A polynomial P1(x) = x4+2x2+5 has three terms: x4, 2x2 and 5. Coefficients of these terms are 1, 2 and 5 respectively while exponents are 4, 2 and 0 respectively. To work with Polynomials, a definition of class Polynomial is given below and memory configuration for P1 is shown as follows:

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **class Polynomial**  **{**  **private:**  int totalTerms;//Total terms in a Polynomial  int\* coeff;//to save array of coefficients  int\* exp; //to save array of exponents  **};** | |  |  |  | | --- | --- | --- | | totalTerms | 3 |  | | coeff |  | |  |  |  | | --- | --- | --- | | 1 | 2 | 5 | | | exp |  | |  |  |  | | --- | --- | --- | | 4 | 2 | 0 | | |  | **P1(x)** |  | |

**Your task is to complete the definition of Polynomial class such that the main program runs successfully.** Make sure that your program doesn’t consume extra memory space and it should not leak any memory.

|  |
| --- |
| **void main()**  **{**  int coeff\_P1[] = {1,2,5}; //Coefficients for Polynomial P1  int exp\_P1[] = {4,2,0}; //Exponents for Polynomial P1  int coeff\_P2[] = {4,3}; //Coefficients for Polynomial P2  int exp\_P2[] = {6,2}; //Exponents for Polynomial P2  Polynomial P1(3, coeff\_P1, exp\_P1);//Creates P1 with 3 terms (P1 = 1x^4 + 2x^2 + 5x^0 )  Polynomial P2(2, coeff\_P2, exp\_P2);//Creates P2 with 2 terms (P2 = 4x^6 + 3x^2)  cout<<"P1 = "<<P1<<endl; //Prints P1 = x^4+2x^2+5  cout<<"P2 = "<<P2<<endl; //Prints P2 = 4x^6+3x^2  if(!P1)  cout<<”P1 is zero”<<endl;/\*if polynomial has only 1 term and its coeff and exp are zero. i.e. if p1 = 0.\*/  if(P1 != P2)  cout<<”P1 is Not Equal to P2”<<endl;  Polynomial P3 = P1+P2; //Adds P1 and P2 and saves result in P3.You may consume extra space for resultant Polynomial in Add function  cout<<"P3 = "<<P3<<endl; //Prints P3 = 4x^6+x^4+5x^2+5  P3 = 2 + P1; //Assume P1 already has a constant term, add 2 in it.  cout<<"P3 = "<<P3<<endl;  //Following is not included in Sec F’s lab. Sec E will do everything in this manual.  cout<<++P1<<endl;//adds 1 in all the coefficient.  cout<<P1<<endl;  cout<<P1++<<endl; //adds 1 in all the coefficient.  cout<<P1<<endl;  **}** |