CSE 3302/5307 Programming Language Concepts

Homework 8 - Fall 2025

Due Date: Oct. 13, 2025, 9:00PM Central Time

Name:_____ UTA ID:_____

Problem1 - 30%

Evaluate the following showing the memory state in each step:

```
let x = ref 5 in
    let y = ref (!x * 2) in
        x := (!x) - 2;
        y := (!y) + (!x);
        !y
```

Problem2 - 30%

Extend the *while* loop covered in the lecture to a *do−while* loop. Include both operational and typing semantics.

Problem3 - 40%

In lecture *Going Imperative*, the language is extended with exceptions. You can raise an exception by using `raise e` and trap it by using the `try...with...` syntax. In this problem, you are required to define the syntax and the semantics (including evaluation rules and typing rules) of `try e catch e₁ finally e₂` in a way that is similar to how `finally` works in Java. You can reuse some extensions such as sequence ($e_1;e_2$).