

CIS 500 Software Foundations (Fall 2002)

Homework Assignment 5

Representation of Terms; Basic Properties of Typing

Due: Thursday, October 10, 2002, by 4PM

Submission instructions:

- Turn in your solutions in hardcopy form to Christine Metz in 556 Moore.
- If it is difficult for you to come to campus on Thursday, you may submit your solutions by *fax* to 215 898-0587. You *must also* email Christine Metz (cmetz@cis.upenn.edu) to alert her to look for your fax.

1 Exercise 6.1.1 in TAPL.

2 Exercise 6.2.2 in TAPL.

3 Exercise 6.2.8 in TAPL.

4 Exercise 7.3.1 in TAPL. (You will need to download and compile the `untyped` checker from the TAPL web site. Follow the instructions posted on the newsgroup last week.)

5 Exercise 8.3.6 in TAPL.

6 Exercise 8.3.7 in TAPL.

7 Debriefing

1. How many hours did you spend on this assignment?
2. Would you rate it as easy, moderate, or difficult?
3. How much did you rely on our solutions while developing yours? (Completely / substantially / moderately / just for verification / not at all?)
4. Did you work on it mostly alone, or mostly with other people?
5. How deeply do you feel you understand the material it covers (0%–100%)?
6. Any other comments?

Solutions

4.

```
let rec eval ctx t = match t with
  TmAbs(fi, _, _) -> t
| TmApp(fi,t1,t2) ->
  let v1 = eval ctx t1 in
  let v2 = eval ctx t2 in
  (match v1 with
    TmAbs(_,x,t12) -> eval ctx (termSubstTop v2 t12)
  | _ -> raise NoRuleApplies)
| _ ->
  raise NoRuleApplies
```

The rest of the solutions can be found in the back of the book. (The solution given for 6.2.8 is just a sketch. What you hand in should be a complete, detailed proof.)