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#include<bits/stdc++.h>

using namespace std;

int n;

double x, y, sumX=0, sumY=0, sumXX=0, sumYY=0, sumXY=0,xBar, yBar, denom, a, b, R,sumX2=0,
sumY2=0, sumXX2=0, sumYY2=0, sumXY2=0, xBar2, yBar2, denom2;

double X[50], Y[50],XP[50],YP[50];

int main(){

    cout<<"Input number of data points: ";

    cin>>n;

    cout<<"Data values of x and y: "<<endl;

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

        cin>>X[i]>>Y[i];

    }

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

        sumX += X[i];

        sumY += Y[i];

        sumXX += pow(X[i], 2);

        sumYY += pow(Y[i], 2);

        sumXY += X[i] * Y[i];

    }

    xBar = sumX / n;

    yBar = sumY / n;

    denom = n * sumXX - pow(sumX, 2);

    if(denom != 0){

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

        a = yBar - b*xBar;

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cout<<endl<<"Linear Regression line:\n\t y = "<<a;
if(b < 0)
    cout<<" - "<<fabs(b)<<"x";
else if(b > 0)
    cout<<" + "<<b<<"x";
else
    cout<<endl;

for(int i = 1; i <= n; i++)
{
    XP[i]=2019+i;
}

cout<<endl<<"Year"<<"\t"<<"Approximate Average Temperature in Degree Celsius"<<endl;
for(int i = 1; i <= n; i++){
    YP[i] = a + b*XP[i];
    cout<<XP[i]<<"\t"<<YP[i]<<endl;
}

for(int i = 1; i <= n; i++){
    sumX2 += XP[i];
    sumY2 += YP[i];
    sumXX2 += pow(XP[i], 2);
    sumYY2 += pow(YP[i], 2);
    sumXY2 += XP[i] * YP[i];
}

xBar2 = sumX2/n;
yBar2 = sumY2/n;
denom2 = n * sumXX2 - pow(sumX2, 2);

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double R1 = n * sumXY2 - sumX2 * sumY2;

double R2 = sqrt((n*sumXX2 - pow(sumX2, 2)) * (n * sumYY2 - pow(sumY2, 2)));

R = R1 / R2;

cout<<endl<<"Here R = "<<R<<endl;

if(R < 0){
    cout<<"Strong Negative Relation.";
}

else if(R == 0){
    cout<<"No relationship at all.";
}

else{
    cout<<"Strong Positive Relation.";
}

}

else{
    cout<<"No solution."<<endl;
}

return 0;
}

```