

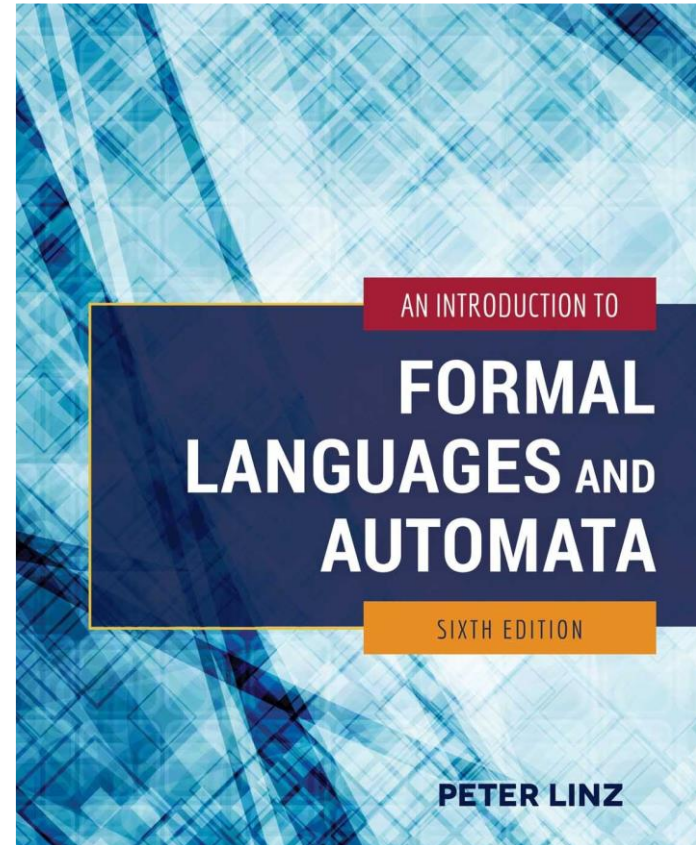
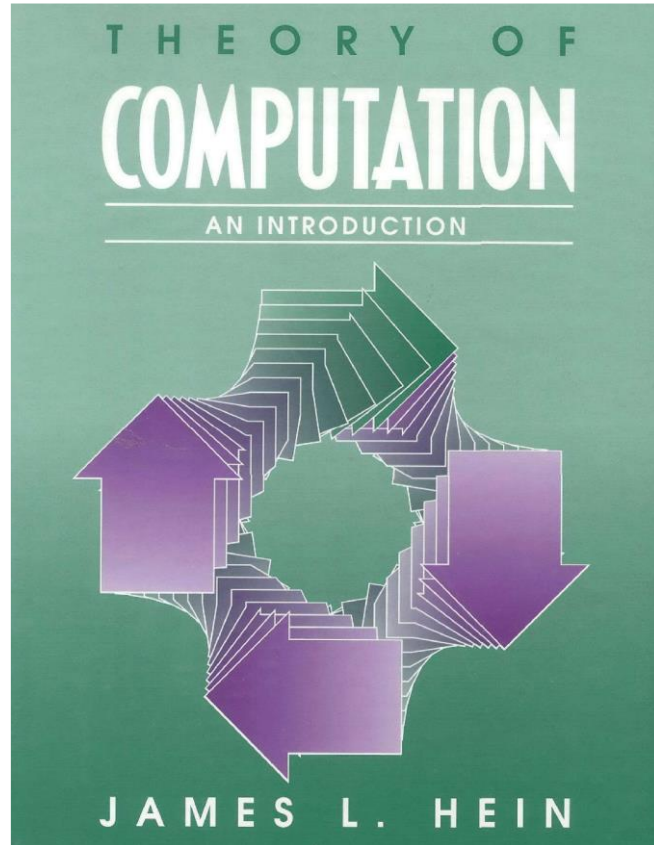
# Automata and Formal Languages

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Lecture 06

# Books

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# PowerPoint

<http://www.bu.edu.eg/staff/ahmedaboalatah14-courses/14767>

The screenshot shows a web interface for Benha University. At the top, there is a blue header with the university logo, the name 'Benha University', and a welcome message for 'Ahmed Hassan Ahmed Abu El Atta' with a 'Log out' link. Below the header, a navigation menu on the left lists various university services. The main content area displays course details for 'Automata and Formal Languages' by 'Ass. Lect. Ahmed Hassan Ahmed Abu El Atta'. The details are presented in a table with blue headers and white content. A 'Course password' section is also visible. On the right side, there are social media icons and a vertical toolbar with icons for Google, a book, RG, LinkedIn, Facebook, Twitter, Google+, YouTube, WordPress, a camera, a globe, a question mark, and an edit icon.

