Problem Set 6 – Due Tuesday, February 28, 2012

This problem set may be done in groups of 1–3 people. A team must turn in a single writeup.

Problem 1. Understand everything you missed on the midterm. Then redo the midterm, turning in a model solution.[1] For the initial true/false questions, also add in a brief (at most one-sentence) explanation. Where appropriate, make that explanation a counter-example.

Problem 2. Following the conventions of your book, fully specify a Turing machine that decides the language

$$L \;=\; \{x = y\colon\ x, y \in \{a, b\}^*\}$$

You may employ any tape alphabet you wish.

Problem 3. Are the decidable languages closed under the regular operations of union, complement, and star? Are the Turing-acceptable languages closed under these operations? Explain all answers.

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[1]Exception: if you got $\geq 120/135$ on the exam and are working alone, do not redo the exam. Do understand whatever you missed. But, after that, write a brief, thoughtful critique of any question(s) on the exam that you find worthy of comment.