

5 Lecture - CS402

Important Subjective

1. **What is a directed graph, and how is it used to represent transitions in a finite automaton?**

Answer: A directed graph is a graphical representation of a finite automaton, where the states are represented by nodes and the transitions are represented by directed edges.

What is a transition table, and how is it used to represent transitions in a finite automaton?

Answer: A transition table is a tabular representation of a finite automaton, where each row represents a state and each column represents an input symbol. The entries in the table represent the resulting states after the transition.

What is a transition function, and how is it used to represent transitions in a finite automaton?

Answer: A transition function is a mathematical function that maps the current state and input symbol to the next state. It can be represented in various ways, such as using algebraic notations like $\delta(q, a)$ or using arrow notations like $q \xrightarrow{a} p$.

What is a state diagram, and how is it used to represent transitions in a finite automaton?

Answer: A state diagram uses graphical symbols to represent the states, transitions, and input symbols. The states are represented by circles, the transitions are represented by arrows, and the input symbols are represented by labels on the arrows.

What are some advantages of using a directed graph to represent a finite automaton?

Answer: Directed graphs provide a visual representation of the finite automaton, making it easier to understand and manipulate. They can also be used to quickly identify the final and non-final states of the automaton.

What are some advantages of using a transition table to represent a finite automaton?

Answer: Transition tables provide a concise and organized representation of the finite automaton, making it easier to read and understand. They can also be used to easily identify the resulting state after a transition.

What are some advantages of using a transition function to represent a finite automaton?

Answer: Transition functions provide a mathematical representation of the finite automaton, making it easier to perform calculations and manipulate the automaton. They can also be used to easily determine the resulting state after a transition.

What are some advantages of using a state diagram to represent a finite automaton?

Answer: State diagrams provide a visual representation of the finite automaton, making it easier to understand and manipulate. They can also be used to quickly identify the final and non-final states of the automaton.

How can the choice of notation affect the representation of a finite automaton?

Answer: The choice of notation can affect the readability, organization, and ease of

manipulation of the finite automaton. Some notations may be more suited for certain applications than others.

Can different notations of transition be used interchangeably to represent a finite automaton?

Answer: Yes, different notations of transition can be used interchangeably to represent a finite automaton, as they all convey the same information about the automaton. The choice of notation depends on the specific application and the preference of the user.