

13 Lecture - CS402

Important Subjective

1. **What is a Nondeterministic Finite Automaton (NFA)?**

Answer: A Nondeterministic Finite Automaton (NFA) is a type of automaton that can have multiple transitions from a state on the same input symbol.

What is the difference between a NFA and a DFA?

Answer: The main difference between a NFA and a DFA is that in a NFA, there can be multiple transitions from a state on the same input symbol, while in a DFA, there can only be one.

Can a NFA have multiple accepting states?

Answer: Yes, a NFA can have multiple accepting states.

What is the role of epsilon transitions in a NFA?

Answer: Epsilon transitions are used to represent empty transitions in a NFA. They allow the automaton to transition from one state to another without consuming any input.

How can a NFA be converted to a DFA?

Answer: A NFA can be converted to a DFA using the subset construction algorithm, which involves constructing a new DFA with a state for each subset of states in the original NFA.

What is the difference between a transition function and an extended transition function in a NFA?

Answer: The transition function maps a state and input symbol to a set of states, while the extended transition function maps a state and an input string to a set of states.

Can a NFA recognize a language that a DFA cannot?

Answer: Yes, a NFA can recognize a language that a DFA cannot, due to its ability to have multiple transitions from a state on the same input symbol.

What is the difference between a deterministic and nondeterministic automaton?

Answer: A deterministic automaton (DFA) has a single transition for each input symbol, while a nondeterministic automaton (NFA) can have multiple transitions for the same input symbol.

How is the language recognized by a NFA determined?

Answer: The language recognized by a NFA is the set of all strings that lead the automaton to an accepting state.

Can a NFA recognize all regular languages?

Answer: Yes, a NFA can recognize all regular languages.