#include<iostream>

using namespace std;

typedef struct Poly{

int coef;

int expo;

}poly;

class Poly\_op{

Poly p[10];

int n,i,j,k;

public: void accept(){

cout<<"Enter the no. of terms:"<<endl;

cin>>n;

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

cout<<"Enter the coef of term "<<i+1<<":";

cin>>p[i].coef;

cout<<"Enter the exp of term "<<i+1<<":\n";

cin>>p[i].expo;

}

}

public: void display(){

cout<<"Polynomial is : ";

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

cout<<p[i].coef<<"x^"<<p[i].expo;

if(i!=n-1){

cout<<"+";

}

}

cout<<endl;

}

public: void add(Poly\_op e1,Poly\_op e2){

i=0,j=0,k=0;

while(i<e1.n && j<e2.n){

if(e1.p[i].expo==e2.p[j].expo){

p[k].coef=e1.p[i].coef + e2.p[j].coef;

p[k].expo=e1.p[i].expo;

i++;

j++;

k++;

}

else if(e1.p[i].expo>e2.p[j].expo){

p[k].coef=e1.p[i].coef;

p[k].expo=e1.p[i].expo;

i++;

k++;

}

else{

p[k].coef=e2.p[j].coef;

p[k].expo=e2.p[j].expo;

j++;

k++;

}

}

while(i<e1.n){

p[k].coef=e1.p[i].coef;

p[k].expo=e1.p[i].expo;

i++;

k++;

}

while(j<e2.n){

p[k].coef=e2.p[j].coef;

p[k].expo=e2.p[j].expo;

j++;

k++;

}

n=k;

}

public:void mul(Poly\_op e1, Poly\_op e2){

int tcoef,texpo,flag,tindex,k=0,x;

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

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

tcoef=e1.p[i].coef \* e2.p[j].coef;

texpo=e1.p[i].expo + e2.p[j].expo;

flag=0;

for(int tindex=0;tindex<k;tindex++){

if(texpo==p[tindex].expo){

flag=1;

break;

}

else if(texpo>p[tindex].expo){

break;

}

}

if(flag){

p[k].coef+=tcoef;

}

else if(tindex==k){

p[k].coef=tcoef;

p[k].expo=texpo;

k++;

}

else{

for(x=k;x>tindex;x--){

p[x+1].coef=p[x].coef;

p[x+1].expo=p[x].expo;

}

p[x].coef=tcoef;

p[x].expo=texpo;

k++;

}

}

}

n=k;

}

};

int main() {

Poly\_op e1,e2,e3,e4;

cout<<"Enter first polynomial :"<<endl;

e1.accept();

e1.display();

cout<<"\nEnter second polynomial : "<<endl;

e2.accept();

e2.display();

e3.add(e1,e2);

e4.mul(e1,e2);

cout<<"\nMultiplication of polynomial : "<<endl;

e4.display();

return 0;

}