C SUBROUTINE TO CALCULATE THE VALUES OF THE SLOPE, THE INTERCEPT,  
C AND THE CORRELATION COEFFICIENT VIA LINEAR REGRESSION  
C  
C THE DATA THAT MUST BE PROVIDED TO THE SUBROUTINE  
C NUMBER OF POINTS, X DATA, Y DATA  
C  
C OUTPUTTED DATA IS  
C SLOPE, INTERCEPT, CORR COEFF  
C  
C DIMENSION ARRAYS  
DIMENSION X(100), Y(100)  
C DEFINE SUBROUTINE  
SUBROUTINE LINREG(PD, X, Y, SLO, INT, CC)  
C SET SUMS EQUAL TO ZERO  
SX=0  
SY=0  
SX2=0  
SXY=0  
SCI=0  
SCBX=0  
SCBY=0  
C CALCULATE VALUES NEEDED TO CALCULATE SLOPE INTERCEPT  
DO 10 I=1,PD  
SX=SX+X(I)  
SY=SY+Y(I)  
X2=X(I)**2  
SX2=SX2+X2  
XY=X(I)*Y(I)  
SXY=SXY+XY  
10 CONTINUE  
C CALCULATE THE SLOPE AND INTERCEPT  
SLO=(SXY-((SX*SY)/PD))/((SX2-((SX**2)/PD))  
INT=(SY-((SLO*SX))/PD)  
P=EXP(INT)  
C CALCULATE VALUES FOR CALCULATION OF CORR COEFF  
XA=SX/PD  
YA=SY/PD  
DO 20 I=1,PD  
CT=(X(I)-XA)*(Y(I)-YA)  
SCI=SCI+CT  
CBX=((X(I)-XA)**2)  
CBY=((Y(I)-YA)**2)  
SCBX=SCBX+CBX  
SCBY=SCBY+CBY  
20 CONTINUE  
C CALCULATE CORR COEFF  
CC=SCI/(((SCBX**0.5)*(SCBY**0.5)))  
C END SUBROUTINE  
RETURN  
END
REFERENCES


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