Arbeidskrav 1

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```
rm(list=ls())
library(tidyverse)
```

```
-- Attaching packages --------------------------------------- tidyverse 1.3.2 --
v ggplot2 3.4.0     v purrr   1.0.1
v tibble  3.1.8     v dplyr   1.1.0
v tidyr   1.3.0     v stringr 1.5.0
v readr   2.1.3     v forcats 1.0.0
-- Conflicts ------------------------------------------ tidyverse_conflicts() --
x dplyr::filter() masks stats::filter()
x dplyr::lag()    masks stats::lag()
```

```
library(readxl)
library(zoo)
```

```
Attaching package: 'zoo'

The following objects are masked from 'package:base':

    as.Date, as.Date.numeric
```

```
# I use import dataset from excel and copy the code preview.

low_trop <- read_excel("C:/Users/47911/Desktop/SAMFUNNS ØKONOMI/SOK 1005 - Datavitenskap/L
    col_names = FALSE, col_types = c("skip", "numeric", "numeric",
        "numeric", "skip", "skip",
        "skip", "skip", "skip",
```

```
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip"),
    skip = 2, n_max = 529)
```

```
New names:
* `` -> `...1`
* `` -> `...2`
* `` -> `...3`
```

```
# I use import dataset from excel and copy the code preview.

mid_trop <- read_excel("C:/Users/47911/Desktop/SAMFUNNS ØKONOMI/SOK 1005 - Datavitenskap/M
    col_names = FALSE, col_types = c("skip", "numeric", "numeric",
        "numeric", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip"),
    skip = 2, n_max = 529)
```

```
New names:
* `` -> `...1`
* `` -> `...2`
* `` -> `...3`
```

```
# I use import dataset from excel and copy the code preview.

tropop <- read_excel("C:/Users/47911/Desktop/SAMFUNNS ØKONOMI/SOK 1005 - Datavitenskap/Tro
    col_names = FALSE, col_types = c("skip", "numeric", "numeric",
        "numeric", "skip", "skip",
        "skip", "skip", "skip",
```

```
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip"),
    skip = 2, n_max = 529)
```

```
New names:
* `` -> `...1`
* `` -> `...2`
* `` -> `...3`
```

```
# I use import dataset from excel and copy the code preview.

low_strat <- read_excel("C:/Users/47911/Desktop/SAMFUNNS ØKONOMI/SOK 1005 - Datavitenskap/
    col_names = FALSE, col_types = c("skip", "numeric", "numeric",
        "numeric", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip",
        "skip", "skip", "skip"),
    skip = 2, n_max = 529)
```

```
New names:
* `` -> `...1`
* `` -> `...2`
* `` -> `...3`
```

```
# I rename every column to make the dataframes readable.

low_trop <- rename(low_trop, year = "...1", month = "...2", globe = "...3")
mid_trop <- rename(mid_trop, year = "...1", month = "...2", globe = "...3")
tropop <- rename(tropop, year = "...1", month = "...2", globe = "...3")
low_strat <- rename(low_strat, year = "...1", month = "...2", globe = "...3")
```

```r
# Code found at: https://stackoverflow.com/questions/39420136/combine-separate-year-and-mo
# I use the 'year' and 'month' columns to make a 'date' column.

low_trop$date <- as.yearmon(paste(low_trop$year, low_trop$month), "%Y %m")
mid_trop$date <- as.yearmon(paste(mid_trop$year, mid_trop$month), "%Y %m")
tropop$date <- as.yearmon(paste(tropop$year, tropop$month), "%Y %m")
low_strat$date <- as.yearmon(paste(low_strat$year, low_strat$month), "%Y %m")
```

```r
# Code found at: https://www.statology.org/rolling-average-in-r/
# I use 'rollmean' to create the mean of each dataframe and specify the start of the calcu

low_trop$mean <- rollmean(low_trop$globe, 13, fill=NA, align='right')
mid_trop$mean <- rollmean(mid_trop$globe, 13, fill=NA, align='right')
tropop$mean <- rollmean(tropop$globe, 13, fill=NA, align='right')
low_strat$mean <- rollmean(low_strat$globe, 13, fill=NA, align='right')
```

```r
# I create the average of the four dataframes.

average <- low_trop$mean+mid_trop$mean+tropop$mean+low_strat$mean/4
```

```r
# I use the 'year' and 'month' columns to make a 'date' value to add to the dataframe for

avg_date <- as.yearmon(paste(low_trop$year, low_trop$month), "%Y %m")
```

```r
# I create a dataframe

avg <- data.frame(avg_date, average)
```

```r
# I plot all the mean's and the average from the dataframes into a plot, and give each lin

  ggplot() +

  geom_line(data=low_trop, aes(x = date, y = mean, color = "Lower Troposphere"), size = 0.

  geom_line(data=mid_trop, aes(x = date, y = mean, color = "Mid-Troposphere"), size = 0.71

  geom_line(data=tropop, aes(x = date, y = mean, color = "Tropopause"), size = 0.71) +

  geom_line(data=low_strat, aes(x = date, y = mean, color = "Lower Stratosphere"), size =
```

```
    geom_line(data=avg, aes(x = avg_date, y = average, color = "Average"), size = 0.71) +
    labs (title = "Mean and average of temperature in the atmosphere", y = "Temperature", x
    theme_bw()
```

```
Warning: Using `size` aesthetic for lines was deprecated in ggplot2 3.4.0.
i Please use `linewidth` instead.
```

```
Warning: Removed 12 rows containing missing values (`geom_line()`).
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