Assignment-1

A polynomial is composed of different terms where each of them holds a 'coefficient' and an 'exponent'. Ex.: Polynomial **$p(x) = 3x^5 + 2x^4 + 5x^2 + 2x + 7$.** Each term of the polynomial contains a 'coefficient' and 'variable with exponent'. In the above polynomial, '3' is the 'coefficient' of 'x^5 '. If any term has no coefficient then it means the coefficient is '1'. 'X' is a variable with a different 'exponent'. If any term does not have a variable the exponent of that variable is '0', i.e. 'x^0 '. Thus P(x) can be represented as [(3,5) (2,4) (5,2) (2,1) (7,0)]

Write a program in C or C++ program to multiply two polynomials

Ex.: **$p1(x) = 3x^5 + 2x^4 + 5x^2 + 2x + 7$ and $p2(x) = 2x^5 + x^4 + 3x^2$.**
The resulting polynomial P(x) = p1(x) * p2(x)
$P(x) = 6x^{10} + 7x^9 + 2x^8 + 19x^7 + 15x^6 + 16x^5 + 22x^4 + 6x^3 + 21x^2$

Test Cases

1) **p1(x)** = [(7,10) (12,6) (4,2)] **and p2(x)** = [(5,9) (4,5) (13,1)]

   Resulting polynomial P(x) = [(35,19) (88,15) (159,11) (172,7) (52,3)]

2) **p1(x)** = [(3,54) (5,44) (5,34)] **and p2(x)** = [(10,8) (5,6) (13,4)]

   Resulting polynomial P(x) =

   [(30,62) (15,60) (39,58) (50,52) (25,50) (65,48) (50,42) (25,40) (65,38)]

3) **p1(x)** = [(6,99) (1,88) (4,77) (7,7)] **and p2(x)** = [(8,6) (4,3) (-10,2)]

   Resulting polynomial P(x) =

   [(48,105)(24,102)(-60,101)(8,94)(4,91)(-10,90)(32,83)(16,80)(-40,79)(56,13)(28,10)(-70,9)]

4) **p1(x)** = [(6,9) (-1,6) (4,3) (-7,0)] **and p2(x)** = [(10,7) (5,5) (-1,3)]

   Resulting polynomial P(x) =

   [(60,16)(30,14)(-6,12)(-10,13)(-5,11)(40,10)(1,9)(20,8)(-4,6)(-70,7)(-35,5)(7,3)]