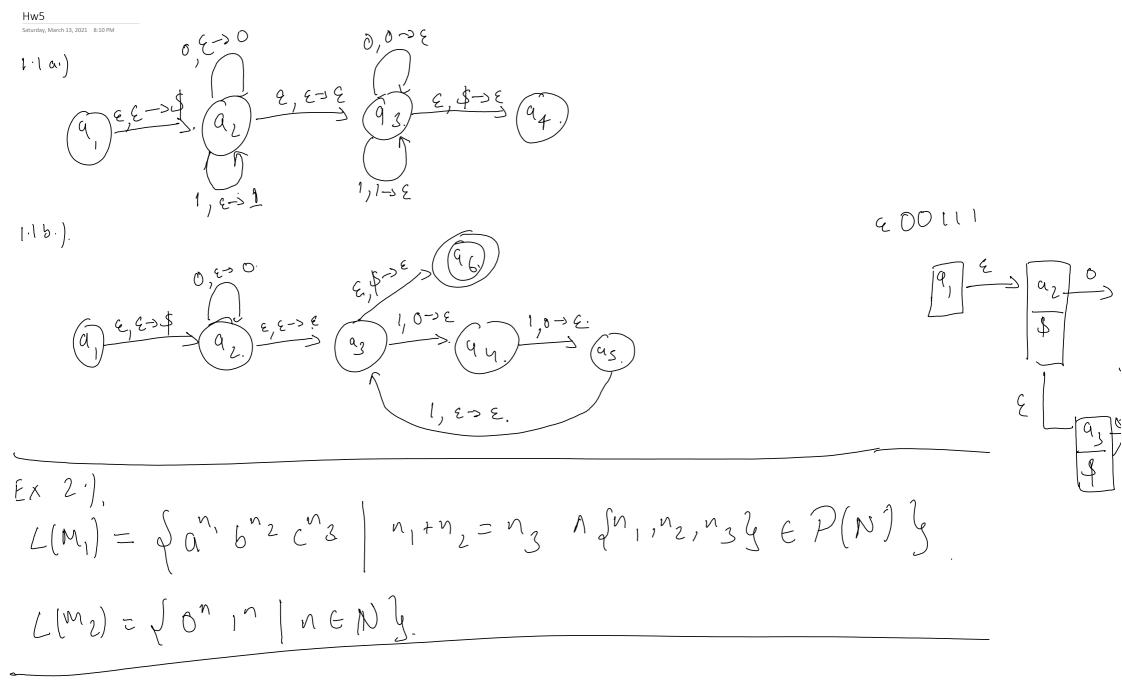


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900111
L(M_1) = \begin{cases} 3^{n_1} b^{n_2} c^{n_3} \\ n_1 + n_2 = n_3 \end{cases} \Lambda_1 n_1, n_2, n_3 \in P(N) 
L(M2) = fon 1 n = N }.
 Ex 3.)
We know, the terminals of the CFG, formed by the
Ans a
automenton is the same as the impolisat of the PDD.
So, Z = & 0,13
And, the start variable of the CFG is.
 S = Aqqaccept
Now, writing the variables of the CfG.
  V= &A11, A22, A33, A12, A21, A23, A32, A13, A31 3
Now, Levising the roles:
 S(1, \epsilon, \epsilon) = (2, \beta) \quad \text{and} \quad S(3, \epsilon, \beta) = (1, \epsilon)
      . A11 = E A23 E
 S(2,1,2)=(2,1), S(2,0,1)=(3,2) and S(3,0,1)=(3,2)
       A_{23} = 1 A_{22} O_{-} | 1 A_{23} O_{-}
Now, osing the trive and the second parts of the lemma
 Since the number of roles that can be derived from the second condition is.
to demine Lintuer voiles
 large, we leave it just like it is as
        Agg = Agr Arg [for g, g, r & &1, 2, 3 3]
The wes derived from thee second condition are:
        A11 = E A22 = E A33 = E
. The CFG generated is given by
  V= &A11, A22, A33, A12, A21, A23, A32, A13, A31 3.
   Z = {0,13
  S= AII
   A 11 = A23 | 2
   A23 = 1 A22 0 / 1 A23 ° 0.
   Apq = Apr Ary [ Por p, a, v & S1, 2, 33].
   A22 - 9
    A33 = E
 Ams b.)
  50
```

Ans b.)

So, $S = A_{11}$ $= A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in. $A_{11} = A_{11} A_{11}$ [Since $A_{11} = A_{11} A_{11}$ is one of ten roles in.



Ans ai)
We know the terminals of the CFG formed by the automention is the same as the impot set of the PDD.

And, the start variable of the CFG is.

$$S = A_{q_0} q_{accept}$$

pow, writing the variables of the CFG,

V= & A11, A22, A33, A12, A21, A23, A32, A13, A31 3.

Now, Levising the roles:

$$8(1, \epsilon, \epsilon) = (2, \beta)$$
 and $8(3, \epsilon, \beta) = (1, \epsilon)$
 $A_{11} = \epsilon A_{23} \epsilon$
 $= A_{23}$

$$S(2,1,2) = (2,1), S(2,0,1) = (3,2) \text{ and } S(3,0,1) = (3,2)$$

$$A_{23} = 1A_{22},0-1A_{23},0.$$

Now, osing the third and the or come parts of the to derive Lirtuer rolls Since the number of roles that can be derived from the large, we leave it just like it is as Agg = Agr Arg [for g,gir & \$1,2,33] The wes derived from thee second condition are: A11 = 9 A22 = 9 A31 = 9 . The CFG generated is given by V= LAII, ALL, A33, A12, A21, A23, A32, A13, A31 y Z = {0,13 S= A11 An = A23 (& A23 = 1 A22 0 / 1 A23 °O. Apq = Apr Ary [Por p, a, v & &1, 2,33]. A22 - 9 A33 = E

Ans b.) $S = A_{11}$ $S = A_{11}$ $= A_{11} A_{11} \quad [Since A_{11} = A_{11} A_{11} \text{ is one of ten roles}]$ $A_{pq} = A_{pv} A_{vq} \quad for \quad p, q, r \in \{1, 2, 3\}, he$ p = q = r = i]

 $= A_{23} A_{23}$ $= 1 A_{23} O 1 A_{23} O$ $= 11 A_{22} O 0 11 A_{23} O$ $= 11 E O O (11 A_{22} O O O)$

= 1/00 111 2000 = 1100111000