CS 228, Regular Expressions

Name:

Some questions are from **Discrete Mathematics and It's Applications 7e** by Kenneth Rosen.

- Determine whether 0101 belongs to each of these regular sets.

  a) 01*0   **b) 0(11)*(01)***
  c) 0(10)*1*   **d) 0*10*(0 ∪ 1)**
  e) (01)*(11)*   **f) 0*(10 ∪ 11)***
  g) 0*(10)*11   **h) 01(01 ∪ 0)1***

- Express each of these sets using a regular expression.

  a) the set consisting of the strings 0, 11, and 010

  b) the set of strings of odd length

  c) the set of strings that contain exactly one 1

  d) the set of strings of two or more symbols followed by three or more 0s

  e) the set of strings with either no 1 preceding a 0 or no 0 preceding a 1

- Using the construction described in the proof of Kleene's theorem, find nondeterministic finite-state automata that recognize the sets **0*1*** and **(0 ∪ 11)***.

- See if you can create simpler nondeterministic finite-state automata that recognize the sets **0*1*** and **(0 ∪ 11)***.