

0202-Working-on-real-data

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1 TP 02 - About Data Frames - 2/2

- Written by Alexandre Gazagnes
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- Based on <https://www.w3schools.com/r/default.asp>

1.1 Load the dataset

```
[ ]: # Url to the csv file
url = "https://raw.githubusercontent.com/AlexandreGazagnes/
↳Unilassalle-Public-Ressources/main/2a-statistical-tests/02-session/database.
↳csv"
```

```
[ ]: # Local file
fn = "/home/alex/Downloads/my_awesome_db.csv"
```

```
[ ]: # Load the csv file
df = read.csv(url, header=TRUE, sep="," , dec=".")
```

1.2 Data Discovery

```
[ ]: # head of the csv file
head(df, 5) # first 2 rows
```

```
[ ]: # str of the csv file
str(df) # compact display of the structure of an R object
```

```
[ ]: # is.numeric
is.numeric(df$Taille) # TRUE
is.numeric(df$Nom) # TRUE
```

```
[ ]: # min and max
min(df$Poids) # 1.5
max(df$Poids) # 2.5
min(df$Taille) # 1.5
max(df$Taille) # 2.5
max(df$Taille, na.rm = TRUE) # 2.5
```

```
[ ]: # Mr Blois
df[df$Nom == "Blois",]

[ ]: # Try this
"Coucou" %in% df$Nom

[ ]: # Advanced selection
df[df$Sexe == "M" & ( (df$Quart == "Q4") |(df$Quart == "Q1")), ]

[ ]: # count the number of elements in each category
table(df$Sexe)

[ ]: # ask for the shape of the dataframe
dim(df) # 4 rows and 2 columns

[ ]: # ask for the summary of the dataframe
summary(df)
```

1.3 Answers

```
[ ]: # Calculate the means of the estimates of the teacher's weight (poids) in group
↳ D1 (then D2).
mean(df[df$Groupe == "D1",]$Poids, na.rm = TRUE)

[ ]: # Calculate the average of the first random numbers (Nombre1) of the students
↳ in group D2?
mean(df[df$Groupe == "D2",]$Nombre1, na.rm = TRUE)

[ ]: # Estimate the variance of the size (Taille) of the teacher, we will take all
↳ the students.
var(df$Taille, na.rm = TRUE)

[ ]: # Calculate the median of the sample consisting of the first random number
↳ (Nombre1) between 0 and 99 given by the students (Men=M).
median(df[df$Sexe == "M",]$Nombre1, na.rm = TRUE)

[ ]: # Calculate the deciles of the sample consisting of the first random number
↳ (Nombre1) between 0 and 99 given by the students (Men).
quantile(df[df$Sexe == "M",]$Nombre1, na.rm = TRUE)

[ ]: # Calculate the coefficients of variation, skewness and kurtosis of the
↳ teacher's heights (taille) of all students.
cv(df$Taille, na.rm = TRUE)
skewness(df$Taille, na.rm = TRUE)
kurtosis(df$Taille, na.rm = TRUE)
```

```
[ ]: # Summarize the series by these main characteristics (function summary).
summary(df)

[ ]: # 9) Display the division of the series made up of the second random number
↳ (Nombre2) between 0 and 99 given by the students (Men =M and Women=M)
↳ according to the following breakdown:
# ]-1 ; 9], ]9 ; 19], ]19 ; 29], ]29 ; 39], ]39 ; 49], ]49 ; 59], ]59 ; 69],
↳ ]69 ; 79], ]79 ; 89], ]89 ; 99].

[ ]: # Create the breaks
breaks = seq(-1, 99, 10)

[ ]: # Cut the data
df$cut = cut(df$Nombre2, breaks = breaks)

[ ]: # Count the number of elements in each category
table(df$cut)

[ ]: # Display the distribution of the series made up of the second random number
↳ (Nombre2) between 0 and 99 given by the
# students
hist(df$Nombre2, breaks = breaks, main = "Histogramme de la variable Nombre2",
↳ xlab = "Nombre2", ylab = "Fréquence")

[ ]: # Give the contingency table for the factors Group (Demi) and Sex.
table(df$Demi, df$Sexe)

[ ]: # Calculate the covariance between the first random number (Nombre1) and the
↳ second (Nombre2).
cov(df$Nombre1, df$Nombre2, use = "complete.obs")

[ ]: # Calculate the correlation coefficient between the first random number
↳ (Nombre1) and the second (Nombre2).
cor(df$Nombre1, df$Nombre2, use = "complete.obs")

[ ]: # Calculate the correlation coefficient between the first random number
↳ (Nombre1) and the second (Nombre2).
cor(df$Poids, df$Taille, use = "complete.obs")

[ ]: # Sort the dataframe by the column "Poids"
df[order(df$Poids),]

[ ]: # Sort the dataframe by the column "Poids" in decreasing order
df[order(df$Poids, decreasing = TRUE),]

[ ]: # Sort the dataframe by the column "Poids" and "Taille"
df[order(df$Poids, df$Taille),]
```

```
[ ]: # Sort the dataframe by the column "Poids" and "Taille" in decreasing order  
df[order(df$Poids, df$Taille, decreasing = TRUE),]
```