

Pharos University in Alexandria

Faculty of Computer Science & Artificial Intelligence

Course Title: Theory of Computation

Code: CS 307



Theory of Computation

Lecturer: Sherine Shawky

Text Books

1. Introduction to formal languages and automata, Peter Linz, 6th edition, 2017.

Week 7

Revision

Choose

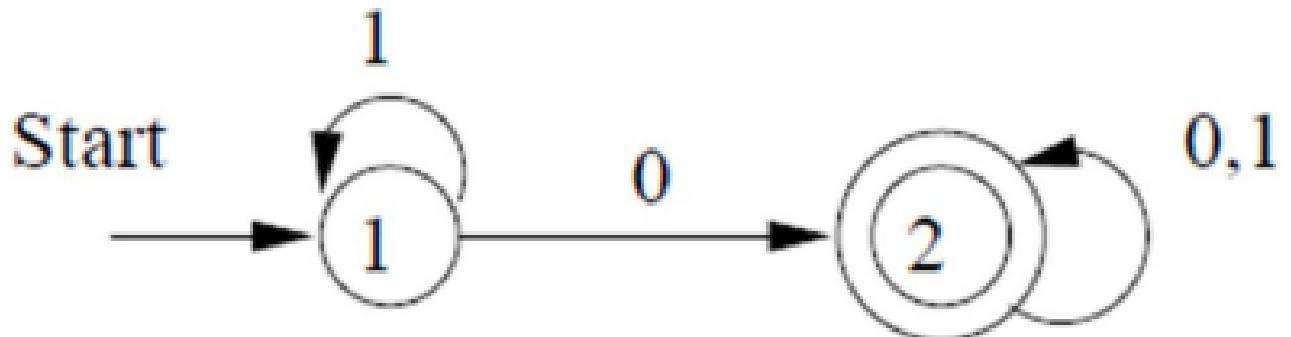
Which of the following expressions describes the language that starting and ending with a and over inputs {a,b}

- A. $R = a (a+b) a$
- B. $R = a^* (a+b)^* a^*$
- C. $R = a (a+b)^* a$
- D. $R = a^* (a+b) a^*$

Choose

The regular expression of the shown state diagram is

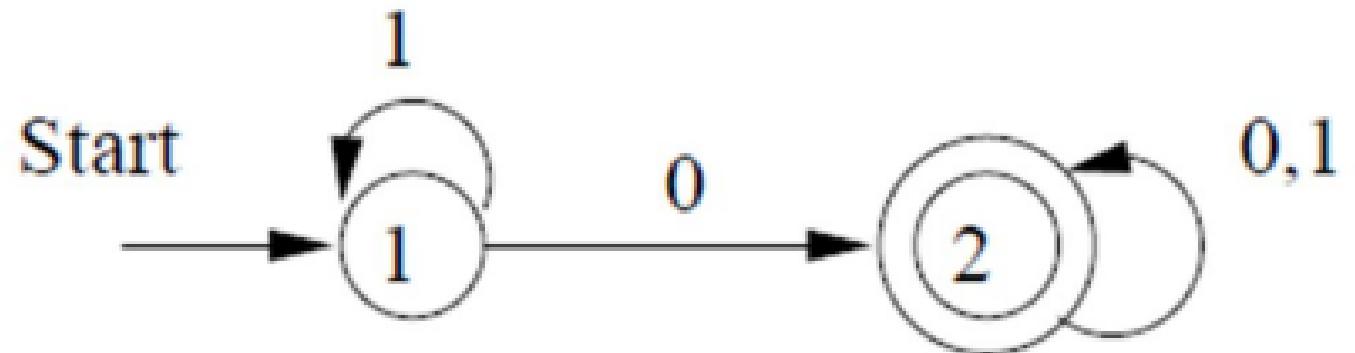
- A. $R = 1^* 0 0 + 1^*$
- B. $R = 1^* 0 (0 + 1)^*$
- C. $R = 1^* 0 0 1^*$
- D. $R = 1^* 0^* 1^*$



Choose

Which of the following sentences describes the shown DFA correctly.

