

# Automata Theory: Assignment 7

Due date: March 7 (Thursday)

**Problem 1** (4 points)

Argue that the language  $\{a^n b^k a^n : k, n \geq 0\}$  is not regular.

**Problem 2** (6 points)

Give a context-free grammar for each of the following languages:

- (a)  $\{a^n b^k a^n : k, n \geq 0\}$
- (b)  $\{a^k b^m a^n : m = 2 \cdot k + 2 \cdot n\}$
- (c)  $\{a^k b^m a^n : k + m \geq n\}$