

$$\Sigma \times n = 5$$

1) This grammar is context-free grammar
 $\left[\begin{array}{l} S \rightarrow aU \xrightarrow{\text{Linear, Right Linear}} \\ \text{and} \\ U \rightarrow Sb \xrightarrow{\text{Left Linear}} \end{array} \right]$

2) Three words

$$- S \xrightarrow{2} aU \in L(G)$$

$$- S \xrightarrow{1} aU \xrightarrow{3} aSb \xrightarrow{2} acb \in L(G)$$

$$- S \xrightarrow{1} aU \xrightarrow{4} ad \in L(G)$$

$$S \xrightarrow{n \text{ times } (2)+3} a^n Sb^n \xrightarrow{2} a^n cb^n, S \xrightarrow{n \text{ times } (1)+3} a^n Sb^n \xrightarrow{1} a^n Sb^n \xrightarrow{4} a^{n+1} db^n$$

$$L(G) = \{ a^n cb^n, n \in \mathbb{N} \} \cup \{ a^{n+1} db^n, n \in \mathbb{N} \}$$

$$= \{ a^n cb^n, a^{n+1} db^n, n \in \mathbb{N} \}.$$

$$\Sigma \times n = 6$$

$$G_1 = (N, T, S, P), N = \{S\}, T = \{a, b\}$$

$$P = (S \rightarrow aSb \mid \epsilon) \xrightarrow{\text{Type}} \text{Context-free grammar}$$

$$G_2 = (N, T, S, P), N = \{S\}, T = \{a, b\}$$

Word $w = a^n b^p$ respect $n \leq p \leq 2n$
 number of occurrences of b greater than a , but not
 greater than twice:

$$P = (S \rightarrow aSb \mid aSbb \mid \epsilon), \text{ or other grammar}$$

Type: Context-free

$$L_1 \cap L_2 = L_1$$