

COMPUTER SCIENCE 320 (SPRING TERM, 2006)
CONCEPTS OF PROGRAMMING LANGUAGES
Problem Set 10: A Type System for Mini-ML



OUT: FRIDAY, APRIL 7, 2006

DUE: 4:59 PM ON FRIDAY, APRIL 14, 2006

*There are 5 problems in this set, each worth as indicated, for a total of 100 points. The harder problems are marked with a single * (average difficulty) or two ** (higher-than-average difficulty). For the easy points, start with the unmarked problems.*

For this assignment you need to read carefully Handout 31, entitled “A Fragment of SML”.

There is no programming to be done in this assignment. Nevertheless, you have to turn it in electronically (using *gsubmit*) in the form of a text file, where you enter your answers in ASCII. In all the problems below, instead of writing “ X_p ”, which is not possible in ASCII, write “ X_p ”.

Problem 1 (15 points) Do Exercise 3, page 2, in Handout 31
(Ex. 4, p. 2, in Handout 31, revised 26 Nov 2005).

Problem 2 (15 points) Do Exercise 4, page 2, in Handout 31
(Ex. 5, p. 2, in Handout 31, revised 26 Nov 2005).

* **Problem 3** (15 points) Do Exercise 5, page 2, in Handout 31
(Ex. 6, p. 2, in Handout 31, revised 26 Nov 2005).

In the remaining problems, use the ASCII conventions of Example 10, page 5, in Handout 31 to write your typing derivations (Example 8, p. 5, in Handout 31, revised 26 Nov 2005).

Problem 4 (15 points) Do Exercise 12, page 5, in Handout 31
(Ex. 10, p. 5, in Handout 31, revised 26 Nov 2005).

** **Problem 5** (40 points) Do Exercise 15, page 6, in Handout 31
(Ex. 20, p. 8, in Handout 31, revised 26 Nov 2005).