**Finite-State Theory**

* Q : The Finite set of States,
* Σ : The set of Input Symbols,
* q : The initial State,
* F : The set of Final States,
* δ : The Transition Function
* Deterministic Finite Automata (DFA)
* Nondeterministic Finite Automata (NFA)
* Regular Grammars ONLY

**Grammar Theory**

* A finite set, N, of nonterminal symbols.
* A finite set, Σ, of terminal symbols.
* A finite set, P, of production rules, each rule of the form:
  + (Σ U N)\* N(Σ U N)\* -> (Σ U N)\*
  + Note: Kleene Star (\*) means 0 or more.
* S, where S is the start symbol.

**DFA and NFA**

* Determinism refers to Uniqueness.
* DFA Rules:
  + Null move is NOT Allowed
  + The inability to transmit to any number of states for an input
* NFA Rules:
  + Null move IS Allowed
  + The ability to transmit to any number of states for an input
* Each DFA/NFA can transform into an equivalent NFA/DFA
* They have equal computational power

**JFLAP Tutorial**

* JFLAP is a software for experimenting with formal languages.
* 6 Main editors: Attribute Editor, State Creator, Transition Creator, Delete, Undo and Redo.
* Big pointer denotes Initial State, double ring denotes final state(s), arrows denote transitions with their terminal character above it,
* Trap State – used for a string to fail if certain conditions are met.