

40 Lecture - CS402

Important Subjective

1. **What is the difference between a CFG and a PDA?**

Answer: A CFG is a formal grammar that generates a set of strings, while a PDA is a type of automaton that accepts or rejects input strings based on a set of rules.

What is the purpose of converting a CFG to a PDA?

Answer: The purpose is to create an equivalent PDA that recognizes the same language as the original CFG.

What is the stack used for in the PDA?

Answer: The stack is used to keep track of symbols as the PDA processes an input string.

What is a non-deterministic PDA (NPDA)?

Answer: An NPDA is a type of PDA that allows for multiple transitions from a given state, which can lead to multiple possible paths through the automaton.

What is the acceptance condition for a PDA?

Answer: The acceptance condition is that the PDA must reach a final state and have an empty stack.

What is the role of the transition function in the PDA?

Answer: The transition function determines how the PDA transitions between states based on the current input symbol and the symbol at the top of the stack.

How is each nonterminal symbol in the CFG assigned to a state in the PDA?

Answer: Each nonterminal symbol is assigned to a unique state in the PDA.

How is each rule in the CFG converted to a transition in the PDA?

Answer: Each rule in the CFG is converted to a transition that pushes or pops symbols onto the stack and transitions between states.

What is the relationship between the number of transitions in the PDA and the number of rules in the CFG?

Answer: The number of transitions in the PDA can be greater or less than the number of rules in the CFG.

Can any CFG be converted to an equivalent PDA?

Answer: Yes, it is always possible to convert any CFG to an equivalent PDA.