* CFG for $L = \{0^n 1^m \mid 2n \leq m \leq 3n\}$.

For each 0, we need to generate either 11 or 111.

$S \to 0S11 \mid 0S111 \mid \varepsilon$.

* CFG for $L = \{0^i 1^j 2^{i+j} \mid i, j \geq 0\}$.

Any string in the language can be written in the form $0^i 1^j 2^j 2^i$.

$S \to 0S2 \mid T \mid \varepsilon$
$T \to 1T2 \mid \varepsilon$.

S generates the outer strings, of the form $0^i T 2^i$, and T generates the inner strings, of the form $1^j 2^j$.

* $L = \{0^n w w^R 0^n \mid n \geq 0, w \in \{0,1\}^*\}$.

$S \to 0S0 \mid T$
$T \to 0T0 \mid 1T1 \mid \varepsilon$

S generates the outer part, T generates the inner part (palindromes).

* $L = \{0^n 1^m \mid n \leq m+3\}$

$S \to 000T$
$T \to 0T1 \mid W$
$W \to W1 \mid \varepsilon$.

* CFG for $L = \{0^m 1^n \mid m \neq n\}$

$$S \to E_0 T \mid T E_1$$
$$E_0 \to E_0 0 \mid 0$$
$$E_1 \to E_1 1 \mid 1$$
$$T \to 0T1 \mid \varepsilon.$$

E_0 and E_1 generate extra 0's or 1's, and T generates the rest of the string, with an equal number of 0's and 1's.

* CFG for the set of strings over $\{0,1\}$ with more 0's than 1's.

We generate first a string with two 0's and a single 1. On each possible position, we use recursion.

$$S \to S0S0S1S \mid S0S1S0S \mid S1S0S0S \mid \varepsilon.$$

* $L = \{x\#y \mid x, y \in \{0,1\}^* \text{ and } |x| = |y|\}.$

$$S \to 0S1 \mid 0S0 \mid 1S0 \mid 1S1 \mid \#.$$

* CFG for $L = \{0^i 1^j 2^k \mid i = j \text{ or } j = k\}$

$$S \to E_{01} T \mid W E_{12}$$
$$E_{01} \to 0 E_{01} 1 \mid \varepsilon$$
$$E_{12} \to 1 E_{12} 2 \mid \varepsilon$$
$$T \to 2T \mid \varepsilon$$
$$W \to 0W \mid \varepsilon$$

E_{01} generates the strings with the same number of 0's and 1's; E_{12} generates the strings with the same number of 1's and 2's.