Benha University

Staff Search: **Welcome: Ahmed Hassan Ahmed Abu El Atta (Log out)**

You are in: [Home](#) / [Courses](#) / [Automata and Formal Languages](#) [Back To Courses](#)

Ass. Lect. Ahmed Hassan Ahmed Abu El Atta :: Course Details:  
Automata And Formal Languages [add course](#) | [edit course](#)

Course name	Automata and Formal Languages
Level	Undergraduate
Last year taught	2018
Course description	Not Uploaded
Course password	
Course files	<a href="#">add files</a>
Course URLs	<a href="#">add URLs</a>
Course assignments	<a href="#">add assignments</a>
Course Exams & Model Answers	<a href="#">add exams</a>

Benha University

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- Administrative Positions

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(edit)

# Regular Expressions & NFA

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# Agenda

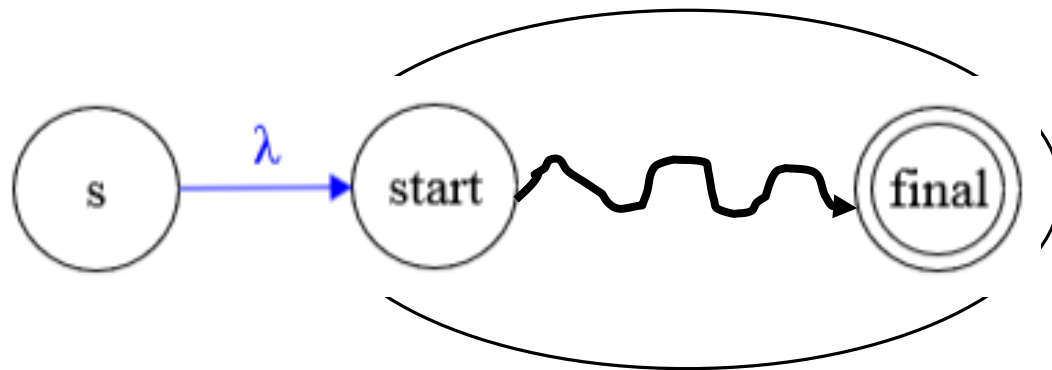
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- Transforming Finite Automata into Regular Expressions
  - FA to RE
  - Example 1
  - Example 2
  - Example 3
  - Example 4

# Transforming Finite Automata into Regular Expressions

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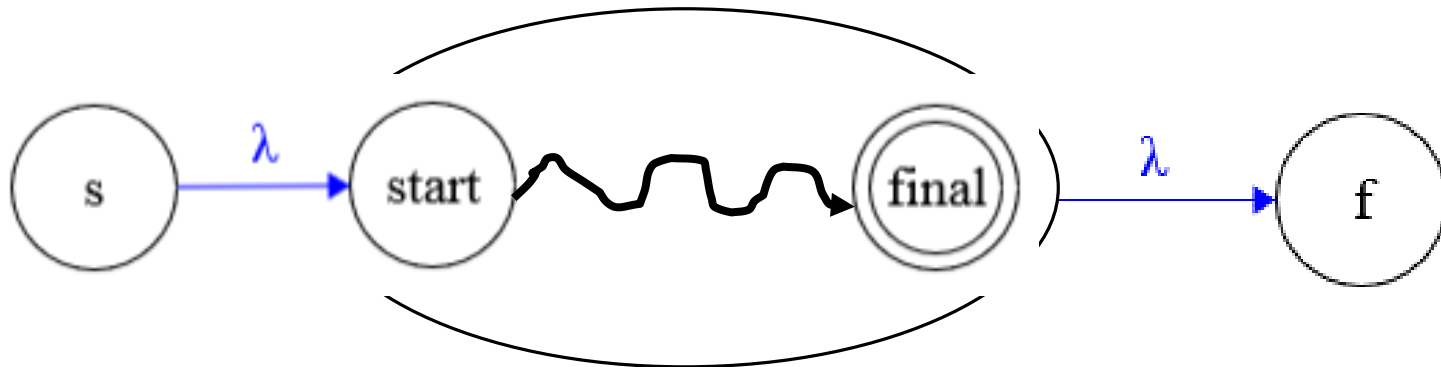
1- Create a new start state **s**, and draw a new edge labeled with  $\Lambda$  from **s** to the **original start state**.



