Interview Questions: Regular Expressions

The **hard deadline** for this homework is **Wed 5 Jun 2013 8:59 PM PDT (UTC -0700)**.

☐ **In accordance with the Coursera Honor Code, I (Atul Gupta) certify that the answers here are my own work.**

Question 1

Challenging REs. Construct a regular expression for each of the following languages over the binary alphabet or prove that no such regular expression is possible:

- All strings except 11 or 111.
- Strings with 1 in every odd-number bit position.
- Strings with an equal number of 0s and 1s.
- Strings with at least two 0s and at most one 1.
- Strings that when interpreted as a binary integer are a multiple of 3.
- Strings with no two consecutive 1s.
- Strings that are palindromes (same forwards and backwards).
- Strings with an equal number of substrings of the form 01 and 10.

Question 2

Exponential-size DFA. Design a regular expressions of length N such that any DFA that recognizes the same language has an exponential number of states.

Question 3

Extensions to NFA. Add to NFA.java the ability to handle multiway or, wildcard, and the + closure operator.

☐ **In accordance with the Coursera Honor Code, I (Atul Gupta) certify that the answers here are my own work.**

Submit Answers Save Answers

You cannot submit your work until you agree to the Honor Code. Thanks!