

## Homework 2

Give regular expressions for following languages.

1.  $L = \{ 0^n 1^m : n < 4, m \leq 3 \}$ .
2. The set of all strings of 0's and 1's not containing 101 as a substring.
3.  $L = \{ w \in \{0,1\}^* \mid w \text{ contains both } 01 \text{ and } 10 \text{ as substrings} \}$ .
4. The set of all strings with an equal number of 0's and 1's, such that no prefix has two more 0's than 1's, nor two more 1's than 0's.
5. Let  $L = \{ w \mid w \in \{0,1\}^* \text{ and if there are two 0s of } w, \text{ they must be separated by } 1 \text{ or } 11 \}$