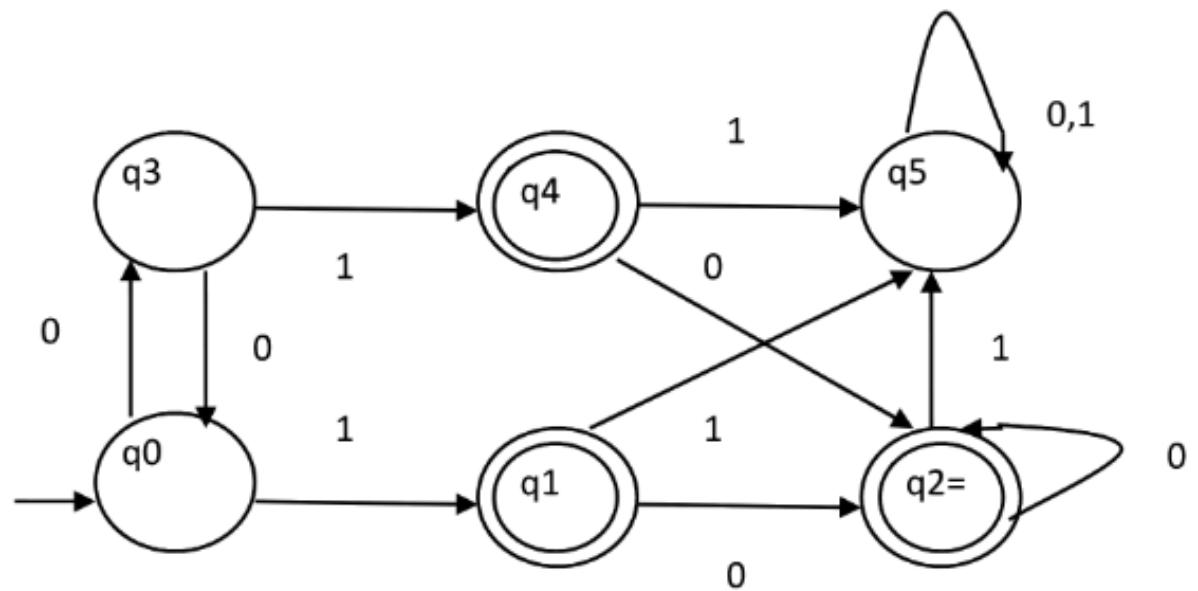
- A. It accepts strings that include “10”.
- B. It rejects string “0”.
- C. It accepts string “1111”.
- D. It rejects string “000”.



Choose

Which of the following sentences describe the shown DFA in Fig. 3 correctly?

- A. It accepts string “111001” and rejects “110”.
- B. It accepts string “010000” and rejects “110”.
- C. It accepts string “010000” and rejects “100”.
- D. It accepts string “111001” and rejects “100”.

