16 Lecture - CS402

Important Mcqs

What is the purpose of null transitions in an NFA?

A. To consume input symbols

B. To transition to a new state without consuming any input

C. To reject input strings

D. None of the above

Solution: B

Which of the following statements is true about null transitions in an NFA?

A. Null transitions can be followed by any symbol

B. Null transitions can only be followed by null symbols

C. Null transitions are not allowed in an NFA

D. None of the above

Solution: A

Which of the following is an example of an NFA with null transitions?

A. DFA

B. PDA

C. Turing machine

D. ?-NFA

Solution: D

Which of the following is a valid regular expression for the language that consists of all strings over {0, 1} that contain the substring 01?

A. 01*

B. 10

C. (0+1)01(0+1)

D. (0+1)*

Solution: C

Which of the following is true about the closure under concatenation of the class of regular languages?

A. The concatenation of two regular languages is always a regular language

B. The concatenation of two regular languages is not necessarily a regular language

C. The concatenation of two regular languages is always a context-free language

D. None of the above

Solution: A

Which of the following is true about the closure under union of the class of regular languages?

A. The union of two regular languages is always a regular language

B. The union of two regular languages is not necessarily a regular language

C. The union of two regular languages is always a context-free language

D. None of the above

Solution: A

Which of the following is an example of a language that can be recognized by an NFA with null transitions but cannot be recognized by a DFA?

A. {w | w contains an even number of 0's and an even number of 1's}

B. {w | w contains an odd number of 0's or an odd number of 1's}

C. {w | w is a palindrome}

D. {w | w contains the substring 010}

Solution: D

Which of the following is an example of a language that can be recognized by a DFA but cannot be recognized by an NFA with null transitions?

A. {w | w contains an even number of 0's}

B. {w | w contains an odd number of 1's}

C. {w | w is a palindrome}

D. {w | w contains the substring 010}

Solution: A

Which of the following is true about the intersection of two regular languages?

A. The intersection of two regular languages is always a regular language

B. The intersection of two regular languages is not necessarily a regular language

C. The intersection of two regular languages is always a context-free language

D. None of the above

Solution: A

Which of the following is true about the complement of a regular language?

A. The complement of a regular language is always a regular language

B. The complement of a regular language is not necessarily a regular language

C. The complement of a regular language is always a context-free language

D. None of the above

Solution: A