# FA to RE

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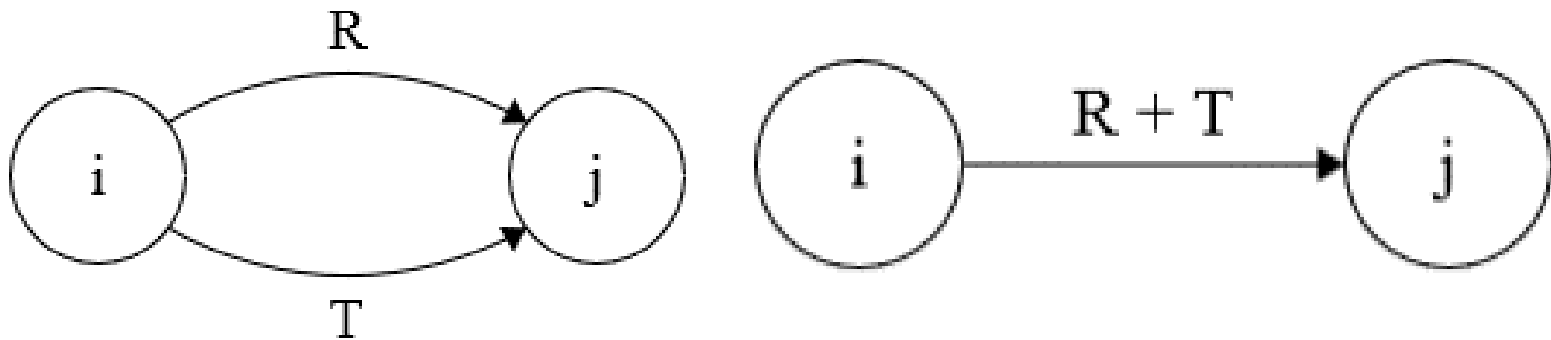
2- Create a new final state **f**, and draw new edges labeled with  $\Lambda$  from all the **original final states** to **f**.



# FA to RE

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3- For each pair of states  $i$  and  $j$  that have **more than one edge** from  $i$  to  $j$ , **replace** all the edges from  $i$  to  $j$  by **a single edge** labeled with the regular expression formed by the **sum** of the labels on each of the edges from  $i$  to  $j$ .





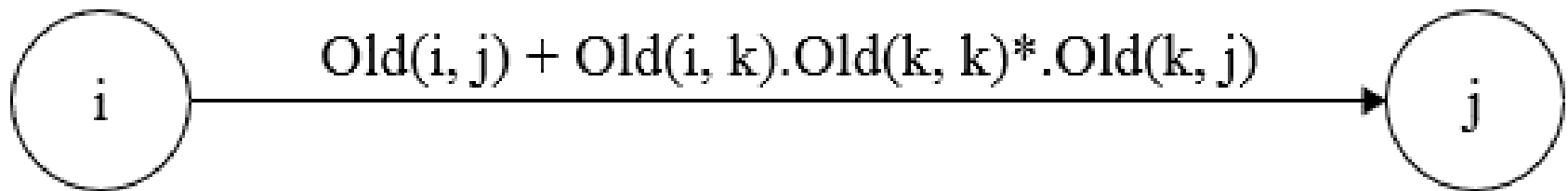
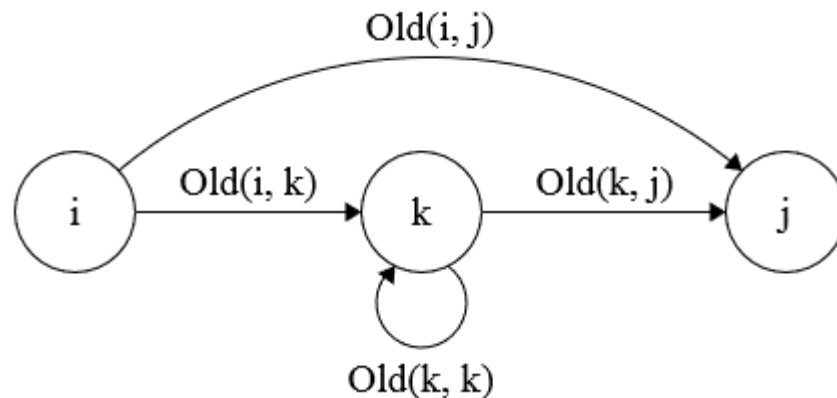
# FA to RE

