Reading Assignments

• For lecture on 9/12/2011: Dragon-book 3.1-3.6 (43 pages)
• For lecture on 9/19/2011: Dragon-book 4.1-4.4 (42 pages)

Homework Assignments

5 questions, total 24 points.

1. From informal description to extended regular expression (4 points).
   Write a regular expression for hexadecimal numbers. These numbers start with 0x, followed by one or more digits or letters from a-f. The letters can be lower-case or upper-case. For example, your regular expression should accept 0x0, 0x24a, and 0xbC, but it should reject 123 and 0xbG.

2. From extended regular expression to essential regular expression (5 points).
   Consider the following extended regular expression:
   \((\[a-c\]d?\[ef\])+\)
   Rewrite this regular expression using only the “essential” features of formal regular expressions. For example, character classes \[\cdots\] and positive closure + are not essential features, and should be expressed using only the essential features instead.

3. From regular expression to NFA (5 points).
   Consider the following regular expression:
   \((a(b|c)\*)\*)\*
   Show an NFA that accepts the same language. You can show your NFA either graphically, or by providing a transition table, whichever you prefer.

4. From NFA to DFA (5 points).
   Consider the following NFA:

   ![NFA Diagram](image)

   Show a DFA that accepts the same language. You can show your DFA either graphically, or by providing a transition table, whichever you prefer.
5. From DFA to regular expression (5 points).
Consider the following DFA:

Show a regular expression that accepts the same language.

http://cs.nyu.edu/courses/fall13/CSCI-GA.2130-001/hw2.pdf