// Linear Regression using least square method //

#include<iostream>

#define S 50

using namespace std;

int main()

{

int n, i;

float x[S], y[S], sumX=0, sumX2=0, sumY=0, sumXY=0, a, b;

/\* Input \*/

cout<<"How many data points? ";

cin>>n;

cout<<"Enter data:"<< endl;

for(i=1;i<=n;i++)

{

cout<<"x["<< i <<"] = ";

cin>>x[i];

cout<<"y["<< i <<"] = ";

cin>>y[i];

}

/\* Calculating Required Sum \*/

for(i=1;i<=n;i++)

{

sumX = sumX + x[i];

sumX2 = sumX2 + x[i]\*x[i];

sumY = sumY + y[i];

sumXY = sumXY + x[i]\*y[i];

}

/\* Calculating a and b \*/

b = (n\*sumXY-sumX\*sumY)/(n\*sumX2-sumX\*sumX);

a = (sumY - b\*sumX)/n;

/\* Displaying value of a and b \*/

cout<<"Calculated value of a is "<< a << "and b is "<< b << endl;

cout<<"Equation of best fit is: y = "<< a <<" + "<< b<<"x";

return(0);

}