CSci 2300 — Data Structures and Algorithms
Class 5 Solution

Exercises

1. **10 points** Rewrite Polynomial::operator- for Version 1 so that it uses neither the scalar multiplication operator nor the additional operator.

**Solution:** This is solution is very similar to the solution for addition. Many other solutions are possible.

Polynomial operator- (const Polynomial& f, const Polynomial& g) {
    Polynomial h;
    int f_size = f.coefficients_.size();
    int g_size = g.coefficients_.size();

    if (f_size > g_size) {
        h.coefficients_ = f.coefficients_;
        for (int i=0; i<g_size; ++i)
            h.coefficients_[i] -= g.coefficients_[i];
    }
    else {
        h.coefficients_ = g.coefficients_;  
        for (int i=0; i<f_size; ++i)
            h.coefficients_[i] -= f.coefficients_[i];  // gives g-f
        for (int i=0; i<g_size; ++i)
            h.coefficients_[i] *= (-1);  // gives f-g
    }

    return h;
}