6.894 Assignment

1. Do the exercise described at the end of the handout: write a proof (in full detail, using the inference rules of the type system) of the judgment

$$A \vdash \textbf{let } \mathit{fact} = \cdots \textbf{ in } \mathit{fact}\ 5 : \textbf{int}$$

   where A is the context described in the handout.

2. Do the same proof in Athena.

3. Augment algorithm `T` and method `prove` to handle **fix** expressions. (Note that this will necessitate augmenting the structure `DExp` of decorated expressions.)

Getting Athena and the source code

To run Athena

On the course web page you will find two `.tar` files:

1. `athena-unix.tar`; and

2. `athena-win.tar`.

Create a directory `athena` somewhere on your computer, and then download the appropriate `.tar` file there and untar it. Read the `READ-ME` file and proceed accordingly.

To get the existing Athena code for the Hindley-Milner project

Download the file `hm-code.tar` from the course web page and untar it in your `athena` directory. This will result in a small number of Athena files, recognizable by the suffix `.ath`. Once you have Athena running, type

```
>(load-file "hm.ath")
```

and that will load all of the appropriate code into the Athena run-time environment. You should then be ready to start evaluating Athena expressions and deductions as illustrated in the handout.