

CPSC-406 Report

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Abstract

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1 Introduction

2 Week by Week

2.1 Week 1

2.1.1 Exercise 1: Word Processing with DFAs

Notes and Homework:

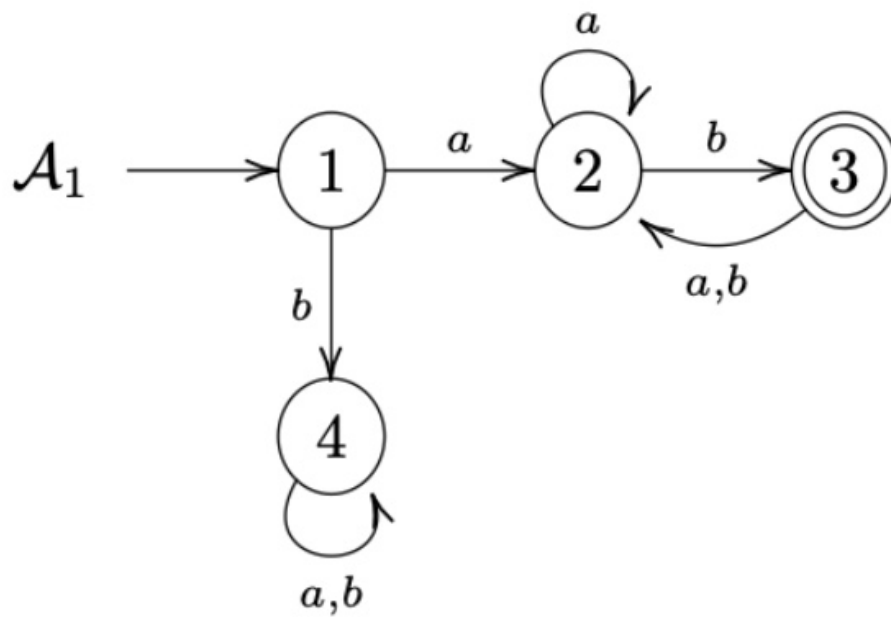


Figure 1: Automata \mathcal{A}_1 and \mathcal{A}_2

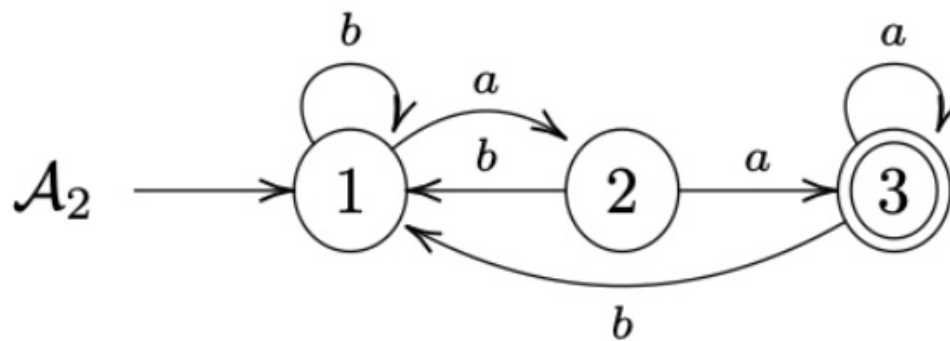


Figure 2: Additional automata reference

Question 1: Which of the following words are accepted/refused by \mathcal{A}_1 and \mathcal{A}_2 , respectively? Complete the table.

w	accepted by A_1 ?	accepted by A_2 ?
aaa	no	yes
aab	yes	no
aba	no	no
abb	no	no
baa	no	yes
bab	no	no
bba	no	no
bbb	no	no

Table 1: Acceptance table for A_1 and A_2

Question 2: More generally, can you completely describe the languages $L(A_k)$ accepted by A_k , for $k = 1, 2$?

The language $L(A)$ accepted by this DFA is:

$$L(A) = \{w \in \{a, b\}^* \mid \text{the number of } a\text{'s in } w \text{ is even}\}$$

2.1.2 Exercise 2: Designing DFAs

Design DFAs whose accepted languages are given as follows:

1. All the words that end with ab
2. All the words that contain ab
3. All the words that contain an odd number of a 's and an odd number of b 's
4. All the words that contain an even number of a 's and an odd number of b 's
5. All the words such that any three consecutive characters contain at least one a
6. All the words that contain aba

DFA Diagrams:

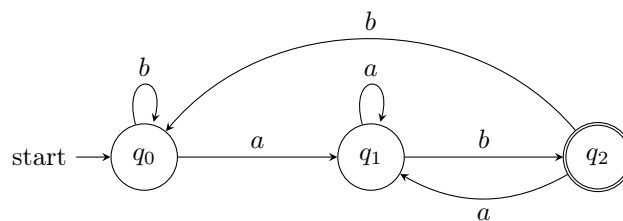


Figure 3: DFA for words ending with ab

Observation: Compare the various automata designed above. What patterns do you notice in their structure and complexity?

3 Synthesis

4 Evidence of Participation

5 Conclusion

References

[BLA] Author, [Title](#), Publisher, Year.