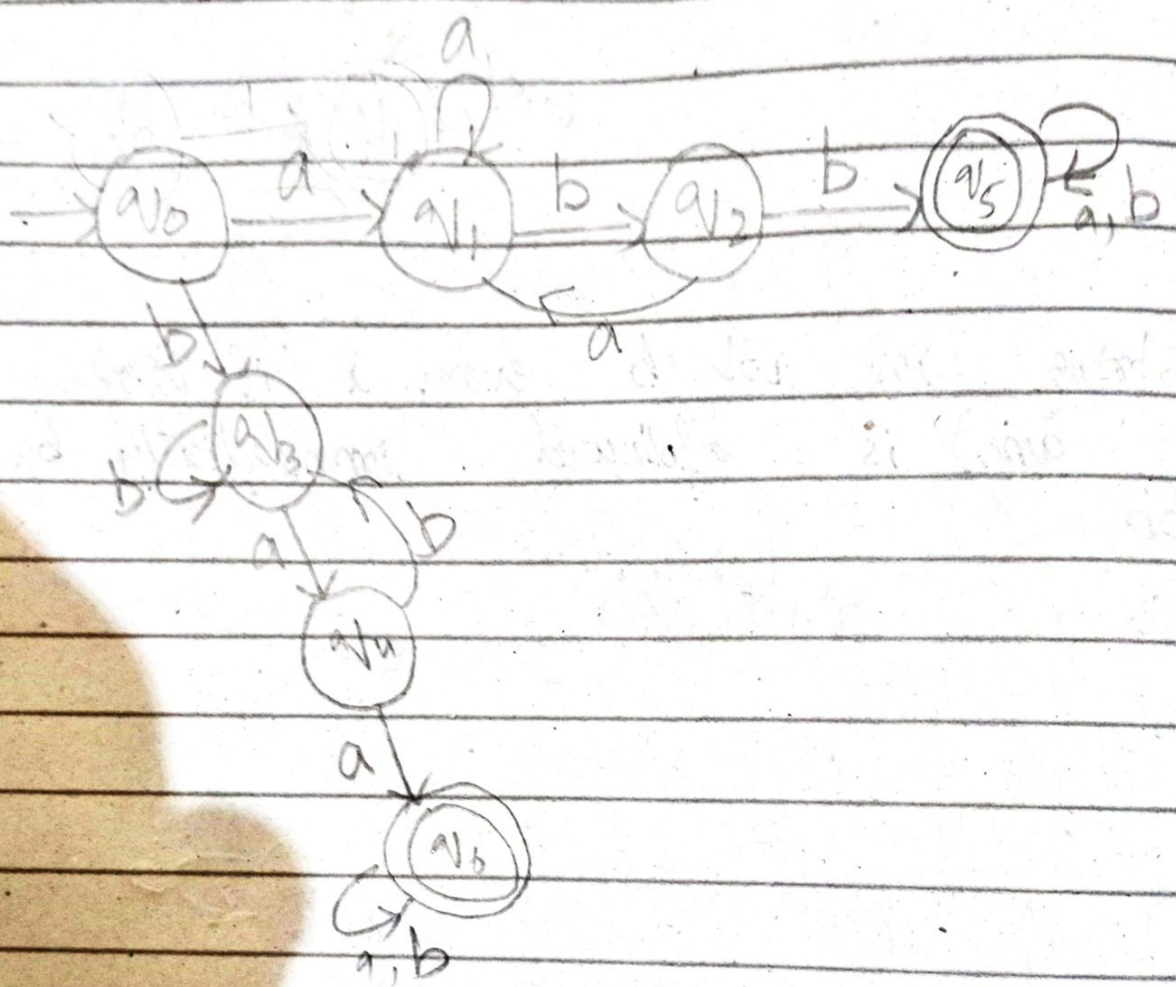
RE = $b^* + b^*(abb)^*$



Date

L27 All the string containing both bb and aa as substrings

RE = $(a+b)^* aa (a+b)^* bb (a+b)^* + (a+b)^* bb (a+b)^* aa (a+b)^*$



Date

28 Strings containing both aba and bab as substring

RE : $(a+b)^*(aba+bab)(a+b)^*$