Assignment 4

CSI 4336

Due October 4, 2016

Submitting your assignment

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

Submit this assignment on the due date in two ways: by email (before class) and in hardcopy (at the beginning of class). The printed copy should not contain any programming code. 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 (e.g. 0). The email should have one attachment (in plain text, .zip, or .tar.gz format) containing:

- the .tex document you wrote named “lastname.tex” (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, 30 points total)

- Do problem 3.16 (c) from your textbook. Consider using nondeterminism.
- Do exercise 4.7 from your textbook (note: this is 4.6 in the second edition).
- Do problem 4.13 from your textbook (note: this is 4.12 in the second edition).

2 Accepting Cubes with a TM (20 points)

Do the problem ‘tmcubes’ on Kattis. This problem helps you understand the capabilities of the Turing Machine model. Use a restricted form of Java or C++ that is not too different from a Turing machine.

This problem has ‘included code’, hosted on Kattis, which you do not submit. Kattis has the included code and compiles it in automatically. You submit a ‘driver’ which uses the included code. Here are copies of the included code, which you need to write your solution on your own computer:

- Java: TuringMachineTape.java
- C++: TuringMachineTape.h

For a little bit of extra credit, construct your program so it only uses one tape.