

BASE PLOT

Tobias Niedermaier

VISUALIZATION OF DATA

GRAPHICS GENERAL

- There are several kind of graphics available in R. E.g.
 - `plot()`; `hist()`; `boxplot()`;
- The title of a plot is set with the additional argument
 - `main = 'Main title'`
- The axes names by the additional arguments:
 - `xlab = 'x'` for the x-axis; `ylab = 'y'` for the y-axis
 - Color can be set by argument `col` (e.g., `col='red'`, `col='grey'`, ...)

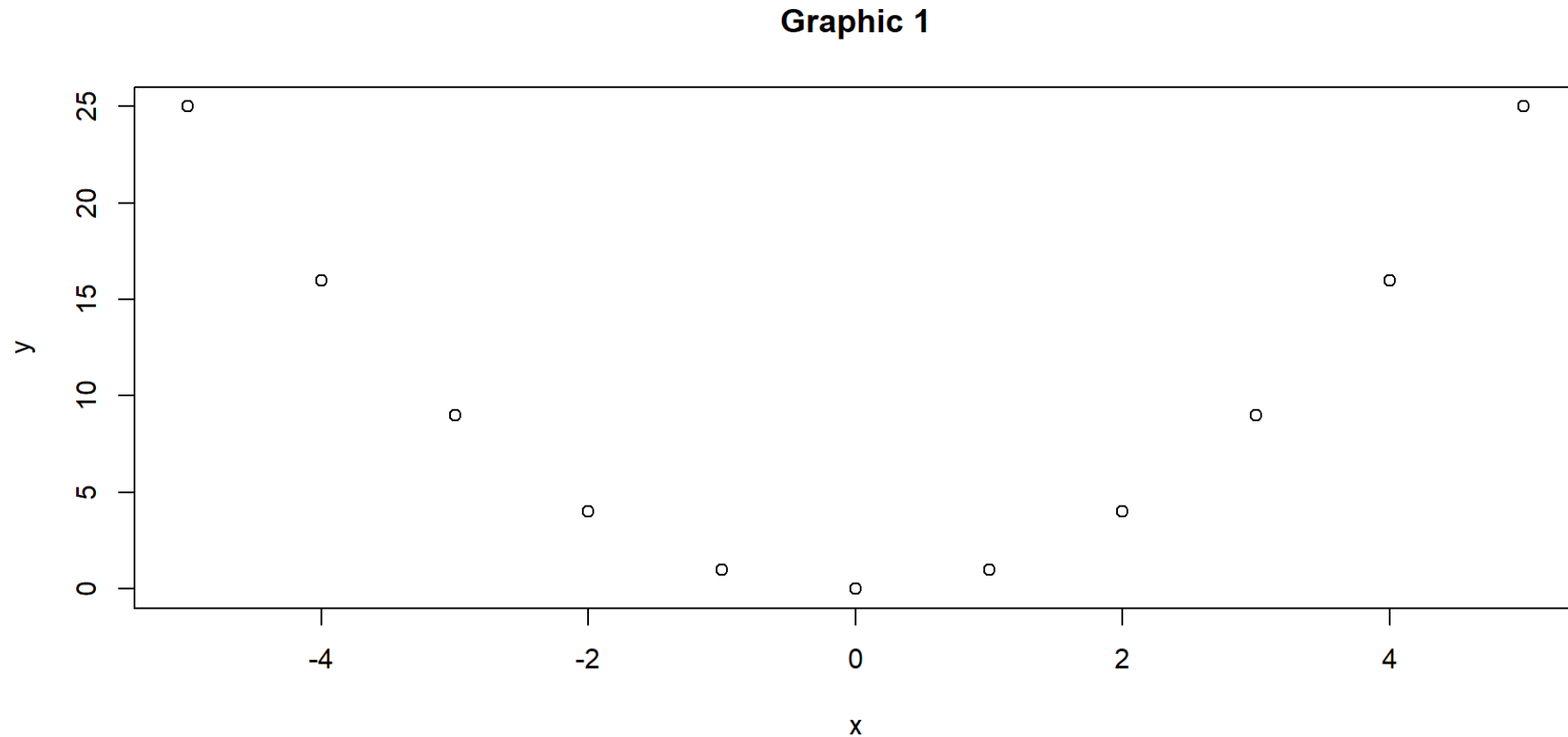
PLOT

- Standard scatter or line plot
- Needs the value for x-axis and the y-axis
- different types can be chosen (via argument `type`):
 - 'p' for points (default); 'l' for lines
 - A lot of styling options
 - See help for more details

