PRACTICAL 9 -

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| Perform the Linear regression on the given data warehouse data. |

Question-

Input Data

Below is the sample data representing the observations -

# Values of height

151, 174, 138, 186, 128, 136, 179, 163, 152, 131

# Values of weight.

63, 81, 56, 91, 47, 57, 76, 72, 62, 48

lm() Function - This function creates the relationship model between the predictor and the response variable.

Syntax

The basic syntax for lm() function in linear regression is -

lm(formula,data) -

Following is the description of the parameters used -

• formula is a symbol presenting the relation between x and y.

• data is the vector on which the formula will be applied.

Create Relationship Model & get the Coefficients

Program-

> x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)

> y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)

> relation <- lm(y~x)

> print(relation)

Call:

lm(formula = y ~ x)

Coefficients:

(Intercept) x

-38.4551 0.6746

> print(summary(relation))

Call:

lm(formula = y ~ x)

Residuals:

Min 1Q Median 3Q Max

-6.3002 -1.6629 0.0412 1.8944 3.9775

Coefficients:

Estimate Std. Error t value Pr(>|t|)

(Intercept) -38.45509 8.04901 -4.778 0.00139 \*\*

x 0.67461 0.05191 12.997 1.16e-06 \*\*\*

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Signif. codes: 0 ‘\*\*\*’ 0.001 ‘\*\*’ 0.01 ‘\*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 3.253 on 8 degrees of freedom

Multiple R-squared: 0.9548, Adjusted R-squared: 0.9491

F-statistic: 168.9 on 1 and 8 DF, p-value: 1.164e-06

> a<-data.frame(x=170)

> result<-predict(relation,a)

> print(result)

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76.22869

> png(file = "E:/linearregression.png")

> plot(y,x,col="blue",main="Height and Weight Regression",abline(lm(x~y)),cex=1.3,pch=16,xlab="Weight in kg",ylab="Height in cms")

> dev.off()

null device

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