**CODE:**

#include <stdio.h>

#include <math.h>

int main()

{

float xx[20],yy[20],nr=0,dr=0;

int i,n;

float x[20],y[20]; //float x[5]={60,61,62,63,65},y[5]={3.1,3.6,3.8,4.0,4.1};

float xip,yop;

printf("Enter the number of observations:\n");

scanf("%d",&n);

printf("Enter the values of x:\n");

for(int i=0;i<n;i++)

scanf("%f",&x[i]);

printf("Enter the values of y:\n");

for(int i=0;i<n;i++)

scanf("%f",&y[i]);

double sum\_y=0,sum\_xy=0,sum\_x=0,sum\_xx=0,sum\_x2=0,slope=0,intercept=0,reg;

for(i=0;i<n;i++)//calculate xi square and yi square

{

xx[i]=x[i]\*x[i];

yy[i]=y[i]\*y[i];

}//for

for(i=0;i<n;i++)

{

sum\_x+=x[i];//calculate summation of xi

sum\_y+=y[i];//calculate summation of yi

sum\_xx+= xx[i];//calculate summation of xi square

sum\_xy+= x[i]\*y[i];//calculate summation of deviation

}//for

//calculate regression slope

nr=(n\*sum\_xy)-(sum\_x\*sum\_y);

sum\_x2=sum\_x\*sum\_x;

dr=(n\*sum\_xx)-sum\_x2;

slope=nr/dr;

//calculate regression coefficient

double fac = pow(10, 2); //printf("\nfac=%f\n",fac);

slope=round(slope\*fac)/fac; //printf("\nslope=%f\n",slope);

intercept=(sum\_y- slope\*sum\_x)/n;

reg= intercept + (slope\*64);

printf("\nSlope: %.2f\nIntercept: %.3f\nRegression: %.3f\n",slope,intercept,reg);

printf("\nLinear Regression Equation: y=%.2fx+%.3f\n",slope,intercept);

printf("\nEnter a value of x:\n");

scanf("%f",&xip);

yop=(slope\*xip)+intercept;

printf("\nThe value of y from Linear Regression equation will be:\ny=%.3f\n",yop);

return 0;

}

**OUTPUT**

**d50113@d50113-ThinkCentre-M720t:~$** gcc lr.c

**d50113@d50113-ThinkCentre-M720t:~$** ./a.out

Enter the number of observations:

5

Enter the values of x:

1

2

3

4

5

Enter the values of y:

1

2

3

4

5

Slope: 1.00

Intercept: 0.000

Regression: 64.000

Linear Regression Equation: y=1.00x+0.000

Enter a value of x:

4

The value of y from Linear Regression equation will be:

y=4.000

**d50113@d50113-ThinkCentre-M720t:~$** ./a.out

Enter the number of observations:

5

Enter the values of x:

-1

-2

-3

-4

-5

Enter the values of y:

-1

-2

-3

-4

-5

Slope: 1.00

Intercept: 0.000

Regression: 64.000

Linear Regression Equation: y=1.00x+0.000

Enter a value of x:

-9

The value of y from Linear Regression equation will be:

y=-9.000

**d50113@d50113-ThinkCentre-M720t:~$** ./a.out

Enter the number of observations:

6

Enter the values of x:

10

20

30

10

20

10

Enter the values of y:

15

25

40

10

20

10

Slope: 1.35

Intercept: -2.500

Regression: 83.900

Linear Regression Equation: y=1.35x+-2.500

Enter a value of x:

15

The value of y from Linear Regression equation will be:

y=17.750