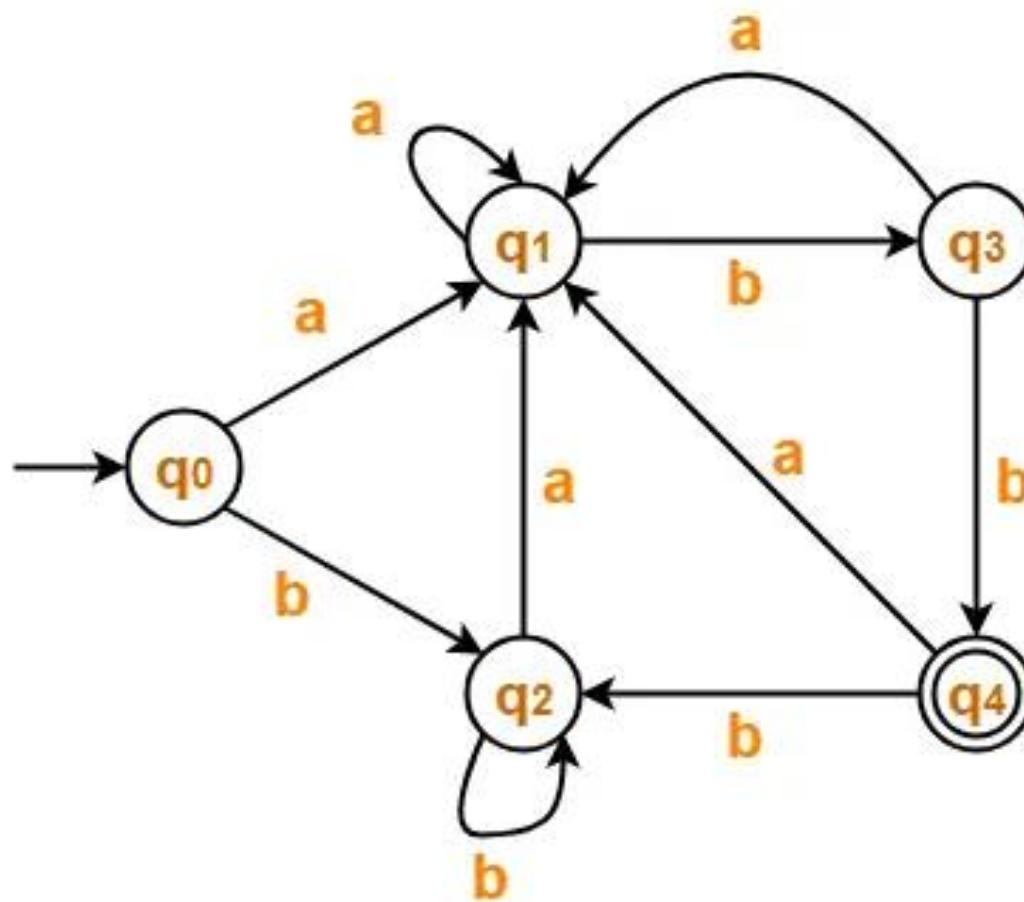


Question

Given that L_1 is a language that accepts all strings that ends with “11” over inputs of $\{0,1\}$. Answer the following questions:

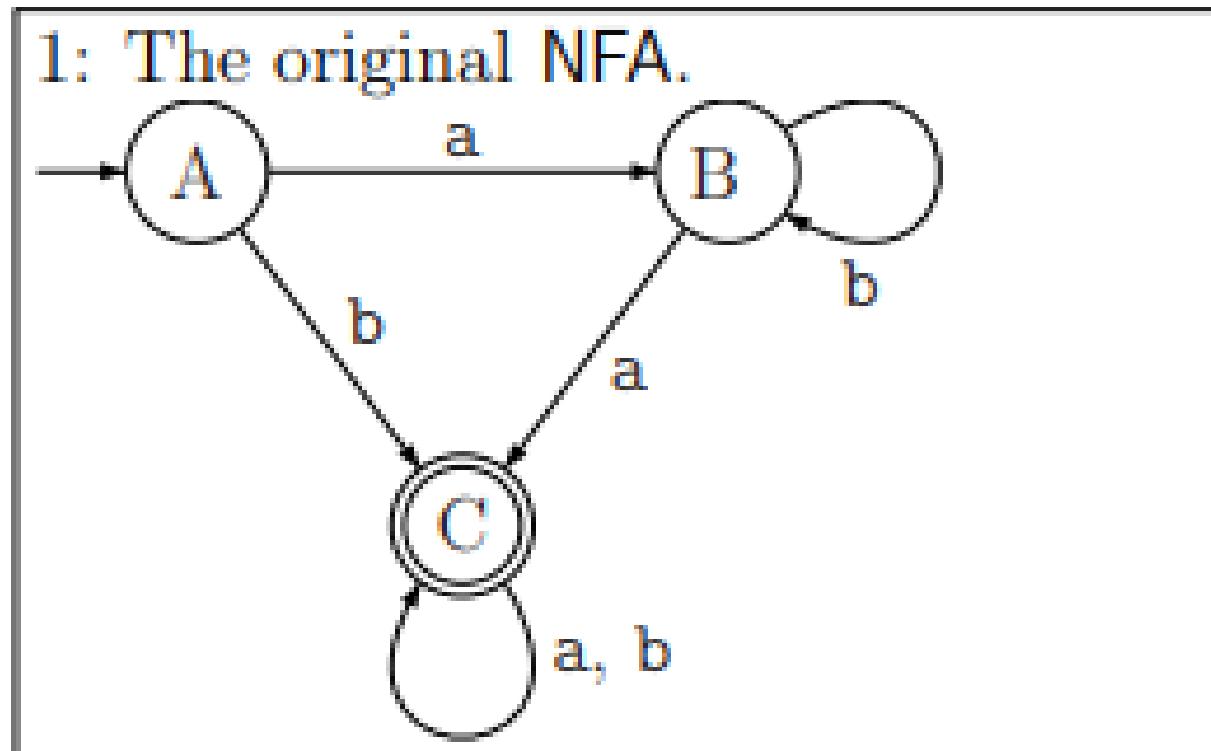
- A. Design a DFA machine of L_1 .
- B. Design a NFA machine of L_1 .
- C. Compare between the answers of a and b.
- D. Convert the NFA obtained in b to its equivalent DFA with steps.
- E. Compare between the answers of a and d.

Question



Question

Convert FA shown into RE and RG.



Question

- Convert RE $(a+b)^*a$ into RG