**EXPERIMENT 8**

**REGRESSION METHODS**

**1. Linear Regression Method**

Ques 1:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 1 | 2 | 3 | 4 | 5 |
| y | 2 | 4 | 5 | 4 | 5 |

Ques 2:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 0 | 25 | 50 | 75 | 100 |
| y | 157.076 | 156.2419 | 154.7758 | 154.2522 | 153.2005 |

**CODE**

***METHOD 1***

clc

clear all

%y=a+b\*x

n=input('enter the number of data values: ');

x=input('enter data for x: ');

y=input('enter data for y: ');

a=0;b=0;c=0;d=0;

for i=1:n

a=a+x(i);

b=b+y(i);

c=c+x(i)\*y(i);

d=d+x(i)\*x(i);

end

A=[n,a;a,d]

C=[b;c]

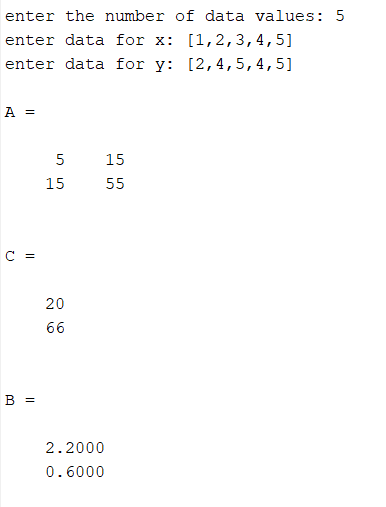
B=inv(A)\*C

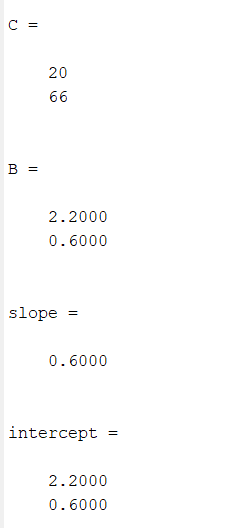
slope=B(2,1)

intercept=B(1,1)

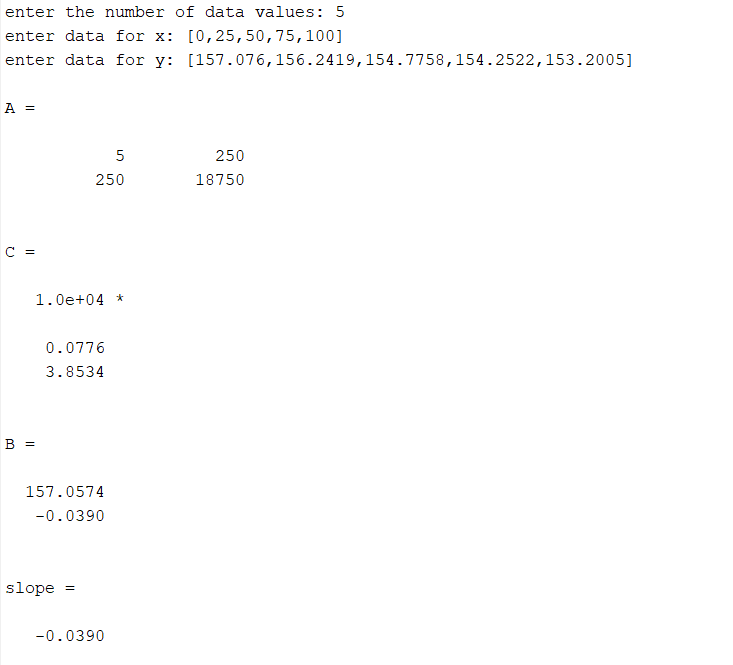
**OUTPUT**

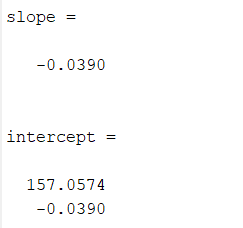
**ANS 1**

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****

**ANS 2**

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**METHOD 2**

clc

clear all

%y=C+B\*x

n=input('enter the number of data values: ');

x=input('enter data for x: ');

y=input('enter data for y: ');

a=0;b=0;c=0;B\_num=0;B\_den=0;

for i=1:n

a=a+x(i);

b=b+y(i);

end

x\_bar=a/n;

y\_bar=b/n;

for j=1:n

B\_num=B\_num+(x(j)-x\_bar)\*(y(j)-y\_bar);

B\_den=B\_den+((x(j)-x\_bar))^2;

end

B=B\_num/B\_den;

for k=1:n

A(k)=(y(k)-B\*x(k));

end

for l=1:n

c=A(l)+c;

end

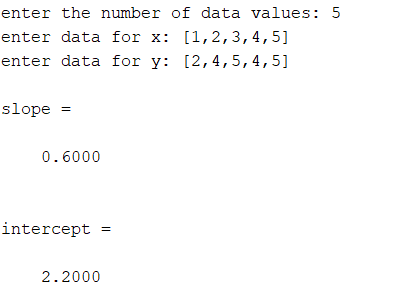
c\_net=c/n;

slope=B

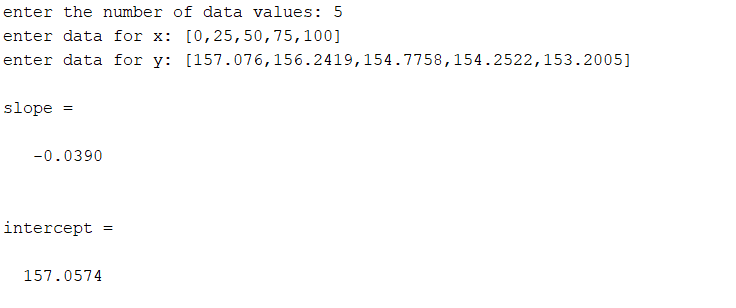
intercept=c\_net

**OUTPUT**

**ANS 1**

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**ANS 2**

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**2.Quadratic Regression Method**

