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Experiment 4

AIM: Write a program to perform linear regression analysis

Code:

```
x<-c(100,200,300,400,500,600,700,800,900,1000)

y<-c(1,2,3,4,5,6,7,8,9,10)

r<-lm(y~x)

print(r)

print(summary(r))

a<-data.frame(x=1200)

res<-predict(r,a)

print(res)
```

Output:

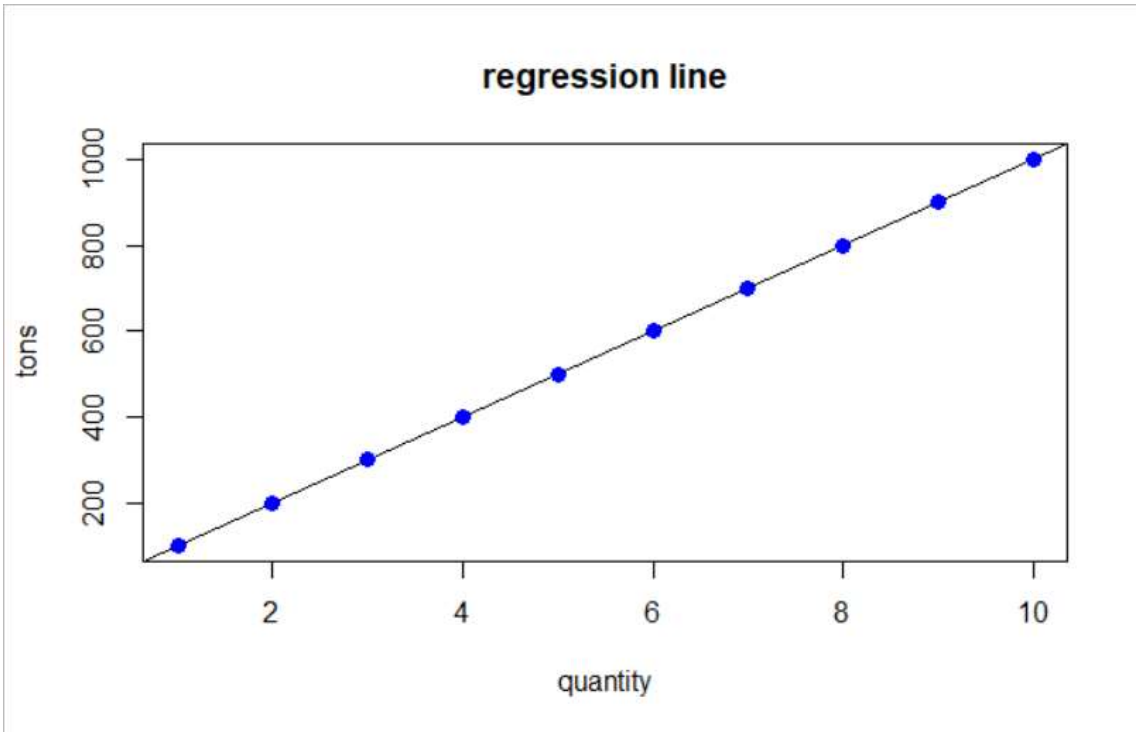
```
> source("C:/Users/Manikanta Bhuvanesh/Desktop/6th sem/ADA/Lab/Lab4/lab4.R")

Call:
lm(formula = y ~ x)

Coefficients:
(Intercept)            x
  2.247e-15    1.000e-02


Call:
lm(formula = y ~ x)

Residuals:
       Min         1Q     Median         3Q        Max
-7.093e-16 -3.750e-16 -9.622e-17  2.433e-16  1.293e-15

Coefficients:
             Estimate Std. Error   t value Pr(>|t|)
(Intercept) 2.247e-15  4.165e-16 5.395e+00  0.00065 ***
x           1.000e-02  6.712e-19 1.490e+16  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 6.097e-16 on 8 degrees of freedom
Multiple R-squared:      1,     Adjusted R-squared:      1
F-statistic: 2.22e+32 on 1 and 8 DF,  p-value: < 2.2e-16

 1
12
```

Line Plotting:

Code:

```
plot(y,x,col="blue",main="regression
line",abline((lm(x~y))),cex=1.3,pch=16,xlab="quantity",ylab="tons")
```

