
HW 6 – Polymorphic Type Inference

CS 421 – Fall 2014

Revision 1.3

Assigned October 2, 2014

Due October 14, 2014, 23:59 pm

Extension 48 hours (20% penalty)

1 Change Log

1.3 Re-corrected the turn-in procedure.

1.2 Corrected the type annotation.

1.1 Corrected the turn-in procedure.

1.0 Initial Release.

2 Turn-In Procedure

Answer the problem below, save your work as a PDF (either scanned if handwritten or converted from a program), and hand in the PDF. Your file should be named `hw6-submission.pdf`.

3 Objectives and Background

The purpose of this HW is to test your understanding of how to use typing rules to perform polymorphic type derivations in a functional programming language (here with OCaml syntax). Another purpose of HWs is to provide you with experience answering non-programming written questions of the kind you may experience on the midterms and final.

4 Problems

(22 points) Give a complete type derivation for the following typing judgment.

```
let id = fun x -> x in if (id true) then (fun id -> id + 1) else id : int
-> int
```

As a suggestion for formatting, you may want to name subtrees of the proof and write them out separately. Note, we are asking for a type derivation not the intermediate states of a type inferencing algorithm.