The DFA takes in an input symbol, a state and returns the next state. The NFA takes in an empty string a state and input symbols. then returns a set of next states. The DFA has a unique output and input. NFA can accept an empty string.

A terminal is a set of characters in an alphabet that appear in strings and are generated by the grammar

A nonterminal variable is a set of for patterns of terminals generated by the nonterminal symbol.

1. Used to check to see if languages are not regular.
~~Must be recognized by a finite automaton~~.

2 An alphabet is a finite set of symbols denoted by Σ

3 A string contains symbols of the Alphabet that combine to form

4. A language is something that can be detected by a finite automation

5. A sequence is a pattern of symbols following some rule

6. K-tuple determines how many rules a machine will have determined by K. So for a CFG, is a 4 tuple $(V \Sigma R S)$

7. Ordered pair contains two symbols that are different $(0,1)$ $(1,0)$

8. Unordered pair can be the same two symbols $(1,1)$ $(2,2)$

9. The Domain is the input of a function $f(n)$

10 The Range is the output of a function $f(n) = 2$

CFG is a 4 tuple also known as $\{V, \Sigma, R, S\}$

V is a finite set called variable

Σ is a finite set of variable V, called termin

R Is a finit set of rules

S is the state variable

PDA is a 6 tuple also known as a Push down automata. $\{Q, \Sigma, P, \%, \Delta, F\}$

Q is the set of states

Σ is the set of input alphabet

P is the stack alphabet

% is the start state

Δ is the transition function

F is the set of accept states

Regular Expression:

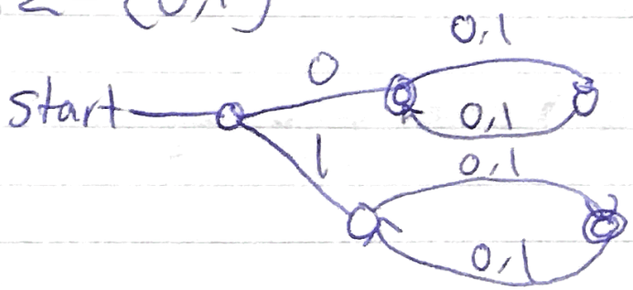
$\{a\}, \{e\}, \emptyset$

Assuming... ->

$\{R_1 \cup R_2\}$ R_1 and R_2 are regular expressions
$\{R_1 \circ R_2\}$ R_1 and R_2 are regular expressions
$\{R_1^*\}$ R_1 is a regular expression

DFA

3. $\Sigma = \{0,1\}$



4. $\Sigma = \{0,1\}$ Alphabet
$Q = \{Q_1, Q_2, Q_3, Q_4\}$ states

	0	1
q_1	q_1	q_2
q_2	q_1	q_3
q_3	q_1	q_4
q_4	q_4	q_4

$Q_0 = Q_1$ (start state)
$F = \{Q_2, Q_3, Q_4\}$ (Final state

$L = \{w | w$ start with two 1's$\}$

5. The PDA is a 6 tuple and contains stack alphabet P and the DFA doesn't. The PDA is similar to the NFA. The DFA can only take in regular languages and a PDA can take in non-regular languages. The DFA can only have unique one input state and output state. The PDA can accept empty strings. One is called Push down automa and NFA is called Non-deterministic automa

5b. ~~Expression = Expression + terms | terms~~

/10

6.a ~~Expression~~ Selection-stmt

Expression-stmt => var-smt

Selection-stmt

Expression-stmt => var-smt

6b.