

# R Markdown Example

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## Combined R Markdown Example

This is a simple R Markdown document with code chunks and a plot included.

Use **Ctrl+Alt+I** to create new code chunk

### R Code Chunk with Plot

```
# Generate some random data
set.seed(42)
x <- rnorm(100)

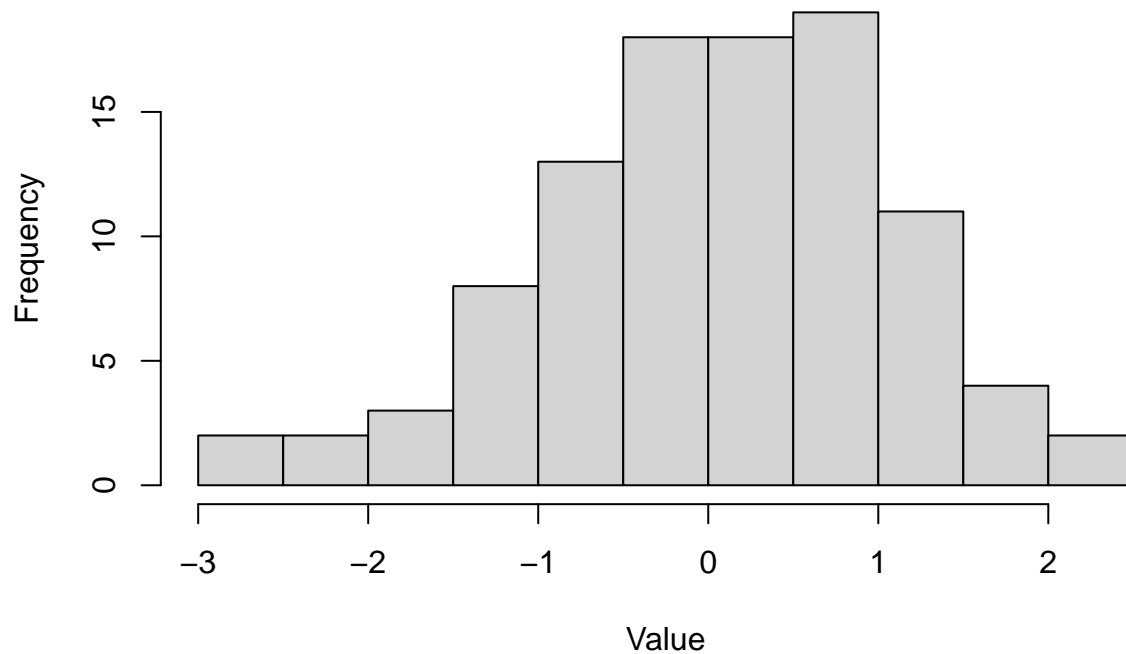
# Summary statistics
summary(x)
```

```
##      Min.   1st Qu.   Median     Mean   3rd Qu.     Max.
## -2.99309 -0.61669   0.08980   0.03251   0.66156   2.28665
```

### Plot histogram

```
hist(x, main = "Histogram of Random Data", xlab = "Value")
```

## Histogram of Random Data



## Loading and Exploring Data

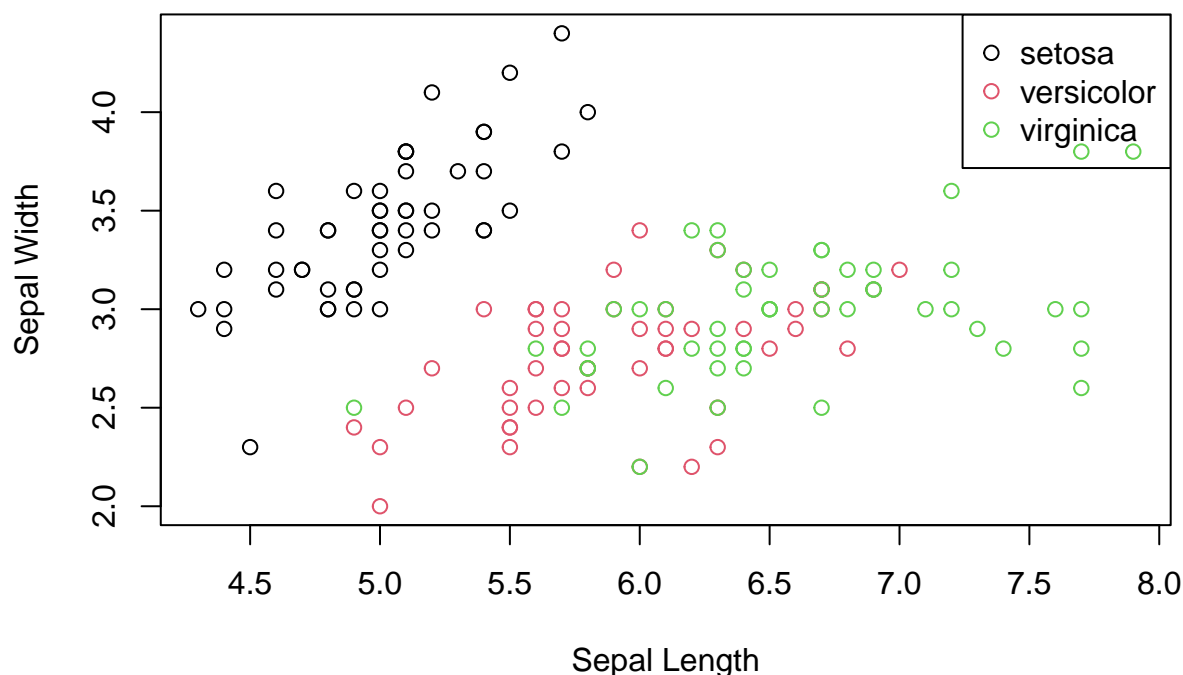
```
# Load a sample dataset  
data(iris)  
  
# View the first few rows of the dataset  
head(iris)
```

```
##   Sepal.Length Sepal.Width Petal.Length Petal.Width Species  
## 1         5.1         3.5         1.4         0.2  setosa  
## 2         4.9         3.0         1.4         0.2  setosa  
## 3         4.7         3.2         1.3         0.2  setosa  
## 4         4.6         3.1         1.5         0.2  setosa  
## 5         5.0         3.6         1.4         0.2  setosa  
## 6         5.4         3.9         1.7         0.4  setosa
```