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4- Construct a sequence of new machines by **eliminating** one state at a time until the only states remaining are **s** and the **f**.

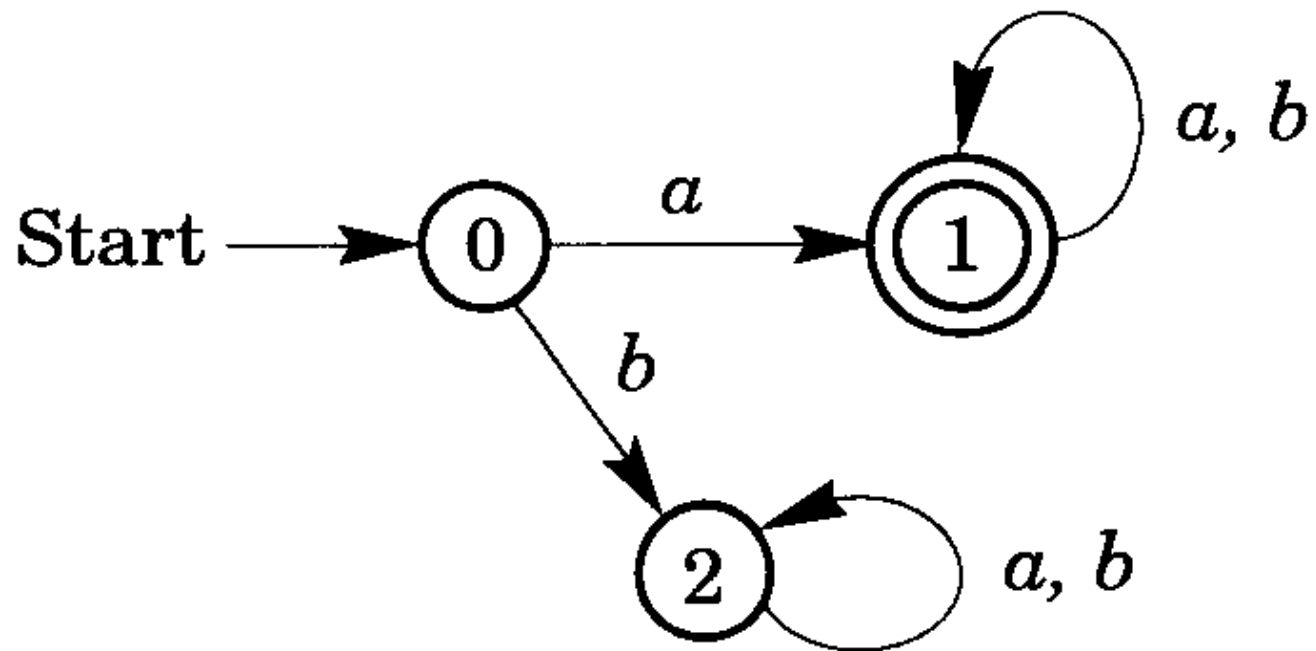
*Eliminate State **k***

**$i \neq k$**  and  **$k \neq j$**



