Definition

A *nondeterministic finite automata* $N = (Q, \Sigma, \delta, q_0, F)$ is a list where Q and Σ are finite sets, $\delta : Q \times (\Sigma \cup \{\varnothing\}) \to \mathcal{P}(Q)$, $q_0 \in Q$ and $F \subset Q$.

As with finite automata, we call Q the *states*, Σ the *alphabet*, δ the *transition function*, q_0 the *start state*, and F the *accept states* (or *final states*). An input $u \in \mathsf{str}(\Sigma)$ results in a state sequence $x \in \mathsf{str}(Q)$ with $x_1 = q_0$ and $x_{i+1} = \delta(x_i, u_i)$ for $i = 1, \ldots, |u|$.

Main result

For any automata M, there exists a nondeterminstic finite automata N such that N accepts the same languages as M.

Nondeterministic Finite Automata

Finite Automata

Alphabets

Lists

Direct Products

Set Numbers

Finite Sets

Equivalent Sets

Family Unions and Intersections

Natural Order

Function Inverses

Families

Function Composites

Function Images

Peano Axioms

Functions

Equivalence Relations

Natural Induction

Relations

Set Products

Generalized Set Dualities

Natural Numbers

Set Powers

Set Dualities

Set Unions and Intersections

Intersection of Empty Set

Successor Sets

Unordered Triples

Partitions

Set Complements

Pair Unions

Set Intersections

Ordered Pairs

Set Differences

Pair Intersections

Set Unions

Empty Set

Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Standardized Accounts

Accounts

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects