

20 Lecture - CS402

Important Subjective

1. **What is the primary difference between a Finite Automaton (FA) and a Finite Automaton with Output (FAO)?**

Answer: An FA can only recognize a language, while an FAO can produce output in response to input.

How does an FAO produce output?

Answer: An FAO produces output by emitting output symbols in response to input symbols.

What is the purpose of using an FAO to recognize a language?

Answer: The output produced by an FAO can be used to perform various functions, such as decoding error-correcting codes or simulating logic circuits.

Can an FAO recognize a language that cannot be recognized by an FA?

Answer: It depends on the specific language and FAO.

What is the role of an FAO's output in decoding error-correcting codes?

Answer: The output produced by an FAO can provide information about the errors in the input code.

How does an FAO simulate a logic circuit?

Answer: By interpreting input symbols as logic gates and emitting output symbols based on the logic gates' outputs.

Can an FAO recognize a context-free language?

Answer: No, an FAO cannot recognize a context-free language.

What is the minimum number of states required for an FAO to recognize a regular language?

Answer: Two states are the minimum required for an FAO to recognize a regular language.

What is the computational power of an FAO compared to a Turing machine?

Answer: An FAO is less powerful than a Turing machine.

How does the amount of memory required by an FAO to recognize a language compare to that required by a pushdown automaton?

Answer: The amount of memory required by an FAO can be less than that required by a pushdown automaton to recognize the same language.