

Assignment 2

CSI 4336

Due September 11, 2018

Submitting your assignment

All written portions of the assignment should be prepared in \LaTeX .

Submit this assignment by the due date in two ways: by email (before class) and printed (at the beginning of class). Don't put any code in the printed copy. Proofread your document for style before submitting it.

Send the email to hamerly@cs.baylor.edu with the subject "CSI 4336 assignment X" (where X is the assignment number). The email should have one attachment (plain text, .zip, or .tar.gz format) containing:

- the .tex document you wrote named "lastname.tex" (where 'lastname' is your last name),
- a compiled .pdf from the .tex document named "lastname.pdf" (where 'lastname' is your last name),
- any additional files used in your \LaTeX document, named "lastname_fig1.pdf" (or similar), and
- all source code used for any programs.

1 Proving languages to be non-regular (10 points each, 30 points total)

Use the pumping lemma for regular languages to construct thorough proofs which show that the following languages are not regular.

1. Let $\Sigma = \{a, b\}$. Consider the language of all strings that contain exactly twice as many occurrences of b as occurrences of a. Call this language L_{abb} . For example, "abb", "bababb" and ε are in L_{abb} , but "bbab", "aba", and "bbbabbb" are not.
2. Sipser problem 1.46 part c.
3. Sipser problem 1.53.

2 Regular language complement (20 points)

Do problem 'Regular Language Complement' on Kattis.