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3:W35: Start with R

1) Use R to figure out how many elements in the vector below are greater than 2 and then tell me what their sum (of the larger than 2 elements) is.
rooms <- c(1, 2, 4, 5, 1, 3, 1, NA, 3, 1, 3, 2, 1, NA, 1, 8, 3, 1, 4, NA, 1, 3, 1, 2, 1, 7, 1, 9, 3, NA)

```{r}
length(na.omit(rooms[rooms > 2]))
# there are 12 values in the vector greater than 2.

sum(na.omit(rooms[rooms > 2]))
# the sum of those elements are 55
```

2) What type of data is in the 'rooms' vector?

It is numeric data.

3) Submit the following image to Github: Inside your R Project (.Rproj), install the 'tidyverse' package and use the download.file() and read_csv() function to read the SAFI_clean.csv dataset into your R project as 'interviews' digital object (see instructions in https://datacarpentry.org/r-socialsci/setup.html and 'Starting with Data' section). Take a screenshot of your RStudio interface showing
- **a) the line of code you used to create the object,**
- **b) the 'interviews' object in the Environment, and**
- **c) the file structure of your R project in the bottom right "Files" pane.**

Save the screenshot as an image and put it in your AUID_lastname_firstname repository inside our Github organisation (github.com/Digital-Methods-HASS) or equivalent. Place here the URL leading to the screenshot in your repository.

https://github.com/Digital-Methods-HASS/au682983_Schioenning_AntonDrasbaek/blob/main/Homework/Homework 3.png
(can also be found in the Homework 3 folder on the GitHub repository)

4) Challenge: If you managed to create your own Danish king dataset, use it. If not, you the one attached to this assignment (it might need to be cleaned up a bit). Load the dataset into R as a tibble. Calculate the mean() and median() duration of rule over time and find the three mondarchs ruling the longest. How many days did they rule (accounting for transition year?)

I used my own data. This is excluding Magrethe d. 2 as her rule is not finished yet. See file: HW3 Exercise 4 on GitHub Repo for full R Markdown.

Load Packages and Data
```{r}
library(tidyverse)

kings <- read.csv("./data/danish_monarchs.csv")
```

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Create duration of rule column
```{r}
# create column
kings <- kings %>%
  mutate("days_ruling" = (reign_end - reign_start)*365)

# add extra day for every four years ruled to account for leap year
kings$days_ruling <- kings$days_ruling + round(((kings$days_ruling/365)/4), 0)
```

Calculating mean and median duration rule
```{r}
mean(na.omit(kings$days_ruling))
median(na.omit(kings$days_ruling))
```
Mean number of rule was 7045 days (19.3 years)
Mediuan number of rule was 6027 days (16.5 years)

Finding top three monarchs ruling the longest and how long they ruled
```{r}
head(kings[order(kings$days_ruling, decreasing = TRUE),], 3)
```

From this we see that the top 3 longest rulers are:
1. Christian 4. (21915 days, 60 years)
2. Erik 7. af Pommern (16071 days, 44 years)
3. Christian 9. (15706 days, 43 years)