SCATTER PLOT

A basic scatter plot is created with the basic plot function

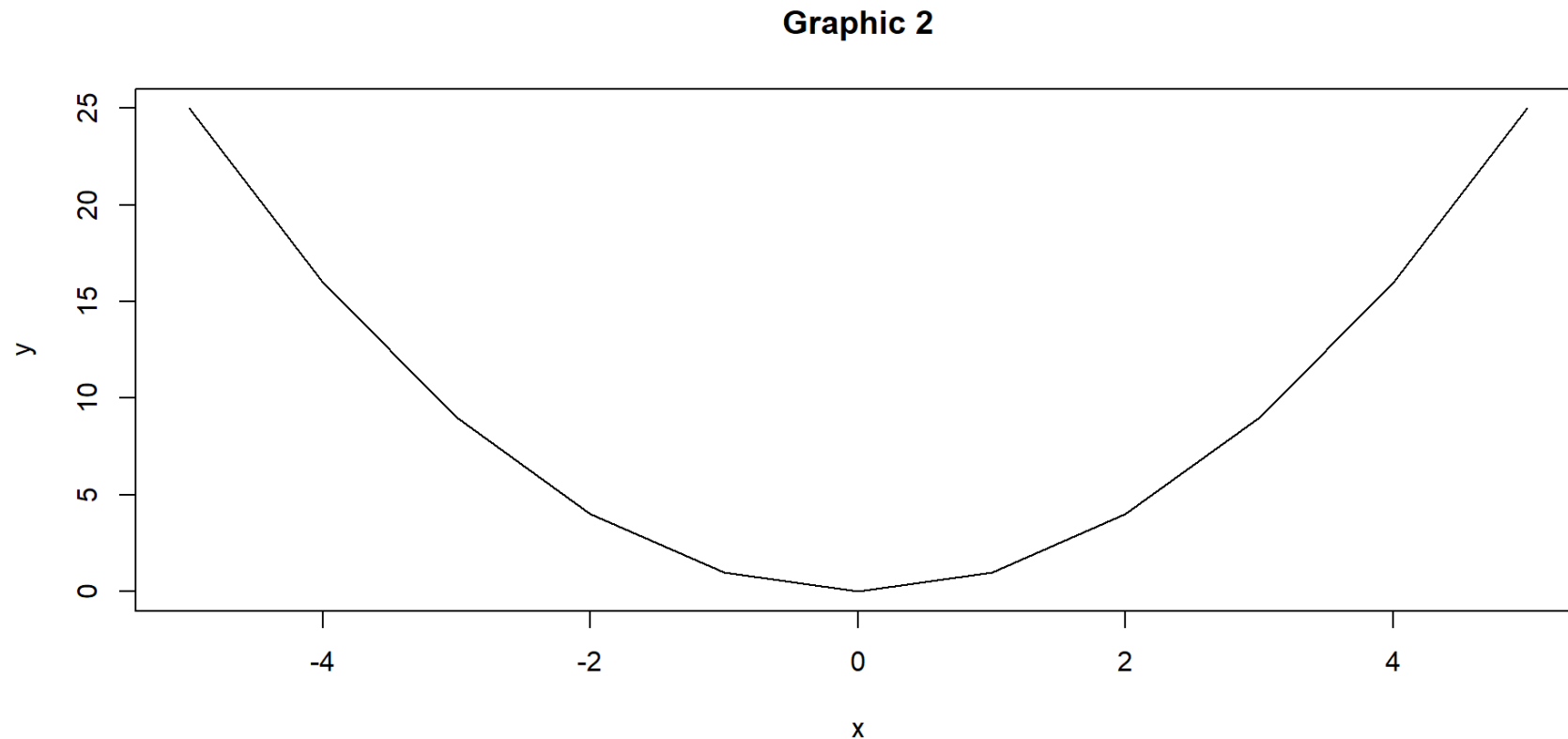
```
1 x <- -5:5
2 y <- (-5:5)^2
3 plot(x, y, main="Graphic 1")
```



