

# 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.