

# Programming language theory, 2021 spring.

## Howe work 2

Read Chapter 3-4 in B.Pierce book, especially section (3.4). In this homework, you are required to redesign our mini-programming language. Then, proceed with further steps:

### I. Install compiler.

First, you need to download archive given in Chapter 4 (at bottom of the first page) named **arith.tar.gz**. Unpack it and then follow steps given [here](#) to make it compilable. After everything is completed, there will be executable “f”, run “./f test.f”.

**Exercise:** remove the code written in test.f and write several terms: (a) stuck term of initial size  $\geq 3$ ; (b) normal form term; (c) value term;

### II. Exercise 3.5.18.

This exercise must be completed both theoretically and practically.

*Theoretic part: provide which rules should be removed (specify label) from Figure 3.1 or 3.2 and show the rules that must be added.*

*Practical part: Open **core.ml** file, function **eval1**. This function represent the rules specified in figures 3.1-3.2. Change this function in such a way, that it follows your new rules given in theoretical part.*

### III. Exercise 3.5.16

**A.** In this exercise you are given a way to process stuck terms. You are required (1) to produce the statement showing that this way of processing is correct and (2) prove it.

**B(onus problem).** Implement this logic by modifying **core.ml/eval1** and **syntax.ml**.