Cansu DAL BİÇİMSEL DİLLER VE OTOMATA TEORİSİ
18253039 FİNAL 4-

Problem 3.5.2

c) $\{www : w \in \{a,b\}^*\}$

$k>0$ $w \in L$

$|w| \geq k$ $v,u,x,y,z \in \Sigma^*$

$w = uvxyz$, $|uxy| \leq k$, $vy \neq e$

$uv^n xy^n z \in L$ $n \geq 0$

$w = a^k b a^k b a^k b$

$uv^2xy^2z = a^{k+p} b a^{k+q} a^k b$

Problem 3.5.5

(a) by applying the Pumping Theorem

$$|vy| = |uv^2xy^2z| - |uvxyz| = |\omega_{k+2}| - |\omega_k| = \frac{(k+3)(k+7)}{2} - \frac{(k+1)(k+1)}{2}$$

$$= \frac{4k+10}{2} = 2k+5$$

$$|xy| = |uvxyz| - |uxz| = |\omega_k| - |\omega_{k-2}| = \frac{(k+1)(k+2)}{2} - \frac{(k-1)(k)}{2} = 2k+1$$

$$|vy| = |uv^2xy^2z| - |uvxyz| = |\omega_{k+1}| - |\omega_k| = \frac{(k+2)(k+3)}{2} - \frac{(k+1)(k+2)}{2} = k+2$$

$$|vy| = |uvxyz| - |uxz| = |\omega_k| - |\omega_k| = \frac{(k+1)(k+2)}{2} - \frac{(k)(k+1)}{2} = \frac{2k+2}{2} = k+1$$

Problem 3.5.14

(a) $\{a^m b^n c^p : m=n \text{ or } n=p \text{ or } m=p\}$

bu dil bağlamdan bağımsızdır

$\{a^n b^n c^m = n,m \in N\} \cup \{a^n b^m c^n : n,m \in N\}$

her biri esasen bağımsızdır $\{a^n b^n : n \in N\}$

(c) $\{a^m b^n c^p : m=n \text{ and } n=p \text{ and } m=p\}$

bu dil bağlamdan bağımsız değildir

$\{a^n b^n c^n : n \in N\}$ ile benzerlik gösterir