University of Washington

CSE 322: Introduction to Formal Models in Computer Science

Homework #4

Due: Wednesday, May 8, 2002, 10:30am

Spring 2002 April 29, 2002

Written homework is due at the *beginning* of class on the day specified. Any homework turned in after the deadline will be considered late. **Late homework policy:** You may turn in your homework after the deadline and before 5pm on the day it was due, but at a cost of a **20% penalty**. No homework will be accepted after 5pm on the due date.

Please staple all of your pages together (and order them according to the order of the problems below) and have your name on each page, just in case the pages get separated. Write legibly (or type) and organize your answers in a way that is easy to read. Neatness counts!

For each problem, make sure you have acknowledged all persons with whom you worked. Even though you are encouraged to work together on problems, the work you turn in is expected to be your own. When in doubt, invoke the *Gilligan's Island* rule (see the course organization handout) or ask the instructor.

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Regular problems (to be turned in) **:**

1. Exercise 1.17c.
2. Exercise 2.4, parts b, d, e.
3. Problem 2.15.
4. Let $L = \{ a^m b^n c^p d^q \mid m + n = p + q$, and $m, n, p, q \geq 0 \}$. Give a grammar that generates L. Provide some written comments that help explain how your grammar works.

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Bonus Problem (optional):

1. (none)

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Suggested problems (highly recommended, but not to be turned in) **:**

1. More exercises to prove languages are not regular. 1.17a,b, 1.18, 1.23, 1.36.
2. 1.41.
3. 1.43.
4. 2.3.
5. 2.4 (parts other than the ones in the regular problems).
6. 2.6.