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#include<iostream>
using namespace std;
class dathuc{
    int bac;
    int *heso;
public:
    dathuc(int bacdathuc, int hesodathuc);
    ~dathuc();
    dathuc& dathuc::operator = (const dathuc &dt);
    friend ostream& operator <<(ostream &out, const dathuc& arr);
    friend istream& operator >>(istream &in, dathuc& arr);
    dathuc operator + (const dathuc &dt);
    dathuc operator - (const dathuc &dt);
    dathuc operator * (const dathuc &dt);
};

dathuc::dathuc(int bacdathuc, int hesodathuc)
{
    if(bacdathuc<0) bacdathuc=0;
    bac=bacdathuc;
    heso=new int[bac+1];
    for(int i=0;i<=bac;i++)
        heso[i]=hesodathuc;
}

dathuc::~~dathuc()
{
    delete[]heso;
}

dathuc& dathuc::operator = (const dathuc &dt)
{
    bac=dt.bac;
    if(heso!=NULL)
        delete[]heso;
    heso=new int[bac+1];
    for(int i=0;i<=bac;i++)
        heso[i]=dt.heso[i];
    return *this;
}

ostream& operator <<(ostream &output, const dathuc& dt)
{
    for(int i=dt.bac;i>=0;i--)
    {
        if(dt.heso[i]!=0)
        {
            if(dt.heso[i]>0&&i!=dt.bac) cout<<" +";
            if(dt.heso[i]<0) cout<<" -";
            output<<(dt.heso[i]<0?-dt.heso[i]:dt.heso[i]);
            if(i!=0) output<<"x^"<<i;
        }
    }
    output<<endl;
}

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        return output;
    }
    istream& operator >>(istream &input, dathuc& dt)
    {
        cout<<"Nhap bac da thuc: ";
        input>>dt.bac;

        delete[]dt.heso;
        dt.heso=new int[dt.bac+1];
        for(int i=0;i<=dt.bac;i++)
        {
            cout<<"Ho so "<<i<<": ";
            input>>dt.heso[i];
        }
        return input;
    }
    dathuc dathuc::operator + (const dathuc &dt)
    {
        int tbac=bac>dt.bac?bac:dt.bac;
        int hesoa=0,hesob=0;
        dathuc *t=new dathuc(tbac,1);
        for(int i=0;i<=tbac;i++)
        {
            hesoa=hesob=0;
            if(i<=bac)
                hesoa=heso[i];
            if(i<=dt.bac)
                hesob=dt.heso[i];
            (*t).heso[i]=hesoa+hesob;
        }
        return *t;
    }
    dathuc dathuc::operator - (const dathuc &dt)
    {
        int tbac=bac>dt.bac?bac:dt.bac;
        int hesoa=0,hesob=0;
        dathuc *t=new dathuc(tbac,1);
        for(int i=0;i<=tbac;i++)
        {
            hesoa=hesob=0;
            if(i<=bac)
                hesoa=heso[i];
            if(i<=dt.bac)
                hesob=dt.heso[i];
            (*t).heso[i]=hesoa-hesob;
        }
        return *t;
    }
    dathuc dathuc::operator * (const dathuc &dt)
    {

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        dathuc* t=new dathuc(bac+dt.bac,0);
        for(int i=0;i<=bac;i++)
        {
            for(int j=0;j<=dt.bac;j++)
            {
                dathuc t1(i+j,0);
                t1.heso[i+j]=heso[i]*dt.heso[j];
                *t=*t+t1;
            }
        }
        return *t;
    }
}

int main()
{
    dathuc dt1(5,2),dt2(0,0);
    cin>>dt1;
    cout<<dt1;

    cin>>dt2;
    cout<<dt2;

    cout<<"Tong 2 da thuc: "<<(dt1+dt2);
    cout<<"Hieu 2 da thuc: "<<(dt1-dt2);
    cout<<"Tich 2 da thuc: "<<(dt1*dt2);
    system("pause");
    return 1;
}

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