LINE PLOT

- A basic line plot is also created with the basic plot function (with additional type)

```
1 plot(y ~ x, main="Graphic 2", type="l")
```



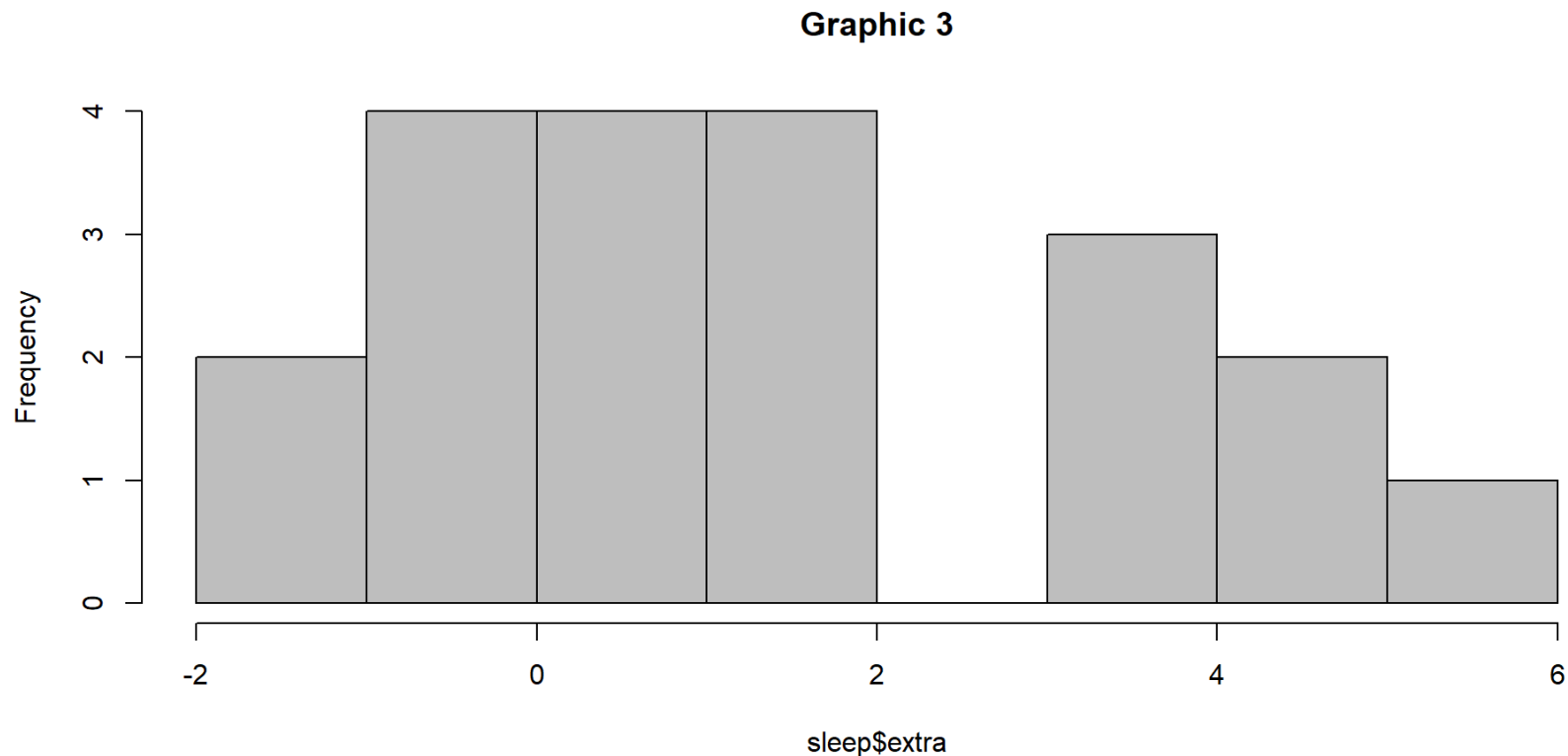
HISTOGRAM

- Command `hist()`
- Use the argument `breaks=...>` to have more or less bars;
- Set option `freq = TRUE` for frequencies, `freq = FALSE` for densities (normalization of area to 1);

