## 학번 2007037196 인 이름 U571.34 분반

## [Automata 2012 - 2 Homework]

[Automata Homework #4]

Example 4.12] Use pumping lemma to prove that  $L = \{a^n b^k c^{n+k} \mid n \ge 0, k \ge 0\}$  is not regular.

Ambo, Choose M= Om Pm Csm (IM FM) Consider all possible decomposition of w=a-ab-bc-c = >CYZ (1xy1/2m, 1/1/21)

Y=ak(1=K=m). Set i=0, 20 = 0 m-k bm c2m & L m-k+m=2m-k+2m =. Lis not regular.

Example 4.13] Use pumping lemma to prove that  $L = \{a^n b^l \mid n \neq l\}$  is not regular.

AMSO CHOOSE N= Om PINTINI (INI FM)

Consider all possible decomposition of w= a-ab--L = 3C/5 (12C/1/FW /1/5/)

 $2(\sqrt{k})^{2} = \alpha^{m+(i+1)k} b^{m+m!}, \quad m+(i+1)k = m+m!, \quad (i-1)k = m!, \quad i = \frac{m!}{k} + 1 \quad (i+1)k = m+m!$ Set  $i = \frac{m!}{k} + 1$ ,  $i = \frac{m!}{k} + 1$ .

Exercises 4.3.3] Use pumping lemma to prove that  $L = \{w \mid n_a(w) = n_b(w)\}$  is not regular.

Amo, choose w= am pm (IM > m)

Consider all possible decomposition of w= a-ab--b = 20/3 (120/1 FM /1/51)

Set i=2,  $x_{3}z = 0^{m+k} b^{m} \notin L$   $\frac{1}{N_{0}}$  is not regular.

Exercises 4.3.4] Prove that  $L = \{w | n_a(w) \neq n_b(w)\}$  is not regular.

i) We know L= 3anb 1/1208

is not regular.

Assume Lis regular

(LC)= 7 W | na(w) = nb(w) {

Land Latt) is regular

: Lis not regular

but Lath

=3 anb NZOSA not regular

ii) Am>0 Choose n=0m/m+mi (IM >m) Consider all possible decomposition of w= arabin

= >012 (DUYI & M. 17121)

Y=ak (1 & K & M)

DCY: Z = Qm+(i-1)k / maml, m+(i-1)k=maml, (1-1)k=ml, i= ml+1

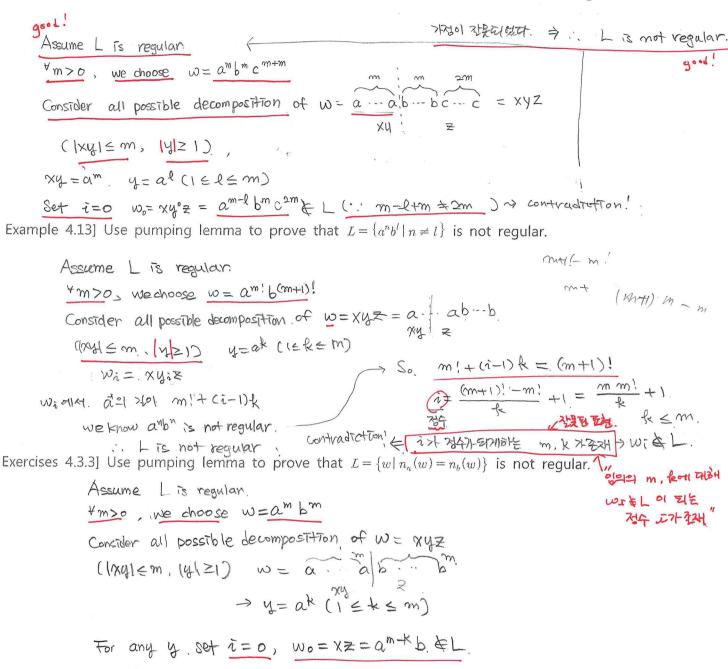
Not regular .: L is not regular.

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Example 4.12] Use pumping lemma to prove that  $L = \{a^n b^k c^{n+k} | n \ge 0, k \ge 0\}$  is not regular.



Exercises 4.3.4] Prove that  $L = \{w | n_a(w) \neq n_b(w)\}$  is not regular.

Accume L is regular.

For any y, set i=3.  $v_m>0$ , we choose  $w=a^mb^{m+1}$ .  $w_i=a^m+a^ka^ka^ka^kb^m+1$ .  $w_i=a^m+a^kb^m+1$ .  $w_i=a^m+a^kb^m+1$ .  $w_i=a^m+a^kb^m+1$ .  $w_i=a^m+a^kb^m+1$ .  $w_i=a^m+a^m+a^m+1$ .