#include <iostream>

#include <cmath>

using namespace std;

int main() {

cout << "Bisection Method…………………………………………………………………………………………….."<<endl;

cout<<endl<<"Enter the degree of the equation:";

int n;

cin>>n;

int coeff[100];

cout<<"Enter coefficients.......................";

for(int i=n;i>=0;i--)

{

cout<<endl<<"Enter Coefficient for term with degree "<<i<<" :";

cin>>coeff[i];

}

int s[]={0,0};

int flag=0;

int specific[2];

double i=0;

double j=0;

while(flag==0)

{

s[0]=0;

s[1]=0;

cout<<endl<<i<<" "<<j;

for(int t=0;n-t>=0;t++) {

s[0] =s[0]+ (pow(i, n - t) \* coeff[n - t]);

s[1] =s[1]+ (pow(j, n - t) \* coeff[n - t]);

}

cout<<endl<<i<<":"<<s[0];

cout<<endl<<j<<":"<<s[1];

if(s[0]\*s[1]<=0)

{

cout << endl << "Root exsistence between " << i << " and " << j;

specific[0] = s[0];

specific[1] = s[1];

flag = 1;

break;

}

i++;

j--;

}

cout<<endl<<"Now for exact root:";

double roots,temp;

roots=(i+j)/2;

for(int x=0;x<50;x++)

{

cout<<endl<<"Root is:"<<roots;

cout<<endl<<"i is:"<<i;

cout<<endl<<"j is:"<<j;

temp=0;

for(int t=0;n-t>=0;t++)

temp=(temp+(pow(roots, n - t) \* coeff[n - t]));

cout<<endl<<"Temp is:"<<temp;

if(temp==0)

{

cout<<endl<<"Root is:"<<roots;

}

else

{

if(temp>0)

{

i=i;

j=roots;

roots=(i+j)/2;

}

else if(temp<0)

{

i=roots;

j=j;

roots=(i+j)/2;

}

}

}

cout<<endl<<"Final closest root is: "<<roots;

return 0;

}