

Assignment 5

CSI 4336

Due October 9, 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 Textbook exercises (10 points each, 40 points total)

- Do exercise 5.4 from your textbook.
- Do problem 5.30 (a) from your textbook. However, do not use Rice's theorem. Instead, use a reduction from another undecidable language.
- Do problem 5.30 (c) from your textbook. You should use Rice's theorem for this proof. You may follow the structure of the book's sample solution for 5.30 (a), but make sure you show each sub-part carefully.
- Is the language from 5.30 (a) co-Turing-recognizable? Prove your answer. Try using Corollary 5.29. This should be easy if you used a mapping reduction in your earlier proof, or if you can show that your earlier reduction is a mapping reduction.
- Extra credit (10 points): Is the language from 5.30 (a) Turing-recognizable? Prove your answer.