

39 Lecture - CS402

Important Mcqs

1. Which of the following is true about PDAs and CFGs?

- a) Every PDA corresponds to a CFG.
- b) Every CFG corresponds to a PDA.
- c) Some PDAs correspond to CFGs.
- d) PDAs and CFGs are not related.

Solution: b) Every CFG corresponds to a PDA.

Which of the following is a necessary component of a PDA?

- a) Finite set of states
- b) Input tape
- c) Transition function
- d) All of the above

Solution: d) All of the above

The stack in a PDA allows the PDA to:

- a) Store input symbols
- b) Store nonterminal symbols
- c) Store both input and nonterminal symbols
- d) None of the above

Solution: b) Store nonterminal symbols

The transition function in a PDA is based on:

- a) Current state
- b) Symbol on the input tape
- c) Symbol at the top of the stack
- d) All of the above

Solution: d) All of the above

Which of the following is necessary for a PDA to accept a string?

- a) It must reach an accepting state.
- b) It must have a nonempty stack.
- c) It must have a stack that contains only input symbols.
- d) It must have visited every state.

Solution: a) It must reach an accepting state.

Which of the following is true about PDAs and regular languages?

- a) PDAs can recognize all regular languages.
- b) PDAs cannot recognize any regular languages.
- c) PDAs can recognize some but not all regular languages.
- d) PDAs and regular languages are not related.

Solution: a) PDAs can recognize all regular languages.

The complement of a context-free language is:

- a) Always context-free.

- b) Always regular.
- c) Always non-context-free.
- d) None of the above.

Solution: c) Always non-context-free.

The language $\{0^n 1^n \mid n \geq 0\}$ is:

- a) Context-free but not regular.
- b) Regular but not context-free.
- c) Both context-free and regular.
- d) Neither context-free nor regular.

Solution: a) Context-free but not regular.

Which of the following is true about PDAs and CFGs?

- a) PDAs can recognize all languages generated by CFGs.
- b) PDAs can recognize some but not all languages generated by CFGs.
- c) PDAs can recognize no languages generated by CFGs.
- d) PDAs and CFGs are not related.

Solution: a) PDAs can recognize all languages generated by CFGs.

Which of the following is true about PDAs and deterministic PDAs (DPDAs)?

- a) PDAs are always non-deterministic.
- b) DPDAs are always non-deterministic.
- c) PDAs can be either deterministic or non-deterministic.
- d) PDAs and DPDAs are not related.

Solution: c) PDAs can be either deterministic or non-deterministic.