

## COSC 341 – Tutorial 8

1. Are the following languages automatic languages? If so, construct an NFA for that language. If not, prove that the language is not automatic.
  - (a)  $L = \{w \mid w \text{ is a palindrome over } \{a, b\}\}$
  - (b)  $L = \{a^n b^m \mid n, m \in \mathbb{N}\}$
  - (c)  $L = \{a^n b^m \mid n < m\}$
  - (d)  $L = \{ww \mid w \in \{a, b\}^*\}$

## Homework

1. Are the following languages automatic languages? If so, construct an NFA for that language. If not, prove that the language is not automatic.
  - (a)  $L = \{w \mid w \text{ has twice as many } a\text{'s as } b\text{'s}\}$
  - (b)  $L = \{w \mid w \in \{a, b\}^*, \text{ the total number of } a\text{'s and } b\text{'s is odd}\}$