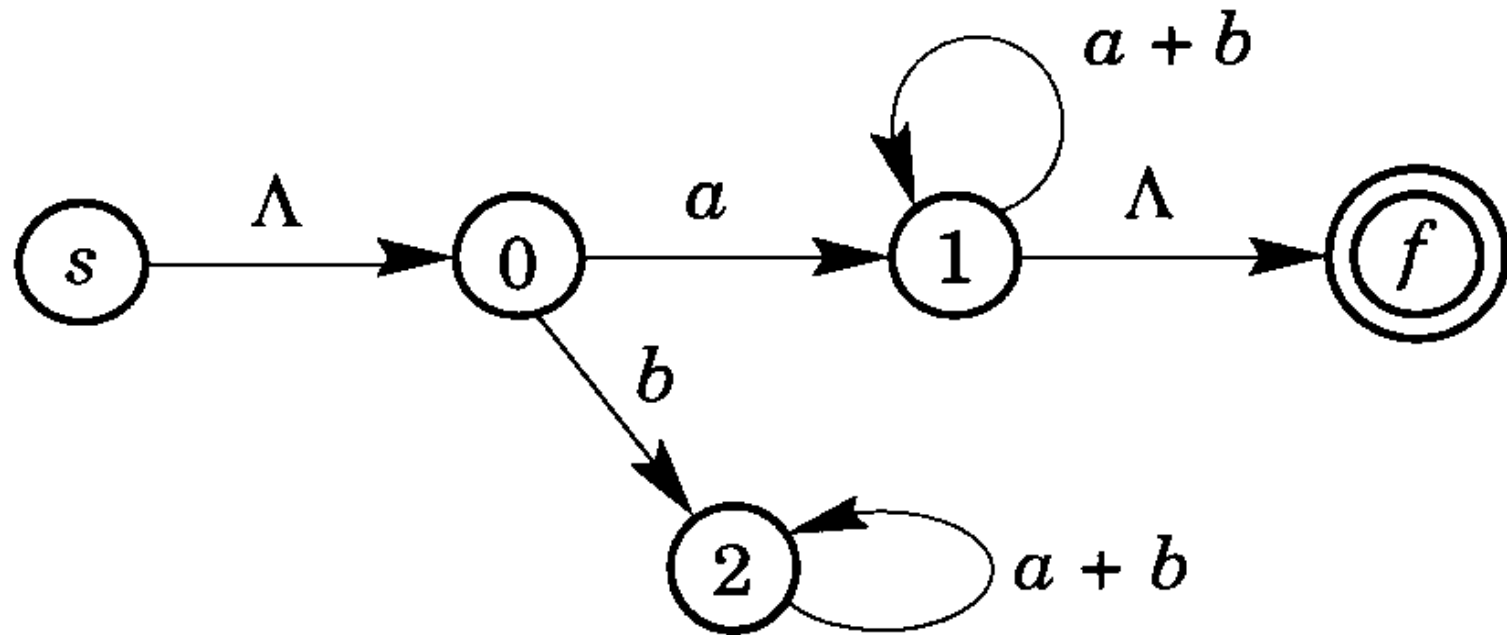
# Example 1

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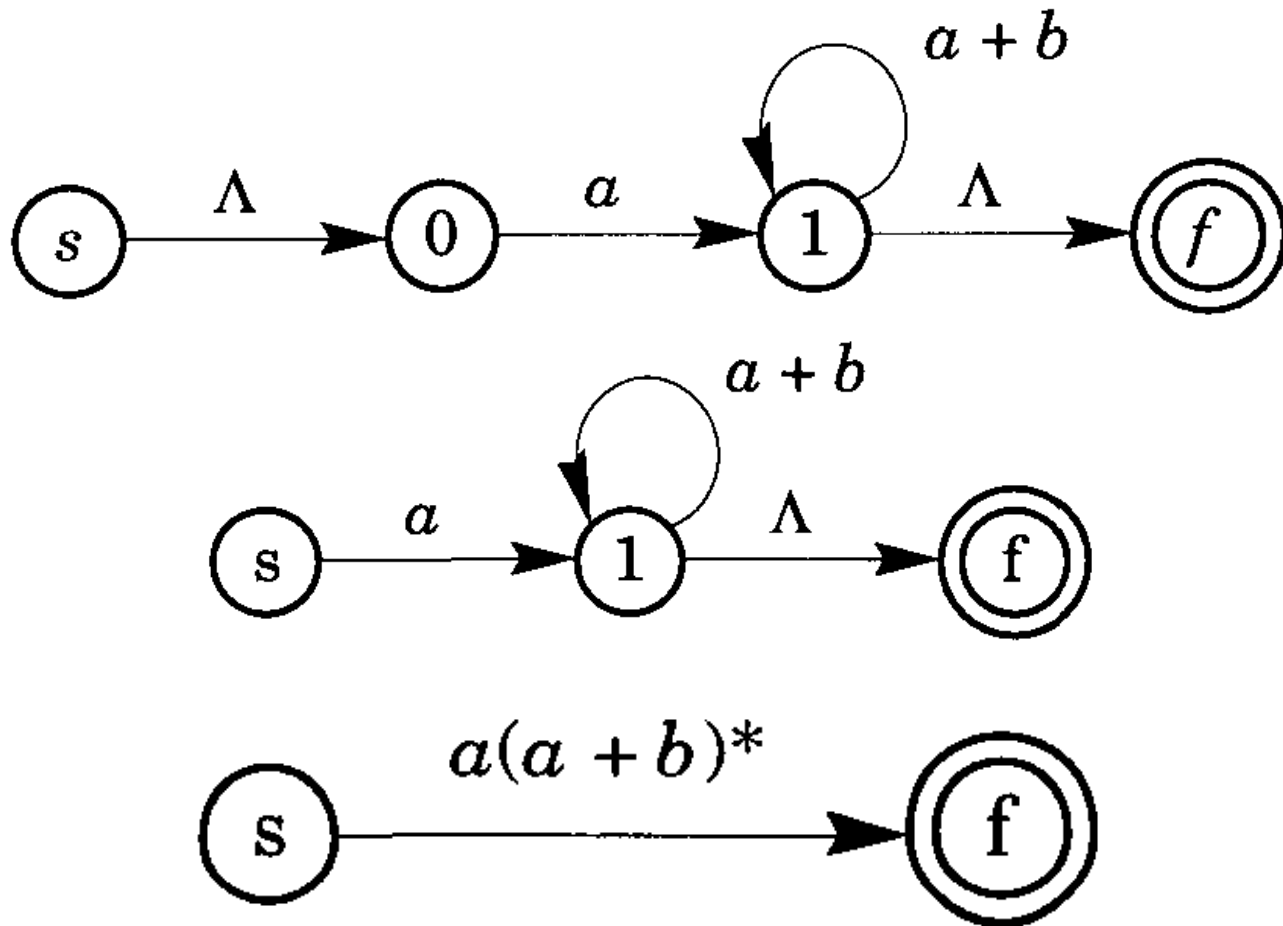
# Example 1