HISTOGRAM SET COLOR

- We use the built-in data set `sleep`.
- Histogram using a single vector:

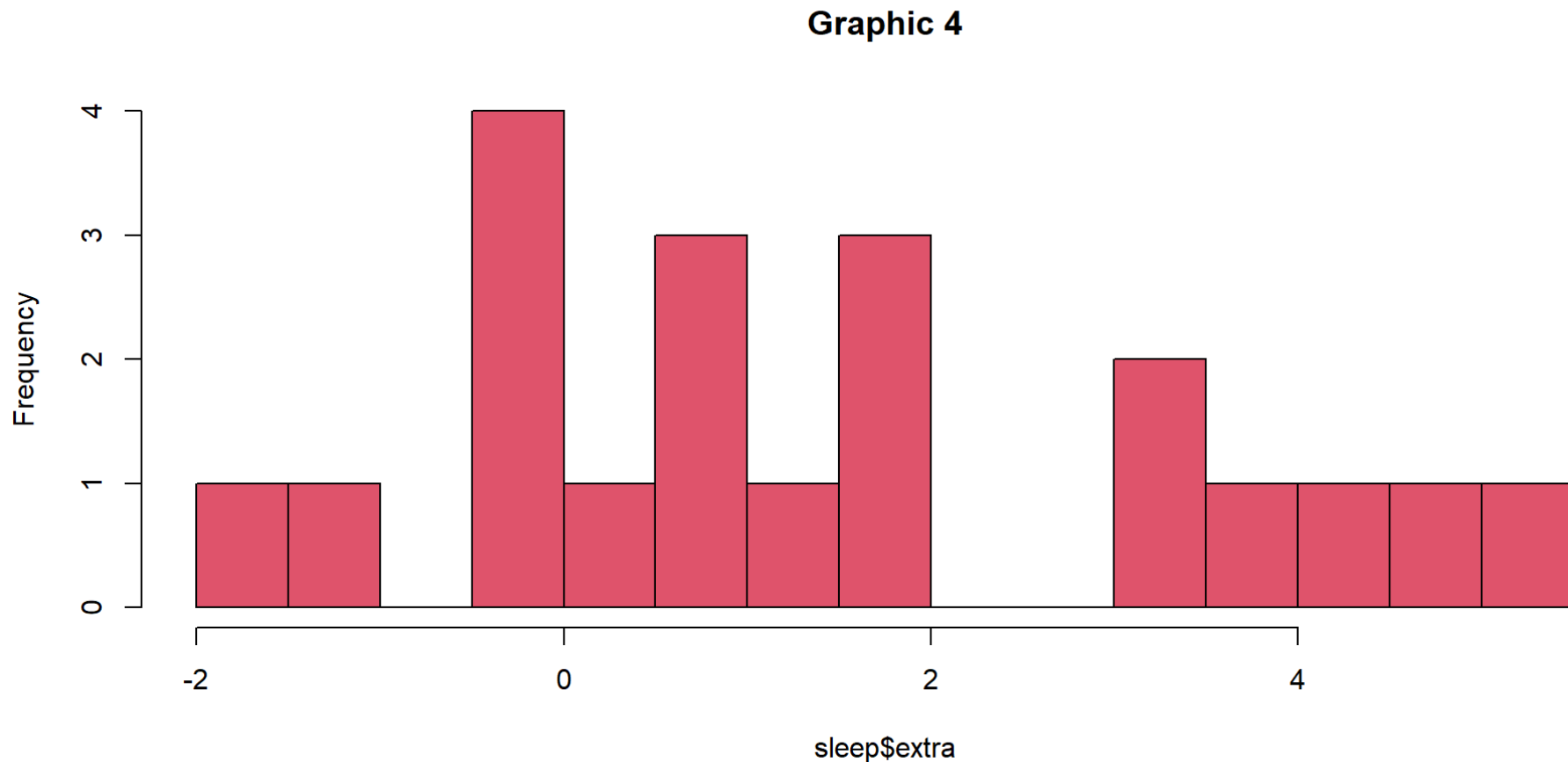
```
1 hist(sleep$extra, main="Graphic 3", col="grey")
```



