7 Lecture - CS402

Important Subjective

1. **What is a finite language?**
   Answer: A finite language is a set of strings of finite length over a finite alphabet.

   What is a deterministic finite automaton (DFA)?
   Answer: A DFA is a type of finite automaton that has a fixed number of states and can recognize regular languages.

   What is a non-deterministic finite automaton (NFA)?
   Answer: An NFA is a type of finite automaton that can have multiple possible paths through the automaton for any given input string and can also recognize regular languages.

   What is the difference between a DFA and an NFA?
   Answer: The main difference is that a DFA has a fixed number of states, while an NFA can have multiple possible paths through the automaton for any given input string.

   How is a DFA constructed?
   Answer: A DFA is constructed by defining the input alphabet, the set of states, the transition function, and the accept state(s).

   How is an NFA constructed?
   Answer: An NFA is constructed by defining the input alphabet, the set of states, the transition function, and the accept state(s), but with the added possibility of having multiple paths through the automaton for any given input string.

   Can a regular expression be used to recognize a finite language?
   Answer: Yes, a regular expression can be used to recognize a finite language.

   Can a DFA be used to recognize a language that is not regular?
   Answer: No, a DFA can only recognize regular languages.

   Can an NFA be used to recognize a language that is not regular?
   Answer: No, an NFA can only recognize regular languages.

   How can you determine if a language is regular?
   Answer: A language is regular if and only if it can be recognized by a DFA, an NFA, or a regular expression.