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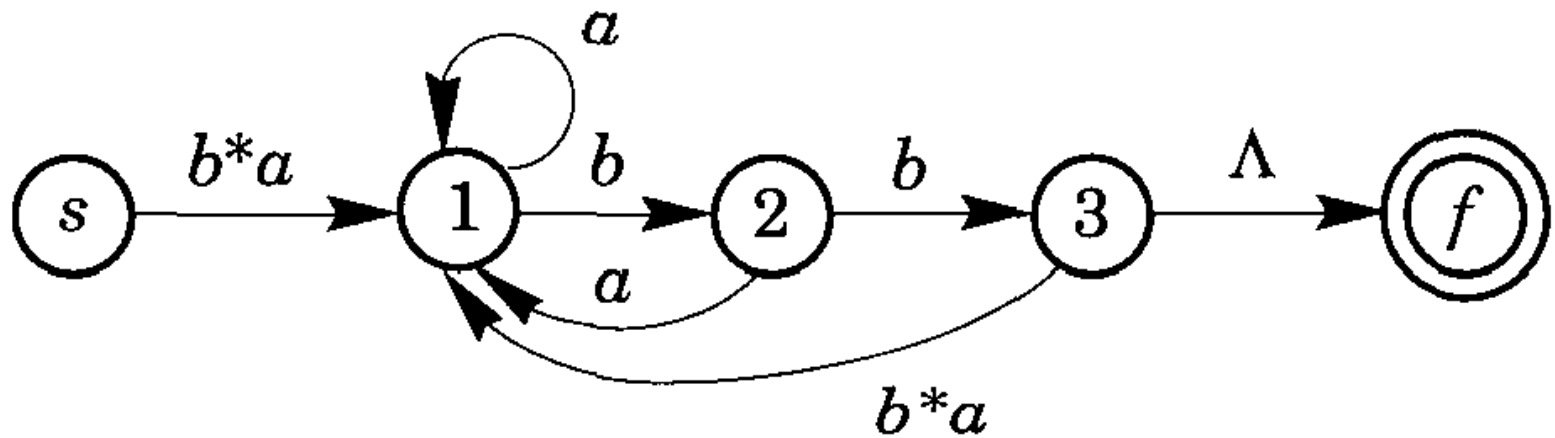
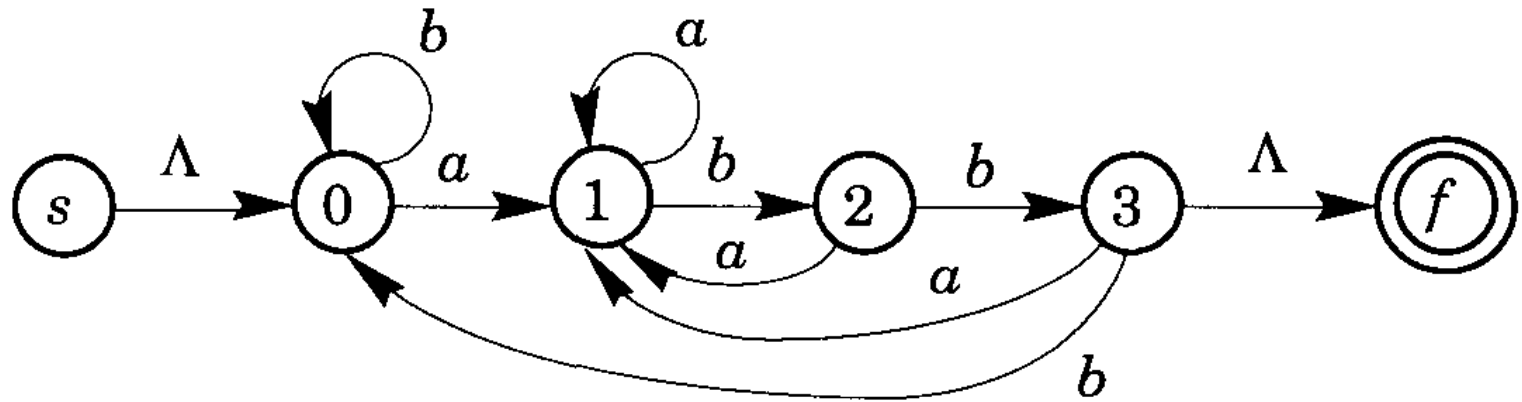


