

### Arkaraj Mukherjee: H.W. 3

Loading necessary libraries and setting the current working directory appropriately:

```
library("tidyverse");

## - Attaching core tidyverse packages ----- tidyverse 2.0.0 -
## v dplyr      1.1.4      v readr      2.1.6
## v forcats    1.0.1      v stringr   1.6.0
## v ggplot2    4.0.1      v tibble    3.3.0
## v lubridate  1.9.4      v tidyr     1.3.2
## v purrr      1.2.0
## - Conflicts ----- tidyverse_conflicts() -
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()     masks stats::lag()
## i Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts
to become errors

library("scales")

##
## Attaching package: 'scales'
##
## The following object is masked from 'package:purrr':
##
##     discard
##
## The following object is masked from 'package:readr':
##
##     col_factor

library("viridis");

## Loading required package: viridisLite
##
## Attaching package: 'viridis'
##
## The following object is masked from 'package:scales':
##
##     viridis_pal

setwd("~/isi_bmath/sem_II/intro_to_statistics_and_computation_with_data");
```

(a) The headers in the csv have been edited for brevity. The graph has its x-axis being the

dates and y-axis being the current time in 24-hour format. The bars correspond (according to colour which depend on the topic) to the meeting timespans. It should be noted that there were meetings (56 of them) which ended on a date later than the start date, these have been split into two separate meetings for the sake of plotting. What we aim to capture is "when is Suppandi in what (according to topic) meeting".

```
SuppandiZoomLog = read.csv("SuppandiZoomLog.csv", header = T);
SZL = SuppandiZoomLog[c("Topic", "Start", "End")]
head(SZL, n = 3)

##      Topic      Start      End
## 1 Water 2024-01-12 17:30:59 01/12/2024 05:41:48 PM
## 2 Water 2024-01-12 10:03:45 01/12/2024 12:38:40 PM
## 3 Water 2023-01-26 18:58:09 01/26/2023 08:30:16 PM

SZL$Start = as.POSIXlt(SZL$Start);
SZL$End = strptime(SZL$End, "%m/%d/%Y %I:%M:%S %p");

#splitting meetings which overflow and attaching them at the end
for(i in 1:nrow(SZL)) {
  if(as.POSIXlt(SZL$End[i])$mday != as.POSIXlt(SZL$Start[i])$mday) {

    new_start = as.POSIXlt(SZL$Start[i]);
    new_start$mday = new_start$mday + 1;
    new_start$sec <- 0;
    new_start$min <- 0;
    new_start$hour <- 0;

    SZL <- SZL %>%
      add_row(Topic = SZL$Topic[i], Start = new_start, End = SZL$End[i]);

    new_end = as.POSIXlt(SZL$Start[i]);
    new_end$sec <- 59;
    new_end$min <- 59;
    new_end$hour <- 23;

    SZL$End[i] = new_end;
  }
}

to_plot <- SZL %>% mutate(
  Date = as.Date(Start),
  Start = as.POSIXlt(SZL$Start)$hour +
    as.POSIXlt(SZL$Start)$min/60 + as.POSIXlt(SZL$Start)$sec/3600,
  End = as.POSIXlt(SZL$End)$hour +
    as.POSIXlt(SZL$End)$min/60 + as.POSIXlt(SZL$End)$sec/3600,
)
```

```

ggplot(data = to_plot) +
  geom_rect(mapping = aes(
    xmin = Date - 0.5,
    xmax = Date + 0.5,
    ymin = Start,
    ymax = End,
    fill = Topic)
  ) +
  scale_x_date(
    date_breaks = "1 month",
    date_minor_breaks = "1 day",
    labels = date_format("%b %Y")
  ) +
  scale_y_continuous(
    breaks = 0:24,
    limits = c(0,24)
  ) +
  labs(
    title = "Daily schdecule of zoom meetings",
    x = "Date",
    y = "Time of day",
    fill = "Topic"
  ) +
  theme(
    axis.text.x = element_text(angle = 45, vjust = 1, hjust = 1)
  )

```

Daily schdecule of zoom meetings

