CS3231 - The Theory of Computing

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0.1. Reference

- Alphabet - Finite Non empty set of symbols, denoted by Σ
  - Powers of Alphabet
    - $\Sigma^2 = \{00, 01, 10, 11\}$
    - $\Sigma^0 = \{\epsilon\}$
    - $\Sigma^{\leq 2} = \Sigma^0 \cup \Sigma^1 \cup \Sigma^2$
- String - Sequence of Symbols from Σ, denoted by ϵ
  - Concat - $x = 00, y = 10, x \cdot y = xy = 0010$
  - Substring - ab is a substring of $babaa$, bb is not.
  - Subsequence - bba is not subseq of $babaa$, abb is
- Length of String - Number of symbols in a string, denoted by $|w|$
- Language - Set of strings over an alphabet
  - $L = \{00, 11, 01, 110\}$
  - $L = \emptyset$
  - $L_1 \cdot L_2 = L_1 L_2 = \{xy : x \in L_1, y \in L_2\}$
  - $L^* = \{x_1 x_2 ... x_n : x_1, x_2, ... x_n \in L, n \in \mathbb{N}\}$
  - $L^+ = \{x_1 x_2 ... x_n : x_1, x_2, ... x_n \in L, n \geq 1\}$