Output:



Using Fish data set

Code:

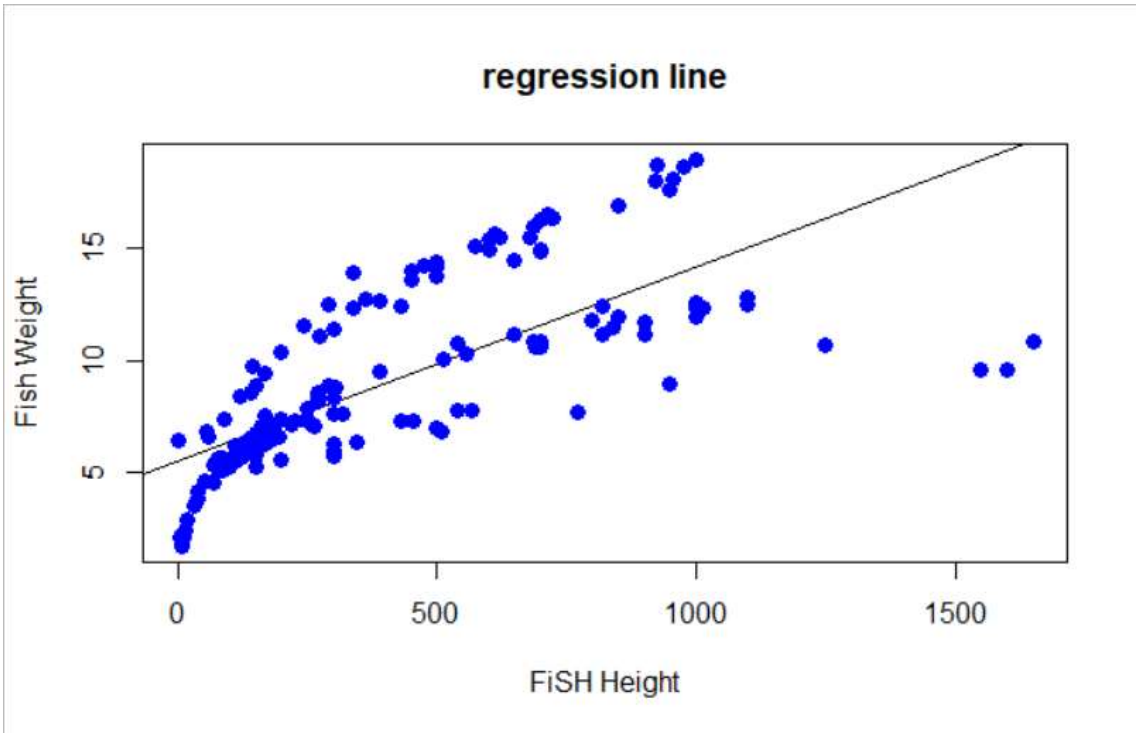
```
df<-read.csv('Fish.csv')
x<-df$Height
y<-df$Weight
r<-lm(y~x)
print(r)
print(summary(r))

a<-data.frame(x=1200)
res<-predict(r,a)
```

print(res)

plot(y,x,col="blue",main="regression line",abline((lm(x~y))),cex=1.3,pch=16,xlab="Height",ylab="Weight")

Output:

```
> x<-df$Height
> y<-df$Weight
> r<-lm(y~x)
> print(r)

Call:
lm(formula = y ~ x)

Coefficients:
(Intercept)            x
     -144.4         60.5

> print(summary(r))

Call:
lm(formula = y ~ x)

Residuals:
    Min      1Q  Median      3Q     Max
-357.29 -116.53  -70.76   33.91 1163.62

Coefficients:
            Estimate Std. Error t value Pr(>|t|)
(Intercept) -144.386     45.663  -3.162  0.00188 **
x             60.496      4.595  13.164  < 2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 247.6 on 157 degrees of freedom
Multiple R-squared:  0.5247,    Adjusted R-squared:  0.5216
F-statistic: 173.3 on 1 and 157 DF,  p-value: < 2.2e-16

>
> a<-data.frame(x=1200)
> res<-predict(r,a)
> print(res)
       1
72451.24
```


regression line
Fish Weight
5
10
15
0
500
1000
1500
FiSH Height