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**1)implementation of programs based on polynomials addition and subtraction**

**//adding two polynomials using arrays**

// Simple C++ program to add two polynomials

#include <iostream>

using namespace std;

// A utility function to return maximum of two integers

int max(int m, int n) { return (m > n) ? m : n; }

// A[] represents coefficients of first polynomial

// B[] represents coefficients of second polynomial

// m and n are sizes of A[] and B[] respectively

int\* add(int A[], int B[], int m, int n)

{

int size = max(m, n);

int\* sum = new int[size];

// Initialize the product polynomial

for (int i = 0; i < m; i++)

sum[i] = A[i];

// Take every term of first polynomial

for (int i = 0; i < n; i++)

sum[i] += B[i];

return sum;

}

// A utility function to print a polynomial

void printPoly(int poly[], int n)

{

for (int i = 0; i < n; i++) {

cout << poly[i];

if (i != 0)

cout << "x^" << i;

if (i != n - 1)

cout << " + ";

}

}

// Driver program to test above functions

int main()

{

// The following array represents polynomial 5 + 10x^2 +

// 6x^3

int A[] = { 5, 0, 10, 6 };

// The following array represents polynomial 1 + 2x +

// 4x^2

int B[] = { 1, 2, 4 };

int m = sizeof(A) / sizeof(A[0]);

int n = sizeof(B) / sizeof(B[0]);

cout << "First polynomial is \n";

printPoly(A, m);

cout << "\nSecond polynomial is \n";

printPoly(B, n);

int\* sum = add(A, B, m, n);

int size = max(m, n);

cout << "\nsum polynomial is \n";

printPoly(sum, size);

return 0;

}

**//2)subtracting two polynomials**

**// Simple C++ program to add two polynomials**

#include <iostream>

using namespace std;

// A utility function to return maximum of two integers

int max(int m, int n) { return (m > n) ? m : n; }

// A[] represents coefficients of first polynomial

// B[] represents coefficients of second polynomial

// m and n are sizes of A[] and B[] respectively

int\* add(int A[], int B[], int m, int n)

{

int size = max(m, n);

int\* sum = new int[size];

// Initialize the product polynomial

for (int i = 0; i < m; i++)

sum[i] = A[i];

// Take every term of first polynomial

for (int i = 0; i < n; i++)

sum[i] -= B[i];

return sum;

}

// A utility function to print a polynomial

void printPoly(int poly[], int n)

{

for (int i = 0; i < n; i++) {

cout << poly[i];

if (i != 0)

cout << "x^" << i;

if (i != n - 1)

cout << " + ";

}

}

// Driver program to test above functions

int main()

{

// The following array represents polynomial 5 + 10x^2 +

// 6x^3

int A[] = { 5, 0, 10, 6 };

// The following array represents polynomial 1 + 2x +

// 4x^2

int B[] = { 1, 2, 4 };

int m = sizeof(A) / sizeof(A[0]);

int n = sizeof(B) / sizeof(B[0]);

cout << "First polynomial is \n";

printPoly(A, m);

cout << "\nSecond polynomial is \n";

printPoly(B, n);

int\* sum = add(A, B, m, n);

int size = max(m, n);

cout << "\nsub polynomial is \n";

printPoly(sum, size);

return 0;

}