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Task 4

Using R example datasets

Describe briefly the content of the CO2 dataset using the help function

```
#load the data
data("CO2")
?CO2
```

The experiment is analyzing the cold tolerance of the grass species *Echinochola cruss-galli* by measuring the CO2 response curve for photosynthesis. The data contain the CO2 uptake at several levels of CO2 concentration in the chilled and non-chilled plants.

What is the average and median CO2 uptake of the plants from Quebec and Missisipi?

```
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.3     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.3     v tibble    3.2.1
## v lubridate 1.9.3     v tidyr     1.3.0
## v purrr     1.0.2
## -- Conflicts ---------------------------------------- tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

```
library(dplyr)
```

```
data(CO2)
#select the plant originated from quebec only
Quebec <-filter(CO2, Type=="Quebec")
summary(Quebec)
```

```
##      Plant            Type         Treatment       conc          uptake
##  Qn1    :7   Quebec     :42   nonchilled:21   Min.   :  95   Min.   : 9.30
##  Qn2    :7   Mississippi: 0   chilled   :21   1st Qu.: 175   1st Qu.:30.32
##  Qn3    :7                                    Median : 350   Median :37.15
##  Qc1    :7                                    Mean   : 435   Mean   :33.54
##  Qc3    :7                                    3rd Qu.: 675   3rd Qu.:40.15
##  Qc2    :7                                    Max.   :1000   Max.   :45.50
##  (Other):0
```

```r
#select the plant originated from Mississippi only
Mississippi<-filter(CO2, Type=="Mississippi")
summary(Mississippi)
```

```
##      Plant            Type         Treatment       conc          uptake
##  Mn3    :7   Quebec     : 0   nonchilled:21   Min.   :  95   Min.   : 7.70
##  Mn2    :7   Mississippi:42   chilled   :21   1st Qu.: 175   1st Qu.:13.88
##  Mn1    :7                                    Median : 350   Median :19.30
##  Mc2    :7                                    Mean   : 435   Mean   :20.88
##  Mc3    :7                                    3rd Qu.: 675   3rd Qu.:28.05
##  Mc1    :7                                    Max.   :1000   Max.   :35.50
##  (Other):0
```

```r
#generate the table
data <-data_frame(
  Plant_Origin = c("Quebec", "Mississippi"),
  Mean = c(33.54, 20.88),
  Median = c(37.15, 19.30))
```

```
## Warning: `data_frame()` was deprecated in tibble 1.1.0.
## i Please use `tibble()` instead.
## This warning is displayed once every 8 hours.
## Call `lifecycle::last_lifecycle_warnings()` to see where this warning was
## generated.
```

```r
knitr::kable(data, caption = "CO2 uptake based on plant origin")
```

Table 1: CO2 uptake based on plant origin

Plant_Origin	Mean	Median
Quebec	33.54	37.15
Mississippi	20.88	19.30

[OPTIONAL]In the airway example data from Bioconductor, how many genes are expressed in each sample? How many genes are ot expressed in any sample?

R Markdown

This is an R Markdown document. Markdown is a simple formatting syntax for authoring HTML, PDF, and MS Word documents. For more details on using R Markdown see http://rmarkdown.rstudio.com.

When you click the **Knit** button a document will be generated that includes both content as well as the output of any embedded R code chunks within the document. You can embed an R code chunk like this:

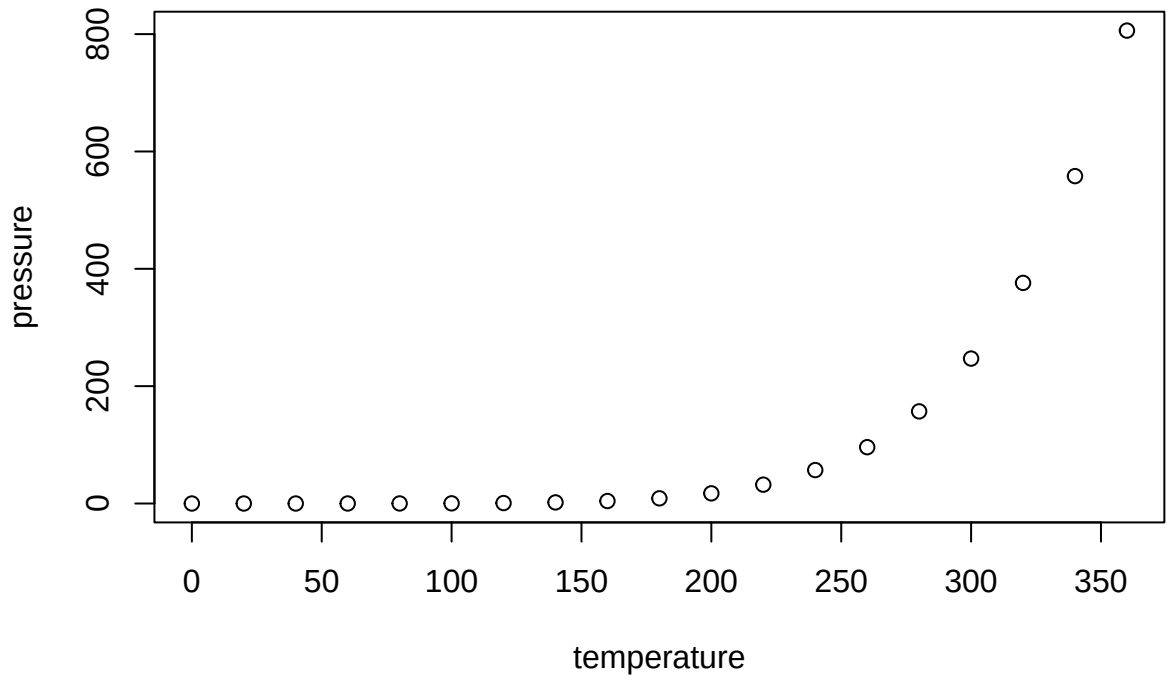
```r
summary(cars)
```

```
##      speed           dist
##  Min.   : 4.0   Min.   :  2.00
##  1st Qu.:12.0   1st Qu.: 26.00
```

```
##  Median :15.0   Median : 36.00
##  Mean   :15.4   Mean   : 42.98
##  3rd Qu.:19.0   3rd Qu.: 56.00
##  Max.   :25.0   Max.   :120.00
```

Including Plots

You can also embed plots, for example:



Note that the `echo = FALSE` parameter was added to the code chunk to prevent printing of the R code that generated the plot.