

# Finite Automata Theory and Formal Languages

## TMV027/DIT321

### Context-Free Languages

#### Exercise 6

In these exercises, book sections, exercise numbers and pages refer to those in the third edition of the course book.

#### Basic exercises

1. Do exercises 7.1.2 and 7.1.3.
2. Do exercise 7.2.1 parts a), b) and d).
3. Do exercises 7.3.1 parts a) and b), and 7.3.2.
4. Do exercise 7.4.1 part a)
5. Do exercise 7.4.3.

#### Additional exercises

1. Do exercises 7.1.1 and 7.1.4– 7.1.6.
2. Do exercises 7.1.9 and 7.1.10.
3. Do exercises 7.2.1 parts e) and f), and 7.2.2.
4. Prove that the language  $\mathcal{L} = \{0^n 1^m 0^n 1^m \mid n, m \geq 0\}$  is not a CFL.
5. Do exercise 7.3.4 parts a), b) and c).
6. Do exercise 7.3.6.
7. Do exercise 7.4.4.

#### Programming Exercises

1. Program the CYK algorithm to test membership in a CFL.