

CS381 Homework Assignment number 3
Due Friday, September 16

Please write your name and net id on the upper right corner of each page.
Do problems 1 and 2 on one sheet of paper, 3 and 4 on one sheet of paper, etc.

1. Write a regular expression for all strings of 0's and 1's having an even number of 0's. Does every string denoted by your expression have an even number of 0's? Is every string with an even number of 0's included in your regular expression?
2. Write a regular expression for all strings of 0's and 1's in which all 0's occur before any 1's.
3. Write a regular expression for all strings of 0's and 1's that are of odd length.
4. Write a regular expression for all strings of 0's and 1's in which the total number of zeros to the right of each 1 is even.
5. Write a regular expression for all strings of 0's and 1's in which at least one copy of the substring 01 occurs before any copy of the substring 10 occurs in the string. If there is no occurrence of the substring 10 then there need not be any copy of the substring 01.
6. Write a regular expression for all strings of 0's and 1's in which there is an even number of 0's between any two 1's.
7. Write a regular expression for all strings of 0's and 1's such that at every point in the string the number of 1's minus the number of 0's is zero, one or two.
8. Write a regular expression for all strings of 0's and 1's with an even number of 0's and an odd number of 1's.
9. Problem 3.1.4 from the book.
10. Write a regular expression for all strings of 0's and 1's such that every odd numbered 0 is immediately followed by a 0, i.e. the 0's occur in pairs.