# lecture4 solution notes

Jannik

11/25/2020

```
library(tidyverse)
library(lubridate)

fix_emperors <- function(data) {
  data %>%
    mutate(
      birth = case_when(
        index %in% c(1, 2, 4, 6) ~ update(birth, year = -year(birth)),
        TRUE                     ~ birth
      ),
      reign_start = case_when(
        index == 1 ~ update(reign_start, year = -year(reign_start)),
        TRUE       ~ reign_start
      )
    )
}
```

**Roman emperors**

The first exercise uses a dataset about roman emperors from the tidytuesday project (link). You can import it with:

```
raw_emperors <- read_csv("https://raw.githubusercontent.com/rfordatascience/tidytuesday/master/data/201

emperors <- fix_emperors(raw_emperors)
emperors
```

```
## # A tibble: 68 x 16
##    index name  name_full birth      death      birth_cty birth_prv rise
##    <dbl> <chr> <chr>     <date>     <date>     <chr>     <chr>     <chr>
##  1     1 Augu~ IMPERATO~ -62-09-23  14-08-19   Rome      Italia    Birt~
##  2     2 Tibe~ TIBERIVS~ -41-11-16  37-03-16   Rome      Italia    Birt~
##  3     3 Cali~ GAIVS IV~ 12-08-31   41-01-24   Antitum   Italia    Birt~
##  4     4 Clau~ TIBERIVS~ -9-08-01   54-10-13   Lugdunum  Gallia L~ Birt~
##  5     5 Nero  NERO CLA~ 37-12-15   68-06-09   Antitum   Italia    Birt~
##  6     6 Galba SERVIVS ~ -2-12-24   69-01-15   Terracina Italia    Seiz~
##  7     7 Otho  MARCVS S~ 32-04-28   69-04-16   Terentin~ Italia    Appo~
##  8     8 Vite~ AVLVS VI~ 15-09-24   69-12-20   Rome      Italia    Seiz~
##  9     9 Vesp~ TITVS FL~ 9-11-17    79-06-24   Falacrine Italia    Seiz~
## 10    10 Titus TITVS FL~ 39-12-30   81-09-13   Rome      Italia    Birt~
```

```
## # ... with 58 more rows, and 8 more variables: reign_start <date>,
## #   reign_end <date>, cause <chr>, killer <chr>, dynasty <chr>, era <chr>,
## #   notes <chr>, verif_who <chr>
```

Here are a couple of questions to answer. Decide for yourselves if a particular question is best answered using a visualization, a table or a simple sentence.

- What was the most popular way to rise to power?

### How they rise

```
rising_to_power <- emperors %>%
  count(rise, sort = TRUE)

knitr::kable(rising_to_power)
```

| rise | n |
|---|---|
| Birthright | 35 |
| Seized Power | 10 |
| Appointment by Army | 7 |
| Appointment by Senate | 7 |
| Appointment by Emperor | 4 |
| Appointment by Praetorian Guard | 3 |
| Election | 1 |
| Purchase | 1 |

### How they fall

- I what are the most common causes of death among roman emperors, what (or who) killed them?

### Dynamic Dynasties doing their thing

- Which dynasty was the most successful?
  - Firstly, how often did each dynasty reign?
  - Secondly, how long where the reigns?
  - Which dynasty would you rather be a part of, if your goal is to live the longest?

### Dairy Products in the US

Another dataset (link) concerns dairy product consumption per person in the US across a number of years. Load it with

```
dairy <- readr::read_csv("https://raw.githubusercontent.com/rfordatascience/tidytuesday/master/data/201
```

- All masses are given in lbs (pounds), can you convert them to kg?
- Which products lost their customer base over time, which ones won?

Above all, have some fun! If you make interesting findings along the way, go ahead and produce plots to highlight it.