# Example 1

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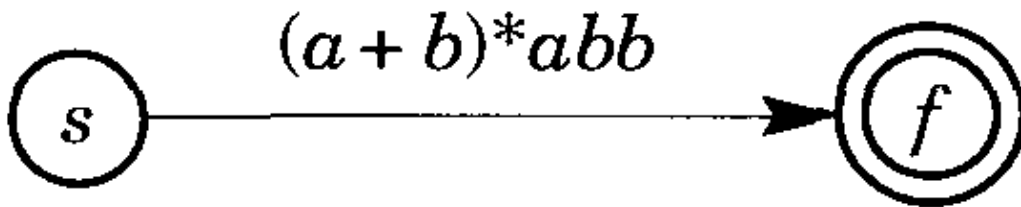
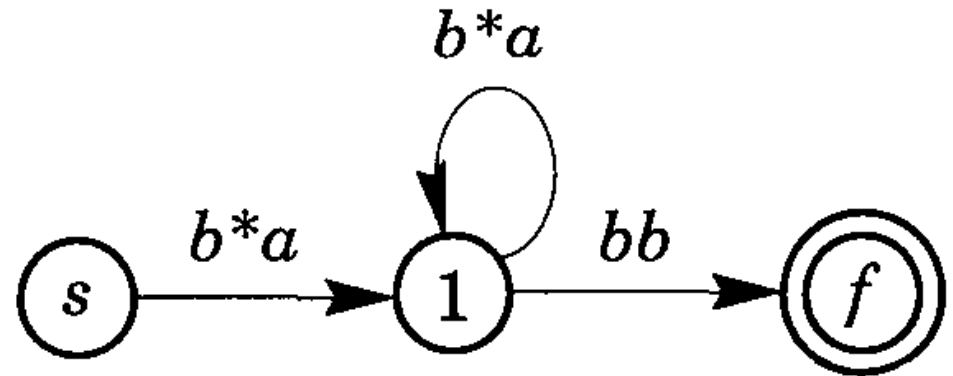
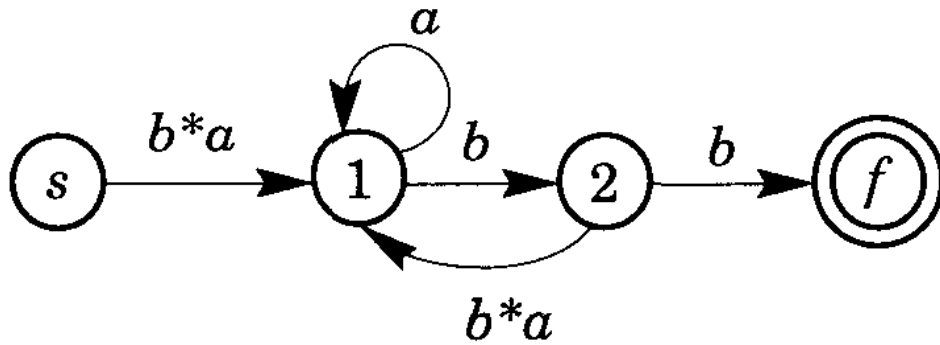


# Example 2



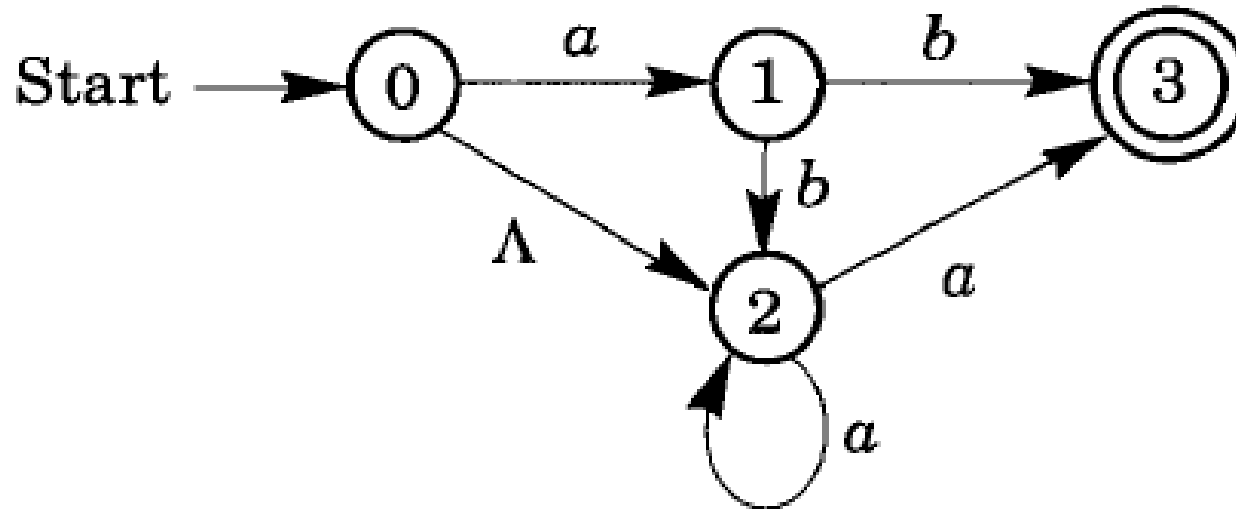
# Example 2

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# Example 3

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# Example 4

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