

```

1: // Diana & Chaitanya
2:
3: #include <iostream>
4: using namespace std;
5:
6: int main() {
7:     int m;
8:     int n;
9:
10:    cout << "Enter order of f(x): ";
11:    cin >> m;
12:
13:    double* f = new double[m + 1];
14:    cout << "Enter " << m + 1 << " coefficients for f(x): ";
15:    for (int index_f = 0; index_f <= m; index_f++) {
16:        cin >> f[index_f];
17:    }
18:
19:    cout << "Enter order of g(x): ";
20:    cin >> n;
21:
22:    double* g = new double[n + 1];
23:    cout << "Enter " << n + 1 << " coefficients for g(x): ";
24:    for (int index_g = 0; index_g <= n; index_g++) {
25:        cin >> g[index_g];
26:    }
27:
28:    double* product = new double[m + n + 1];
29:
30:
31:    for (int index_p = 0; index_p <= m + n; index_p++)
32:    {
33:        product[index_p] = 0;
34:    }
35:
36:
37:    for (int index_f = 0; index_f <= m; index_f++)
38:    {
39:        for (int index_g = 0; index_g <= n; index_g++)
40:        {
41:            product[index_f + index_g] += f[index_f] * g[index_g];
42:        }
43:    }

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44:
45:     cout << endl << "Product polynomial coefficients:" << endl;
46:     for (int index_p = 0; index_p <= m + n; index_p++) {
47:         cout << product[index_p] << " ";
48:     }
49:     cout << endl;
50:
51:     delete[] f;
52:     delete[] g;
53:     delete[] product;
54:
55:     return 0;
56: }
57:
58: /*
59:
60: Test Case 1:
61:
62: Enter order of f(x): 2
63: Enter 3 coefficients for f(x): 1 2 3
64: Enter order of g(x): 1
65: Enter 2 coefficients for g(x): 4 5
66:
67: Product polynomial coefficients:
68: 4 13 22 15
69:
70: -----
71: Process exited after 11.01 seconds with return value 0
72: Press any key to continue . . .
73:
74:
75: Test Case 2:
76:
77: Enter order of f(x): 3
78: Enter 4 coefficients for f(x): 2 0 -1 4
79: Enter order of g(x): 2
80: Enter 3 coefficients for g(x): 3 -5 2
81:
82: Product polynomial coefficients:
83: 6 -10 1 17 -22 8
84:
85: -----
86: Process exited after 23.54 seconds with return value 0

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87: *Press any key to continue . . .*

88:

89: \*/