

Theory of Computation

CS 378, Fall 2022

Smaller Assignment 3

Due **BY THE BEGINNING OF CLASS** Thursday, September 29

- Standard file naming and HW submission conventions apply: Please submit your type-written answers in a PDF file named

`CS378_SA3_<userid>.pdf`

where `<userid>` is replaced by your Colby userid—for example, my file would be called `CS378_SA3_eaaron.pdf`. Please use your full userid, including your class year. Place the properly named file in your **Private** directory in your CS378 filespace on **filer**.

- As usual for small assignments in CS378 this semester, this is due by the beginning of the next class meeting, and it will be marked on a $\checkmark + / \checkmark / \checkmark - / 0$ scale.
- *A general note for CS378:* As always, please present answers cleanly and **explain them clearly and thoroughly**, giving all details needed to make your answers easy to understand; typed-up (rather than handwritten) answers are required, and using $\text{\LaTeX}$ to typeset your answers is appreciated. (Feel free to talk with your Prof. about using $\text{\LaTeX}$!) Graders may not award full credit to incomplete or illegible solutions. Clear communication *is* the point, on every assignment.

In general in CS378, unless explicitly specified otherwise, answers should be accompanied by explanations. Answers without explanations may not receive full credit. Please feel free to ask me any questions about explanations that might come up!

Exercises

1. Sipser, Exercise 1.16(b), page 86. For this one exercise, you do not need to explain your answer or give the 5-tuple for your DFA, just give the state-transition diagram for your DFA.

The exercise in Sipser says to use the construction given in Theorem 1.39—that is the power set construction presented in class and lecture notes.