Reading. Read Chapter 4: “Properties of Regular Languages”. There are several pre-recorded lectures pertaining to this assignment. They can be found following the links on the grid of notes, or on the Canvas LMS.

Assignment. Do some small number of the following exercises.

- Section 4.2: Problems 1–12.
- [Section 4.3: Pumping Lemma. Next week]

We are especially interested in clear exposition and proof technique. (Some solutions sketches are in the back of the book.)

Submission. Write up the solutions. You may use pen and paper, a plain text, or \LaTeX. Produce a PDF document, and submit it on Canvas.

Questions. If you have questions about how to do the problems, you are welcome to send me e-mail: ryan@fit.edu. Starting on Monday students will be called upon to share and explain their answers during class time.

Assessment. Ultimately the written proofs, your choice of exercises, and your participation in answering and asking questions, will influence your course grade.

Objectives.

1. State the closure properties of regular languages
2. Prove that regular languages are closed under union, concatenation, star-closure, complementation, and intersection
3. Prove that regular languages are closed under reversal
4. Describe a membership algorithm for regular languages
5. Describe an algorithm to determine if a regular language is empty, finite, or infinite
6. Describe an algorithm to determine if two regular languages are equal
7. Apply the pumping lemma to show that a language is not regular