

CS 565: Programming Languages

Handout 3

March 30, 2009

Due Date: April 15, 2009

Subtyping for Mini-ML

For this assignment, you will define a type-checker for Mini-ML that employs record subtyping (width and depth subtyping). You should use as your starting point your solution to the first assignment, or the reference implementation available from the course web page.

You will find the material in Chapters 16 and 17 of the text, along with the class notes, useful in writing the checker. As before, you will have to make some design decisions about datatype definitions (especially with respect to the set of types supported; e.g., the inclusion of \top and \perp types). You will also need to consider how to deal with references and conditionals.

You must provide a README file that (a) clearly documents your design decisions, and (b) explains your testcases and why you believe they validate the correctness of your implementation. Your testcases at a minimum should demonstrate (1) how the typechecker handles width and depth subtyping; (2) the interaction of contravariant function (arrow) types with record-type arguments and results; and (3) your treatment of reference types.