

Title

Polynomial multiplication

Problem Description

A polynomial can be efficiently stored in an array by storing the coefficients of the terms. For instance, one might choose to store the polynomial:

$$f(x) = x^4 + 2x^2 + 4$$

In an array:

```
double pol[5] = {1,0,2,0,4};
```

Write a program that prompts the user to enter the coefficients of two polynomials of order 4 or lower. Multiply them together (remember FOIL!) and store their coefficients in an array. Output the coefficients of the new polynomial. How big does that array have to be? Your program should not output coefficients that are zero.

Testing

Your program should be able to obtain the following answer:

$$(x^4 + 3x^2 + 2) * (x^3 + 2x^2 + x + 1) = x^7 + 2x^6 + 4x^5 + 7x^4 + 5x^3 + 7x^2 + 2x + 2$$

Note that the coefficients can be floating point numbers.

Time Target

- *** less than 15 minutes
- ** 15-25 minutes
- * greater than 25 minutes

Section

Arrays