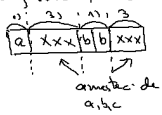
REȚETE DE GHICIT (gramatici)

1) Lb. finite $L=\{PCR, UDMTR\}$ $S\to PCR \mid UDMTR \in \mathcal{G}_3$
2) Lb. repetarea unei litere $L=\{a^n \mid n\geq 0\}$ $S\to aS \mid \lambda \in \mathcal{G}_3$
3) Lb. oglinditi de litere $L=\{a,b\}^*$ $S\to aS \mid bS \mid \lambda \in \mathcal{G}_3$
4) Lb. $\{a^n b^n \mid n\geq 1\}$ $S\to aSb \mid ab \in \mathcal{G}_2$

Ex1: Gasiti o gram. ptr generarea lb. $L=\{p\in\{a,b,c\}^* \mid p$ incepe cu a si contine subcuvantul $bb\}$



$\mathcal{G}_1 \to \mathcal{P}_1'$, $C\to\alpha \in \mathcal{P}_1 \to B\to\alpha \in \mathcal{P}_2'$

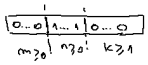
G_1: $S\to XTZ$, $X\to a$, $T\to aT \mid bT \mid cT \mid \lambda$, $Z\to bb$, $T_1\to aT_1 \mid bT_1 \mid cT_1 \mid \lambda$ $\in \mathcal{G}_2$, $L(G_1)=L$

G_2: $S\to aX \mid bbX$, $X\to aX \mid bX \mid cX \mid \lambda$

G_3: $S\to aA$, $A\to aA \mid bA \mid cA \mid B$, $B\to bbC$, $C\to aC \mid bC \mid cC \mid \lambda$

$G_1 \simeq G_2$

Ex2: $L=\{0^m 1^n 0^k \mid m,n\geq 0,\ k\geq 1\}$



G_1: $S\to XYZ$, $X\to 0X \mid \lambda$, $Y\to 1Y \mid \lambda$, $Z\to 0Z \mid 0$ $\in \mathcal{G}_2$

G_2: $S\to 0S1 \mid B$, $B\to 1B \mid X$, $X\to 0X \mid 0$ $\in \mathcal{G}_3$.

$G_1 \simeq G_2$

Ex3: $L=\{a^n b^{n+2} \mid n\geq 1\}$.

G_1: $S\to XT$, $X\to aX \mid a$, $T\to bT \mid b^3$ $\in \mathcal{G}_2$, $L(G_1)=L$

$S\Rightarrow XT \overset{*}{\Rightarrow} a^3 T \Rightarrow a^3 b^{12} \notin L$. incorect

$a^n b^{n+2} = a^n b^n bb$ $\qquad a^n b^{n+2} = a^n bbb b^n$

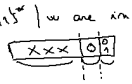
$\mathcal{G}_2 \ni$ $S\to XT$, $X\to aXb \mid ab$, $T\to bb$

G_1: $S\to aSb \mid bb$, $L(G_1)\overset{?}{=}L$ $\qquad S\Rightarrow aSb \overset{*}{\Rightarrow} a^n S b^n$

G_2: $S\to aSb \mid ab^3$, $L(G_2)=L$.

NU PUTEM GĂSI O GRAM DE TIP $\mathcal{G}_2$.

Ex4: $L=\{w\in\{0,1\}^* \mid w$ are in penultima pozitie cifra $0\}$



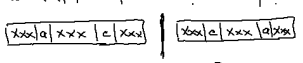
ax $\qquad$ xbx $\qquad$ e.c.

G_1: $S\to XYZ$, $X\to 0X \mid 1X \mid \lambda$, $Y\to 0$, $Z\to 0 \mid 1$ $\in \mathcal{G}_2$

G_2: $S\to 0S \mid 1S \mid T$, $T\to 0S$, $S\to 0 \mid 1$ $\in \mathcal{G}_3$

G_1': $S\to X00 \mid X01$, $X\to 0X \mid 1X \mid \lambda$ $\in \mathcal{G}_2$

Ex5: $L=\{w\in\{a,b,c\}^* \mid w$ contine cel putin un a si cel putin un $c\}$



G_1: $S\to XaXcX$, $X\to aX \mid bX \mid cX \mid \lambda$, $L(G_1)\overset{?}{=}L$ (da)

G_2: $S\to XaXcX \mid XcXaX$, $X\to aX \mid bX \mid cX \mid \lambda$ $\in \mathcal{G}_2$. $G_2 \simeq G_1$

G_3: $S\to X \mid T$, $X\to aX \mid bX \mid cX \mid A$, $A\to aB$, $B\to aB \mid bB \mid cB \mid D$, $D\to cE$, $E\to aE \mid bE \mid cE \mid \lambda$

$Y\to aY \mid bY \mid cY \mid Ü$, $Ü\to cÖ$, $Ö\to aÖ \mid bÖ \mid cÖ \mid T_3$, $T\to aS_3$, $S_3\to aS_3 \mid bS_3 \mid cS_3 \mid \lambda$ $\in \mathcal{G}_3$

Ex6: $L=\{w\in\{a,b,c\}^* \mid w$ contine cel mult un $a\}$.

G_1: $S\to XYX$, $X\to bX \mid cX \mid \lambda$, $Y\to a \mid \lambda$ $\in \mathcal{G}_2$

$S\to X \mid T$, $X\to bX \mid cX \mid S_3$, $S_3\to aT_3$, $T_3\to bT_3 \mid cT_3 \mid \lambda$, $T\to bT \mid cT \mid \lambda$ $\in \mathcal{G}_3$.

$o\leq p$: $S\to 0X1$, $X\to 0YY1 \mid 01$, $Y\to 1Y \mid 1$ $\quad S\Rightarrow 0X1 \Rightarrow 00YY11 \Rightarrow 0^2 1^k 1^2 = 0^3 1^{k+2}$, $k\geq 1$

Ex7: $L=\{0^n 1^m 0^{n+1} \mid m,n\geq 1\}$. $\quad o^n b^n$

$0^n 1^m 0^{n+1} = 0^n 1^m 00^n$

$S\to aSb$ $\quad S\overset{*}{\Rightarrow} a^n S b^n$

$S\to aSO$ $\quad S\overset{*}{\Rightarrow} 0^n S 0^n$

G_2: $S\to X10S0$, $X\to 1X \mid \lambda$. $L(G_2)=L$.

G_2': $S\to 0S0 \mid 0X0$, $X\to 1X \mid 10$ $\quad G_2 \simeq G_2'$

Ex8: $L=\{0^n 1^m \mid n<n<m\}$ $\quad o\leq p$.

$0^n 1^m = 0^n 1^n 1^{m-n}$ $\quad S\to XT$; $X\to 0X1 \mid 01$; $T\to 1T \mid 1$

$L=\{p\in\{0,1\}^* \mid p$ are in pozitia a 3-a litera $0\}$