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) $L = \{w | w \text{ is a palindrome over } \{a, b\}\}$

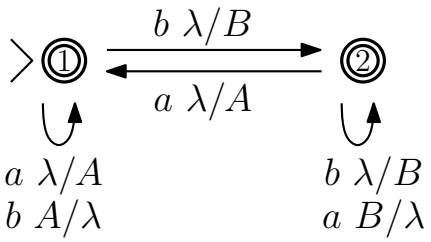
   (b) $L = \{a^n b^m | n, m \in \mathbb{N}\}$

   (c) $L = \{a^n b^m | n < m\}$

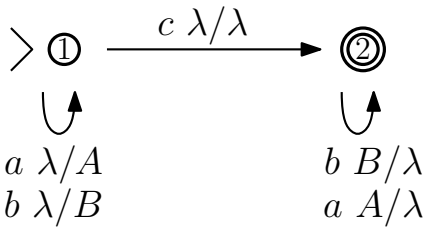
   (d) $L = \{ww | w \in \{a, b\}^*\}$

2. Which language does the following Pushdown Automaton recognise?

   (a)



   (b)



3. Construct a Pushdown Automaton that accepts the following language:

   (a) $L = \{a^n b^n c^m \mid n, m \geq 0\}$

   (b) $L = \{a^i b^j c^k | i + j = k\}$

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) $L = \{w | w \text{ has twice as many } a\text{'s as } b\text{'s}\}$

   (b) $L = \{w | w \in \{a, b\}^*, \text{ the total number of } a\text{'s and } b\text{'s is odd}$