Week 8: Regular Languages and Finite Automaton

CSC 236:Introduction to the Theory of Computation

Summer 2024

Instructor: Lily

Announcement

- Midterm 2: 6:00~8:00pm EX 100 (July 17)
  - Bonus Question (midterm 2). Course material (up to and including W7)
  - Missed Exam? Submit request by July 22 (documents by July 25)
- Structure for finite automaton section:
  - Week 8: DFA, NFA, and regular expressions
  - Week 9: Proof of correctness of finite automatons, equivalence of DFA-NFA-regular expressions
  - Week 10: Limitations of regular languages, pumping lemma
- Tutorials this week: more examples of DFAs and NFAs

Now you try!

Design a DFA which accepts the following languages

1. $L_1 = \{w \in \{0,1\}^* : w \text{ starts with } 0 \text{ and ends with } 1\}$.
2. $L_2 = \{w \in \{0,1\}^* : w \text{ contains an odd number of } 1\}$.
3. $L_3 = \{0^n 1^m : m, n \in \mathbb{N}, m + n \text{ is even}\}$.

$$L_1 = \{w \in \{0,1\}^* : w \text{ starts with } 0 \text{ and ends with } 1\}.$$

$L_2 = \{w \in \{0,1\}^* : w \text{ contains an odd number of } 1\}.$

$$L_3 = \{0^n 1^m : m, n \in \mathbb{N}, m + n \text{ is even}\}.$$