HISTOGRAM SET BREAKS

- A basic histogram with a custom number of breaks in red:

```
1 hist(sleep$extra, main="Graphic 4", breaks=20, col=2)
```



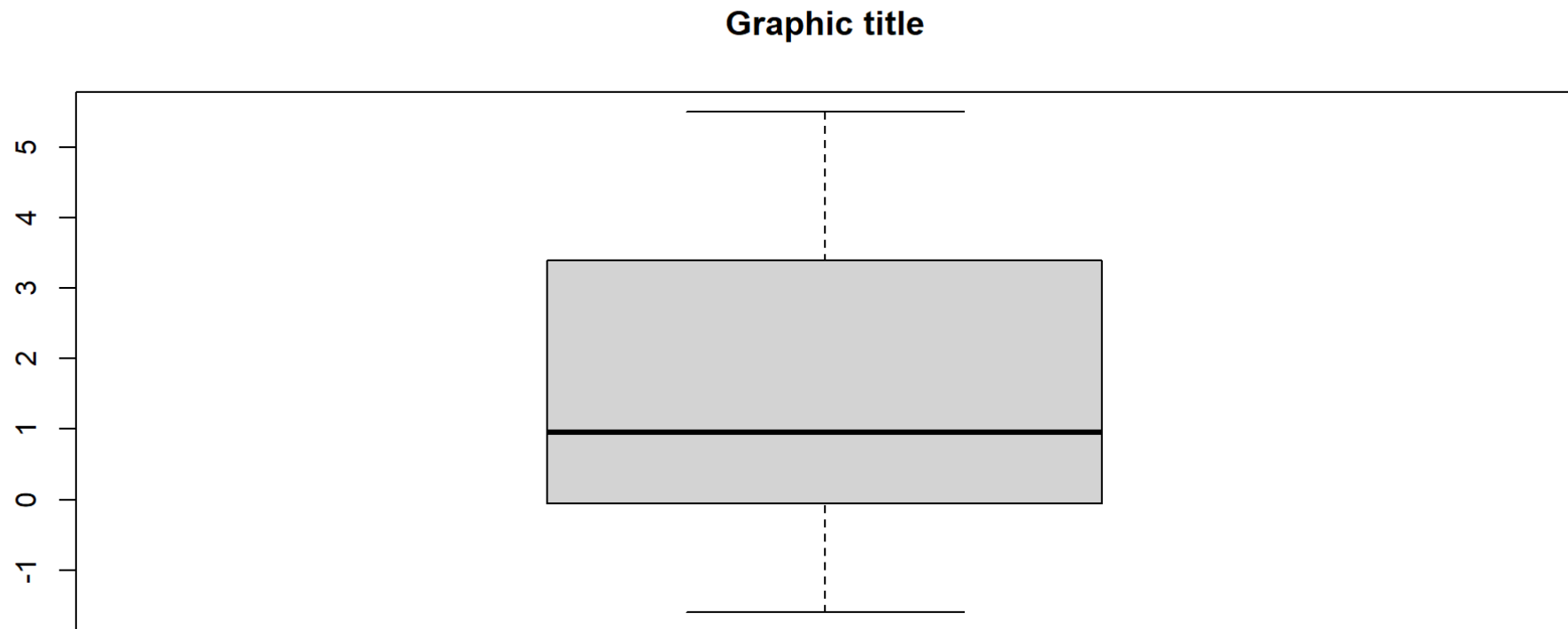
BOXPLOT

- Command `boxplot()`;
- Easy to plot with different groups;
- Parts of boxplot:
 - median,
 - 1st and 3rd quartile
 - outliers

SINGLE BOXPLOT

- Basic boxplot derived from one vector:

