

Notation

Notation varies in the relatively new field of theoretical computer science. The slides, handouts, and exams in this course will use a notation that may sometimes be different from in the textbook. We will present a variety of notations that may denote the same thing.

Logic

\neg	not
\wedge	and
\vee	or
\Rightarrow	implication
\forall	Universal quantification (for all)
\exists	Existential quantification (there exists)

Set theory

\in	set membership
\notin	nonmembership
\emptyset	null set
$\{\}$	null set
\subseteq	subset
\subset	proper subset
\cup	union
\cap	intersection

$A \times B$ is the Cartesian product of sets A and B , i.e., all ordered pairs $\langle x, y \rangle$ such that x is in A , y is in B
 \aleph_0 denotes aleph null, the cardinality of countable sets.

\aleph_1 denotes aleph one, the cardinality of the sets of reals, predicates, streams, or functions on natural numbers.

Formal languages

A string over Σ is a sequence of symbols chosen from alphabet Σ .

Σ is normally a finite alphabet; Σ^* is the set of all strings over Σ

$\lambda = \epsilon =$ null string. λ and ϵ are also used to denote automata state transitions that don't consume inputs.

Σ^∞ is the set of all streams (infinite sequences) over Σ

$(L_1 + L_2) = (L_1 \mid L_2) = (L_1 \cup L_2)$ (language union)

$L_1 L_2 = \{ xz \mid x \in L_1, z \in L_2 \}$ (concatenation of languages)

$L^* = \{ x_1 x_2 \dots x_n \mid x_1, z_2, \dots, z_n \in L \}$

Greek alphabet

Used often to denote objects in mathematics

α	alpha
β	beta
χ	chi
δ	delta
ϵ	epsilon
ϕ	phi
$\gamma (\Gamma)$	gamma
η	nu
ι	iota
φ	psi
κ	kappa
λ	lambda
μ	mu
ν	
\omicron	
π	pi
θ	theta
ρ	rho
$\sigma (\Sigma)$	sigma
τ	tau
υ	
ω	
ω	omega
ξ	xi
ζ	