

CMSC 330

Practice Problems 1

1. Describe the languages denoted by the following regular expressions:

- (a) $0(0|1)^*0$
 - (b) $((\epsilon | 0)1^*)^*$
 - (c) $(0|1)^*0(0|1)(0|1)$
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2. Write regular expressions, DFAs, and NFAs for the following languages.

- (a) All strings of 0's and 1's that begin in 1.
- (b) All non-empty strings of 0's and 1's that end in 1.
- (c) All strings of 0's and 1's that contain the substring 00.
- (d) All strings of 0's and 1's that do not contain the substring 00.

Substring is any contiguous sequence of characters found in a string.

3. For the regular expressions $(a|b)^*$ and $(a^*|b^*)^*$

- (a) Construct an NFA using the construction algorithm presented in class
- (b) Show the sequence of moves in parsing "ababbab"