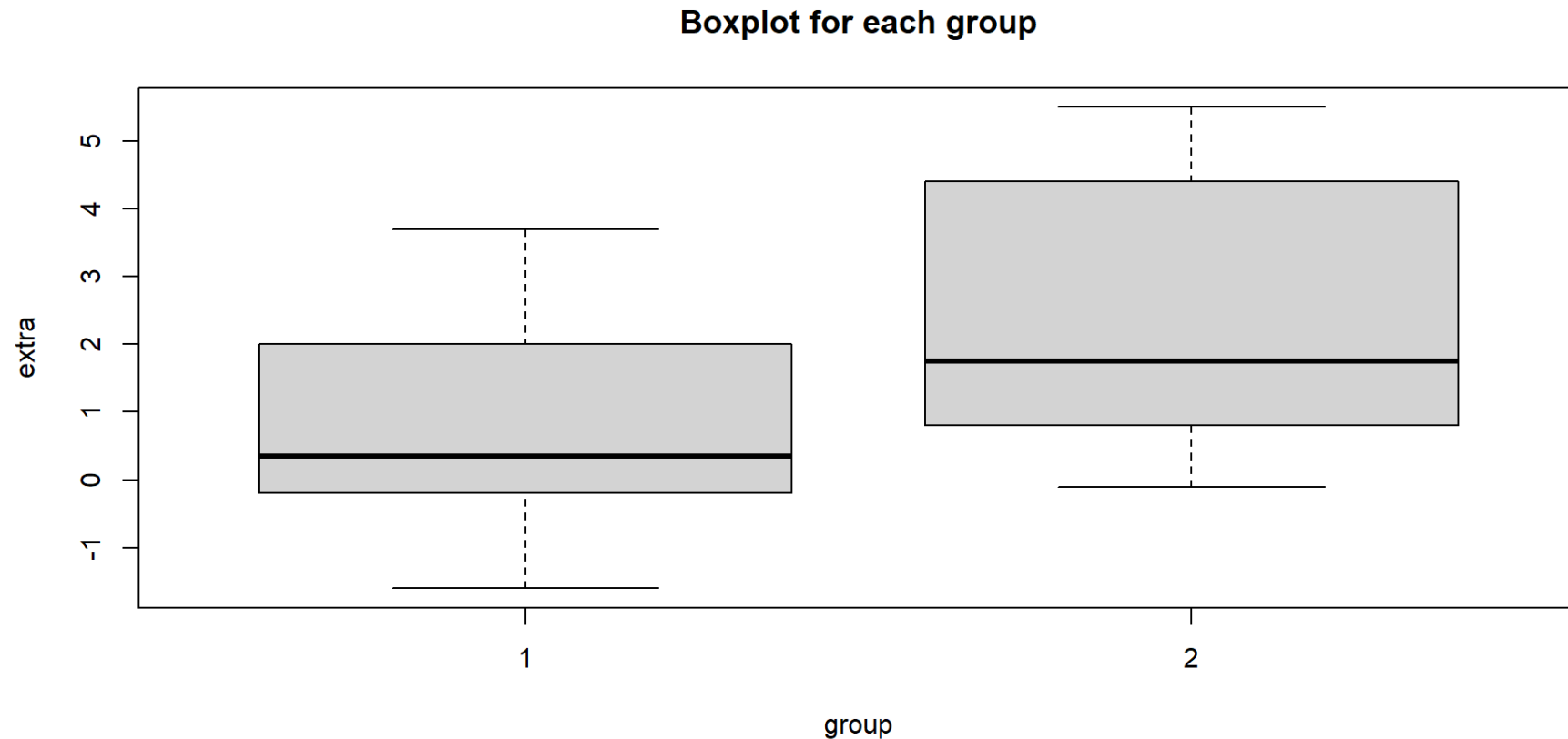
```
1 boxplot(sleep$extra, main="Graphic title")
```



MULTIPLE BOXPLOTS

A boxplot with formula operator to make a boxplot for each group

```
1 boxplot(extra ~ group, data = sleep, main="Boxplot for each group", ylab="extra", xlab="group")
```



This basically splits the vector into two vectors: one for each group.

EXERCISE