ropzh:

$$G = (\{S, X\}, \{a, b\}, S, \{S \to ax \mid bS \mid bb, \quad X \to aS \mid bX\})$$
$$L(G) = \{u \in \{a, b\}^* : |u|_a \equiv 0 \pmod 2 \land \exists x \in \{a, b\}^* : u = xbb\}$$

feladat

3-as tipus: $A \to uB$ vagy $a \to u \quad (A, B \in N, u \in T^*)$
2-es tipus: $A \to v \quad (A \in N, v \in (N \cup T)^*)$

$$G_1 = (\{S\}, \{a, b\}, S, \{S \to aSb \mid bSa \mid SS \mid \varepsilon\})$$
$$L(G_1) = \{u \in \{a, b\}^* : |u|_a = |u|_b\}$$

2-es tipusu mert bal oldalt mindig S

$$aaababbabb$$
$$S \to aSb \to aaSbb \to aaSSbb \to aaaSbSbb \to aaabSabSbb \to aaababSbb \to aaababbSabb \to aaababbabb$$

feladat

$$L = \{w \mid w \text{ tartalmazza az "}aa\text{" reszszot}\} = \{u \in \{a, b\}^* : \exists x, y \in \{a, b\}^* : u = xaay\}$$

$G_{2.1} = (\{S, X\}, \{a, b\}, S, \{S \to XaaX, X \to aX \mid bX \mid \varepsilon\})$

$G_{2.2} = (\{S, X\}, \{a, b\}, S, \{S \to aS \mid bS \mid aaX, X \to aX \mid bX \mid \varepsilon\})$

harmas normal forma egy harmas tipusu harmas normal formaban van hogyha minden szabalya
$A \to tB, a \to \varepsilon \quad (A, B \in N, \quad t \in T)$

a fenti nem normal formaju mert az $S \to aaX$-ben ket terminalis karakter is szerepel

$G_{2.3} = (\{S, X, Y\}, \{a, b\}, S, \{S \to bS \mid aX, X \to aY \mid bS, Y \to aY \mid bY \mid \varepsilon\})$

$G_{2.4} = (\{S, X, Y\}, \{a, b\}, S, \{s \to aS \mid bS \mid aY, Y \to aX, X \to aX \mid bX \mid \varepsilon\})$

advanced feladat

$$L_3 = \{u \in \{a, b\}^* : |u|_b \equiv 2 \pmod 3 \lor \exists x \in \{a, b\}^* : u = abbX\}$$
$$G_3 = (\{S, X, U, V, W\}, \{a, b\}, S, \{S \to aabX, X \to aX \mid bX \mid \varepsilon, S \to U, U \to aU \mid bV, V \to aV \mid bW, W \to aW \mid bU \mid \varepsilon\})$$

feladat

$$L_4 = \{u \in \{a, b\}^* : |u|_a \leq 2 \land |u|_b \geq 2\}$$
$$G_4 = (\{C, D, E, F, G, H, I, J, K\}, \{a, b\}, C, \{$$
$$C \to aD \mid bF, D \to aE \mid bG, E \to bH,$$
$$F \to aG \mid bI, G \to aH \mid bJ, H \to bK,$$
$$I \to aJ \mid bI \mid \varepsilon, J \to aK \mid bJ \mid \varepsilon, K \to bK \mid \varepsilon\})$$