CSE 341 — General Programming Language Concepts — Mini Exercises — Answers

1. Consider the following example in an Algol-like language.

begin
  integer n;
  procedure p(k: integer);
  begin
    k := k+5;
    print(n);
    n := n+(2*k);
  end;
  n := 0;
  p(n);
  print(n);
end;

(a) What is the output when k is passed by value? 0 10
(b) What is the output when k is passed by value result? 0 5
(c) What is the output when k is passed by reference? 5 15

2. True or false?

(a) Haskell is statically typed if the programmer includes a type declaration for all functions; otherwise it is dynamically typed. False.
(b) Java is type safe. True.
(c) Each of the following Haskell expression gives a compile-time type error, since tail is being provided a value of the incorrect type:

   tail []
   tail (1,2,3)

False. (Only the second gives a type error; the first one gives a runtime error.)

3. What happens when you try the following Haskell program?

   x :: Float
   y :: Double
   x = 3
   y = 4
   z = x+y

You get a type error, since + doesn’t work with two different types (Double and Float). No coercion in Haskell, not even Float to Double. But note that Haskell isn’t troubled by x = 3! That’s ok because 3 has type (Num t) => t.