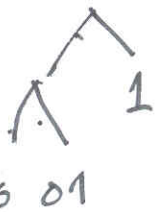
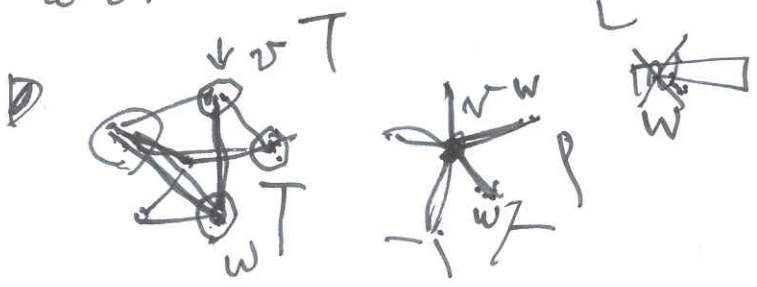
5/30. Chap. 11 Boolean algebra.



prefix code $\xrightarrow{\text{optimal prefix code}}$ Hoffman coding



DFS

Algebraic system $(A, \oplus)$ $\oplus : A \times A \to A$

$\forall x)(\mathbb{N}, +)$ .... closed

↓

semigroup $(A, \oplus)$ if $\oplus$ is associative.

$\oplus : A^n \to A$

$\sum_{i=1}^{n} i = \Sigma\{1, \dots n\} = \sum_{i \in \{1, \dots n\}} i$

↓

monoid $(A, \oplus, e)$ e: identity element $\in A$

$\forall a \in A, \quad a \oplus e = e \oplus a = a$

$\exists x (\mathbb{N}, +, 0)$, $(V^*, \cdot, \varepsilon)$ $x \in V^*$ $\cdot : V^* \times V^* \to V^*$ concatenation

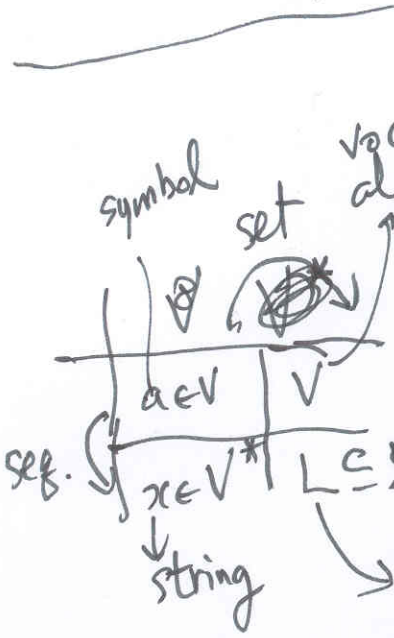
$x, y \in V^*$ $x \cdot y = xy$

free monoid generated by V.

unique representation

$\chi : \{1, \dots, n\} \to V$ $n \geq 0$ (if $n = 0$, $x = \varepsilon$)

$(x \cdot y) \cdot z = x \cdot (y \cdot z)$



Given L over V,

$x \in V^*$, $x \in L$ membership problem

parsing in compiler .- grammar.