```
# Bivariate and Multivariate Graphical Data Analysis

## 1. Bivariate analysis

#### Covariance Code Example 1.1

## Example
# ---
# Question: Find the covariance of eruption duration and waiting time in the data set faithful
# ---
# OUR CODE GOES BELOW
#

# Printing out the the first 6 rows of the dataset
# ---
#

head(faithful)
```

```
##   eruptions waiting
## 1     3.600      79
## 2     1.800      54
## 3     3.333      74
## 4     2.283      62
## 5     4.533      85
## 6     2.883      55
```

```
# Assigning the eruptions column to the variable eruptions
# ---
#
eruptions <- faithful$eruptions

# Assigning the waiting column to the variable waiting
# ---
#
waiting<- faithful$waiting

# Using the cov() function to determine the covariance
# ---
#
cov(eruptions, waiting)
```

```
## [1] 13.97781
```

```
# The covariance of eruption duration and waiting time is about 13.98. It indicates a positive linear r

## Challenge
# ---
# Question: Find out the covariance of Bwt and Hwt in the cats dataset
# ---
# OUR CODE GOES BELOW
#
```

```
# Previewing the cats dataset
# ---
library(MASS)
head(cats)
```

```
##   Sex Bwt Hwt
## 1   F 2.0 7.0
## 2   F 2.0 7.4
## 3   F 2.0 9.5
## 4   F 2.1 7.2
## 5   F 2.1 7.3
## 6   F 2.1 7.6
```

```
Bwt = cats$Bwt
Hwt = cats$Hwt

cov(Bwt,Hwt)
```

```
## [1] 0.9501127
```

```
#### Correlation Coefficient Code Example 1.2

## Example
# ---
# Question: Find the correlation coefficient of eruption duration and waiting time in the faithful data
# ---
# OUR CODE GOES BELOW
#

# Assigning the eruptions column to the variable eruptions
# ---
#
eruptions <- faithful$eruptions

# Assigning the waiting column to the variable waiting
# ---
#
waiting<- faithful$waiting

# Using the cor() function to determine the covariance
# ---
#
cor(eruptions, waiting)
```

```
## [1] 0.9008112
```

```
## Challenge
# ---
# Question: Find out the covariance of Bwt and Hwt in the cats data set below:
# ---
# OUR CODE GOES BELOW
```

```
#

# Previewing the cats dataset by first importing the Mass library
# then displaying the first 6 records of this database
library(MASS)
head(cats)
```

```
##   Sex Bwt Hwt
## 1   F 2.0 7.0
## 2   F 2.0 7.4
## 3   F 2.0 9.5
## 4   F 2.1 7.2
## 5   F 2.1 7.3
## 6   F 2.1 7.6
```

```
cor(Bwt,Hwt)
```

```
## [1] 0.8041274
```

```
## Challenge
# ---
# Question: Create a correlation matrix in R using the corr() function
# ---
# Hint: http://bit.ly/RDocumentationCorrMatrix
# ---
# Dataset url = http://bit.ly/HousingDatainR
# ---
# OUR CODE GOES BELOW



# !!!! dataset not found!!! Error 404
```

```
## 2. Graphical Techniques
```

```
#### Scatterplot Code Example 2.1
```

```
## Example
# ---
# Question: Create a scatter plot of the eruption durations and waiting intervals from the faithful dat
# ---
# OUR CODE GOES BELOW
#

# Assigning the eruptions column to the variable eruptions
# ---
#
eruptions <- faithful$eruptions

# Assigning the waiting column to the variable waiting
# ---
#
```
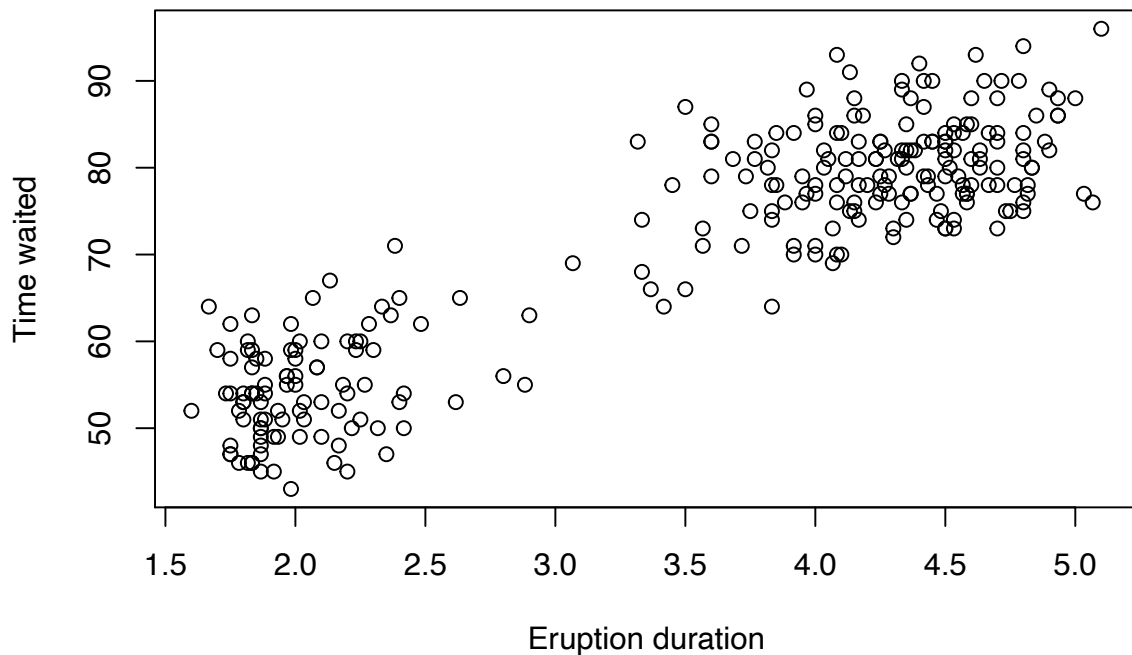
```
waiting <- faithful$waiting

# Creating the scatter plot using eruptions and waiting
# ---
#
plot(eruptions, waiting, xlab="Eruption duration", ylab="Time waited")
```



```
# Challenge
# ---
# Question: Using the cats dataset, create a scatter plot of the Bwt and Hwt variables.
# Does it reveal any relationship between these variables?
# ---
# OUR CODE GOES BELOW
#

# Previewing the cats dataset
# ---
#
head(cats)
```

```
##   Sex Bwt Hwt
## 1   F 2.0 7.0
## 2   F 2.0 7.4
## 3   F 2.0 9.5
## 4   F 2.1 7.2
## 5   F 2.1 7.3
## 6   F 2.1 7.6
```

```
plot(Bwt, Hwt, xlab="Bwt", ylab="Hwt")
```