

CS101 Homework 4

Due: Saturday, November 5, 11:59PM (sharp). Last updated: October 30, 2005 12:42

Collaboration: You are allowed and encouraged to work together and collaborate with others. However, your submission must be your own; you must write up your homework without referring to material developed with other groups.

You may use the WWW for reference material. You may use the material you found to develop your understanding, but your submission must be your own.

Summary: you may use any and all resources at your disposal, but your submission must be your own work.

Start by downloading the code stubs file `homework4.tgz` and unpacking it. Make sure you can compile each of the two parts by running either `make` or `omake` (OMake is a build system developed by Jason Hickey with some contributions from me — see <http://omake.metapr1.org/> if you are interested in more information.)

Part I: Type Checking for a SLam fragment

This part refers to the `part1` directory in the code stubs you have downloaded. Implement a type checking algorithm for the SLam language fragment defined in `cs101_hw4_part1_types.ml`. You should only modify the `cs101_hw4_part1.ml` file.

Part II: References in λ -Calculus

The `part2` directory in the code stubs you have downloaded contains a type-checker and an evaluator for the core λ -Calculus. The `cs101_hw4_part2_types.ml` defines a language of the λ -Calculus with units and references, but the type checker and evaluator currently do not know how to handle units and references. Your job is to write the missing code. You should only modify the `cs101_hw4_part2.ml` file.

Refer to “*Type checking and operational semantics of references*” file posted on the course home page (lecture noted for October 28th) for type checking and evaluation rules.

How to submit: Make sure your code compiles without any warnings (**non-compiling code or code that compiles with warnings will not receive any credit**). Then email the `cs101_hw4_part1.ml` and `cs101_hw4_part2.ml` files containing your solutions to `nogin@cs.caltech.edu`.