## Prova1

## Prova 1 ME315

```
library(dplyr)
library(readxl)
library(readr)
library(lubridate)
library(stringr)
library(moments)
library(DT)
library(ggplot2)
library(jsonlite)
```

Importação do dados.

```
detectDates = TRUE,
skipEmptyRows = TRUE,
skipEmptyCols = TRUE)
```

Tratamento inicial.

```
tratamento <- function(input){</pre>
  output <- input %>%
  `colnames<-`(.[1, ]) %>%
  slice(-1) %>%
  rename_with(~ str_extract(.x, "[^\\s]+$"), -Data) %>%
  mutate(across(-Data, ~ ifelse(. == "-", NA, .))) %>%
  mutate(across(-Data, as.numeric)) %>%
  filter(if_any(-Data, ~!is.na(.))) %>%
  arrange(Data) %>%
  select(Data, where(~ mean(is.na(.x)) <= 0.9)) %>%
  filter(Data >= as.Date("2000-01-01") & Data <= as.Date("2025-08-31"))
  return(output)
}
amex_cabec <- tratamento(amex)</pre>
nasdaq_cabec <- tratamento(nasdaq)</pre>
nyse_cabec <- tratamento(nyse)</pre>
```

Cálculo do Log-retorno.

```
calcula_logret <- function(precos) {
  precos[-1] <- lapply(precos[-1], function(x) {
    x <- as.numeric(x)
    ret <- rep(NA, length(x))
    idx <- which(!is.na(x))
    if(length(idx) > 1) ret[idx[-1]] <- log(x[idx[-1]] / x[idx[-length(idx)]])
    ret
  })
  return(precos)
}
amex_logret <- calcula_logret(amex_cabec)
nasdaq_logret <- calcula_logret(nasdaq_cabec)
nyse_logret <- calcula_logret(nyse_cabec)</pre>
```

Unindo as tabelas numa única.

```
tabelas <- list(amex_logret, nasdaq_logret, nyse_logret)
retornos_diarios <- Reduce(function(x, y) full_join(x, y, by = "Data"), tabelas)
write_csv(retornos_diarios, "retornos_diarios_236280.csv")</pre>
```

Retorno mensal.

Estatísticas

```
estatisticas <- retorno_mensal %>%
 select(-mes) %>%
 summarise(across(everything(), list(
   media = ~ mean(.x, na.rm = TRUE),
   maximo
             = \sim \max(.x, na.rm = TRUE),
   minimo
             = ~ min(.x, na.rm = TRUE),
   mediana = ~ median(.x, na.rm = TRUE),
   assimetria = ~ skewness(.x, na.rm = TRUE),
   curtose = ~ kurtosis(.x, na.rm = TRUE),
             = ~ sd(.x, na.rm = TRUE)
   desvio
 ))) %>%
 tidyr::pivot_longer(everything(),
                     names_to = c("acao", "estatistica"),
                     names_sep = "_",
                     values_to = "valor")
```

Tabela

```
datatable(head(estatisticas, 350), rownames = FALSE)
```

Gráfico

```
retorno_mensal %>%
  select(mes, NVDA) %>%
  ggplot(aes(x = mes, y = NVDA)) +
```

```
geom_line(color = "steelblue", size = 1) +
geom_point(size = 1, alpha = 0.6) +
labs(
   title = "Log-retorno Mensal da NVDA",
   x = "Mês",
   y = "Log-retorno (%)"
) +
theme_minimal() +
theme(
   plot.title = element_text(hjust = 0.5),
   axis.text.x = element_text(angle = 45, hjust = 1)
)
```

Salvar a tabela em formato json.

```
write_json(estatisticas, "estatisticas_descritivas_mensais_236280.json", pretty = TRUE, auto
```