Course 1 Section 3.13 - Reading and writing JSON files

Jiaying Wu

20/09/2020

```
library(tidyverse)
library(jsonlite)
library(lubridate)

Sys.setenv("OER_KEY" = "your-key-here")
```

```
makeRequest <- function(day)  {
  req <- str_glue(
    "https://openexchangerates.org/api/historical/{day}.json?app_id={key}",
    day = day, key = Sys.getenv("OER_KEY")
  )
}
res <- fromJSON(makeRequest("2019-08-15"))

rates <- as_tibble(res$rates) %>%
  mutate(date = as.POSIXct(res$timestamp, origin = "1970-01-01")) %>%
  gather(key = "currency", value = "value", -date)

getDay <- function(day) {
  url <- makeRequest(day)
  res <- fromJSON(url)
  rates <- as_tibble(res$rates)
  rates <- mutate(rates,
                  date = as.POSIXct(res$timestamp, origin = "1970-01-01"))
  rates <- gather(rates, key = "currency", value = "value", -date)
  rates
}
rates <- getDay("2019-08-15")

august <- seq(as_date("2018-08-01"), as_date("2018-08-31"), by = 1)
aug_rates <- map_dfr(august, getDay)

aug_rates
```

```
## # A tibble: 5,282 x 3
##    date                currency  value
##    <dttm>              <chr>     <dbl>
##  1 2018-08-02 09:59:59 AED        3.67
##  2 2018-08-02 09:59:59 AFN       72.4
##  3 2018-08-02 09:59:59 ALL      108.
##  4 2018-08-02 09:59:59 AMD      481.
```

```
##  5 2018-08-02 09:59:59 ANG        1.86
##  6 2018-08-02 09:59:59 AOA      257.
##  7 2018-08-02 09:59:59 ARS       27.5
##  8 2018-08-02 09:59:59 AUD        1.35
##  9 2018-08-02 09:59:59 AWG        1.79
## 10 2018-08-02 09:59:59 AZN        1.70
## # ... with 5,272 more rows
```

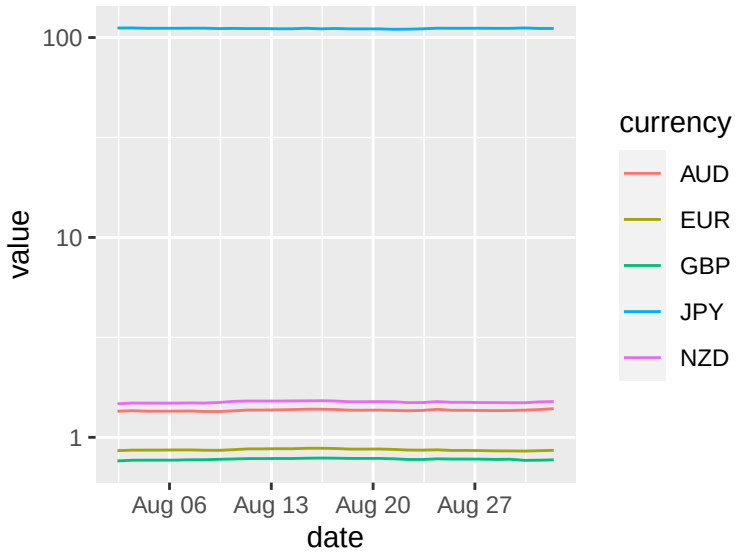
Using filter(), restrict the data to the following USD exchange rates for currencies: AUD, NZD, JPY, EUR, GBP. What information is displayed in your plot?

```
five_currency <- aug_rates %>%
  filter(currency %in% c("AUD", "NZD", "JPY", "EUR", "GBP"))
five_currency
```

```
## # A tibble: 155 x 3
##    date                currency   value
##    <dttm>              <chr>      <dbl>
##  1 2018-08-02 09:59:59 AUD        1.35
##  2 2018-08-02 09:59:59 EUR        0.857
##  3 2018-08-02 09:59:59 GBP        0.762
##  4 2018-08-02 09:59:59 JPY      112.
##  5 2018-08-02 09:59:59 NZD        1.47
##  6 2018-08-03 09:59:59 AUD        1.36
##  7 2018-08-03 09:59:59 EUR        0.863
##  8 2018-08-03 09:59:59 GBP        0.768
##  9 2018-08-03 09:59:59 JPY      112.
## 10 2018-08-03 09:59:59 NZD        1.48
## # ... with 145 more rows
```

Create a line plot to compare the USD exchange rates for AUD, EUR, GBP, NZD, JPY over the month.

```
five_currency %>%
  ggplot(aes(x = date, y = value, group = currency, color = currency)) +
  geom_line() +
  scale_y_log10()
```



Create a facetted line plot to compare the USD exchange rates for AUD, EUR, GBP, NZD, JPY over the month.

```
five_currency %>%
  ggplot(aes(x = date, y = value, color = currency)) +
  geom_line() +
  scale_y_log10() +
  facet_wrap(~currency, nrow = 1)+
  theme(legend.position = "bottom")
```