# Homework 3

Please email your solutions to Rongdi Huang (rh1424@nyu.edu). Solutions to programming exercises **must** be submitted electronically as plain text files. No exotic formats, please!

The deadline for Homework 3 is September 26.

## Problem 1   Expression Evaluation Order (3 Points)

- PLP, p 279: 6.1 (**3 Points**)

## Problem 2   Basic Control Flow Mechanisms (17 Points + 5 Bonus Points)

- PLP, p. 283: 6.23 (**4 Points**)

- PLP, p. 283: 6.25 but use C or Dafny (**8 Points**)

- PLP, p. 284: 6.26. *Hint:* if you used Dafny to solve the previous exercise, you can use the Dafny program verifier (http://rise4fun.com/Dafny) to automatically check whether your invariants are correct. To check your invariants using Dafny, you might need to add a pre-condition (`requires` clause) stating that the input array X is sorted.

  You will receive 5 bonus points for a Dafny method in which you have a post-condition (`ensures` clause) stating that your method returns true if and only if the given element T is in the array X, and the Dafny verifier is able to prove your method correct without producing an error.

  *Warning:* The Bonus exercise is not trivial. Also, note that the Dafny verifier attempts to solve an undecidable problem. So the tool may report a false error stating that your program is incorrect even though it is actually correct. However, in most cases the tool works quite well. (**5 Points + 5 Bonus Points**)