

Linear Regression Example in R

This is an R Markdown (<http://rmarkdown.rstudio.com>) Notebook. When you execute code within the notebook, the results appear beneath the code.

Below is a example Linear Regression code.

```
# The predictor vector.
x <- c(151, 174, 138, 186, 128, 136, 179, 163, 152, 131)

# The response vector.
y <- c(63, 81, 56, 91, 47, 57, 76, 72, 62, 48)

# Apply the lm() function.
relation <- lm(y~x)
```

The above code creates a regression relation of items in vector y w.r.t. items in vector x.

Below is the summary of the relation formed

```
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 ***
## ---
## 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
```

The relation object can be used to predict values.

```
# Find weight of a person with height 170.
a <- data.frame(x = 170)
result <- predict(relation,a)
print(result)
```

```
##          1
## 76.22869
```

We can also visualize our model by plotting a graph.

```
# Give the chart file a name.
png(file = "linearregression.png")

# Plot the chart.
plot(y,x,col = "blue",main = "Height & Weight Regression",
abline(lm(x~y)),cex = 1.3,pch = 16,xlab = "Weight in Kg",ylab = "Height in cm")

# Save the file.
dev.off()
```

```
## quartz_off_screen
##                               2
```