Ques 1:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| x | 3 | 4 | 5 | 6 | 7 |
| y | 2.5 | 3.2 | 3.8 | 6.5 | 11.5 |

Ques 2:

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| x | 80 | 40 | -40 | -120 | -200 | -280 | -340 |
| y | 6.47 | 6.24 | 5.72 | 5.09 | 4.3 | 3.33 | 2.45 |

**CODE**

clc

clear all

%y=a+b\*x+c\*x^2;

n=input('enter the number of data values: ');

x=input('enter data for x: ');

y=input('enter data for y: ');

a=0;b=0;c=0;d=0;e=0;f=0;g=0;

for i=1:n

a=a+x(i);

b=b+x(i)^2;

c=c+x(i)^3;

d=d+x(i)^4;

e=e+y(i);

f=f+x(i)\*y(i);

g=g+(x(i)^2)\*y(i);

end

A=[n,a,b;a,b,c;b,c,d]

C=[e;f;g]

B=inv(A)\*C

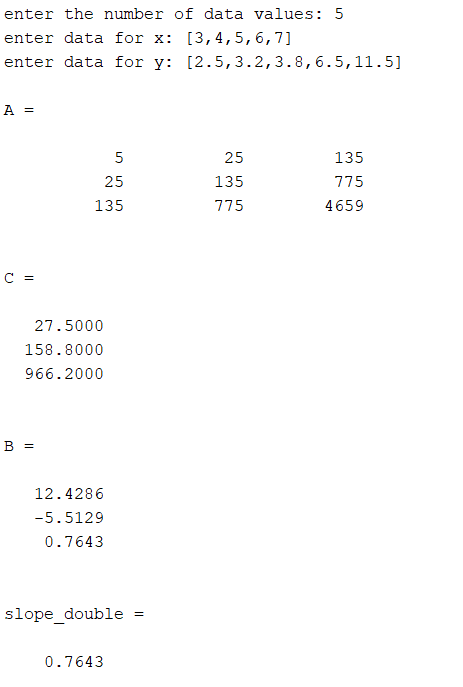
slope\_double=B(3,1)

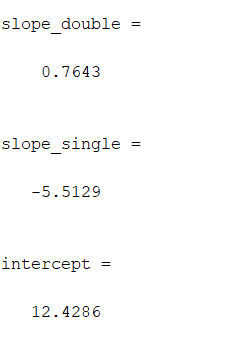
slope\_single=B(2,1)

intercept=B(1,1)

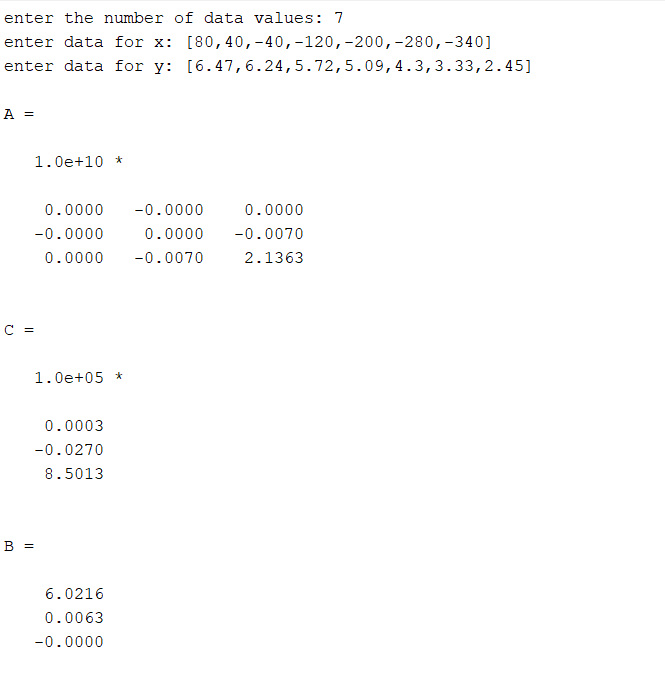
**OUTPUT**

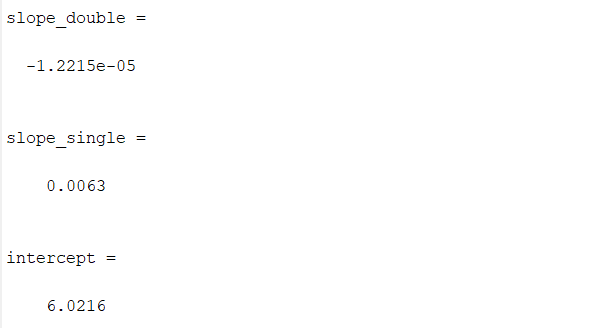
**ANS 1**

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**ANS 2**

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