

91.301, Organization of Programming Languages
Spring 2008, Prof. Yanco

Problem Set 10: The Metacircular Evaluator

Out: Tuesday, 29 April 2008

Due: Thursday, 8 May 2008

Note: Due to the end of classes, no late assignments will be accepted.

Overview: In this problem set, you'll make modifications to the metacircular evaluator, changing UML Scheme.

To run the metacircular evaluator, download `mceval-with-let.ss` from the course web site. Use the MzScheme language in DrScheme.

After executing the code, evaluate `(mc-eval-loop)`. This will run the interactions for your metacircular UML Scheme world. Remember that everything you type in (except for variables and numbers) should be prefixed by `"uml:"` – if you forget, the system will have an error. If you type in an error, the driver-loop exits and you will lose the state you had in the metacircular world.

You only need to turn in the portions of the code that you change.

Warm-up: Run the metacircular evaluator and evaluate some UML Scheme expressions. Nothing to turn in for this part.

Problem 1: Exercise 4.4 (“or” only) on p. 374. Remember to tag your new “or” with `"uml:"`.

Problem 2: Exercise 4.1 on p. 368.

Problem 3: Exercise 4.5 on p. 375.

Problem 4: Exercise 4.9 on p. 376. Pick one of the iteration constructs (`do`, `for`, `while` or `until`) to implement.

Problem 5: Exercise 4.10 on p. 376. Choose your own way to change UML Scheme's syntax in some non-trivial way (e.g., adding a few more Scheme primitives to the primitives list is trivial, while adding a new statement type is not). For this problem, explain what you did as well as turning in the code.