## Data visualization

```
# Scatter plot of iris dataset  
plot(iris$Sepal.Length, iris$Sepal.Width,  
     main = "Sepal Length vs. Sepal Width",  
     xlab = "Sepal Length", ylab = "Sepal Width",  
     col = iris$Species)  
legend("topright", legend = levels(iris$Species), col = 1:3, pch = 1)
```

## Sepal Length vs. Sepal Width



## Linear Regression

```
# Fit a linear regression model
lm_model <- lm(Petal.Width ~ Petal.Length, data = iris)

# Summary of the model
summary(lm_model)

##
## Call:
## lm(formula = Petal.Width ~ Petal.Length, data = iris)
##
## Residuals:
##      Min       1Q   Median       3Q      Max
## -0.56515 -0.12358 -0.01898  0.13288  0.64272
##
## Coefficients:
##              Estimate Std. Error t value Pr(>|t|)
## (Intercept)  -0.363076   0.039762  -9.131  4.7e-16 ***
## Petal.Length   0.415755   0.009582  43.387 < 2e-16 ***
## ---
## Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
##
## Residual standard error: 0.2065 on 148 degrees of freedom
## Multiple R-squared:  0.9271, Adjusted R-squared:  0.9266
## F-statistic: 1882 on 1 and 148 DF, p-value: < 2.2e-16

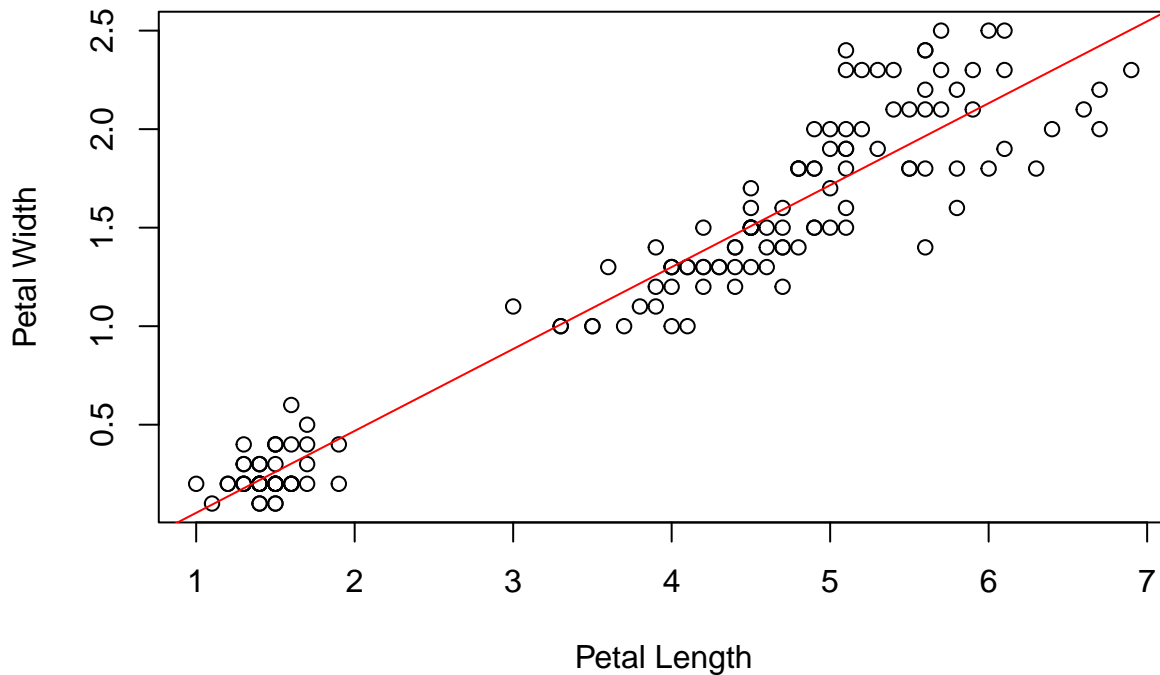
# Plot the regression line
plot(iris$Petal.Length, iris$Petal.Width,
```

```

main = "Petal Width vs. Petal Length with Regression Line",
xlab = "Petal Length", ylab = "Petal Width")
abline(lm_model, col = "red")

```

## Petal Width vs. Petal Length with Regression Line



## Interactive Plot (Using Plotly)

```

# Load the plotly library
library(plotly)

## Loading required package: ggplot2
##
## Attaching package: 'plotly'
## The following object is masked from 'package:ggplot2':
##
##   last_plot
## The following object is masked from 'package:stats':
##
##   filter
## The following object is masked from 'package:graphics':
##
##   layout
# Scatter plot using plotly
plot_ly(iris, x = ~Petal.Length, y = ~Petal.Width, color = ~Species,
         type = 'scatter', mode = 'markers',
         marker = list(size = 10)) %>%
  layout(title = "Interactive Scatter Plot: Petal Width vs. Petal Length",

```

```
xaxis = list(title = "Petal Length"),  
yaxis = list(title = "Petal Width"))
```