Final Project

Sashi R Amatya

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Importing libraries

```r
library(tidyverse)
```

```
## -- Attaching core tidyverse packages ----------------------- tidyverse 2.0.0 --
## v dplyr     1.1.4      v readr     2.1.5
## v forcats   1.0.0      v stringr   1.5.1
## v ggplot2   3.5.1      v tibble    3.2.1
## v lubridate 1.9.3      v tidyr     1.3.1
## v purrr     1.0.2
## -- 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
```

```r
library(readxl)
library(ggplot2)
library(data.table)
```

```
##
## Attaching package: 'data.table'
##
## The following objects are masked from 'package:lubridate':
##
##     hour, isoweek, mday, minute, month, quarter, second, wday, week,
##     yday, year
##
## The following objects are masked from 'package:dplyr':
##
##     between, first, last
##
## The following object is masked from 'package:purrr':
##
##     transpose
```

```r
library(plotly)
```

```
##
## Attaching package: 'plotly'
##
## The following object is masked from 'package:ggplot2':
##
##     last_plot
##
## The following object is masked from 'package:stats':
##
##     filter
##
## The following object is masked from 'package:graphics':
##
##     layout
```

Reading excel file

and then converting Sleep duration to decimal hour format so that

9 hour 30 minutes will show as 9.5 hrs for analysis purpose

```
sleep_data <- read_excel("~/Library/CloudStorage/OneDrive-Personal/SASHI - DATA 211/FINAL PROJECT - SLE
head(sleep_data,3)
```

```
## # A tibble: 3 x 9
##   Participant   Age Sex   Occupation 'Age Group'        Date                Day
##   <chr>       <dbl> <chr> <chr>      <chr>              <dttm>              <chr>
## 1 Sashi          42 Male  Work       Middle-aged adult 2024-10-26 00:00:00 Satu~
## 2 Sashi          42 Male  Work       Middle-aged adult 2024-10-27 00:00:00 Sund~
## 3 Sashi          42 Male  Work       Middle-aged adult 2024-10-28 00:00:00 Mond~
## # i 2 more variables: 'Day Off' <chr>, 'Sleep Duration' <dttm>
```

```
# Converting "Sleep Duration" to Hours and Minutes format.
# 9 hours 30 minutes with date will save as = 930
sleep_data$`Sleep Duration`<-
  as.numeric(format(as.POSIXct(sleep_data$`Sleep Duration`),format = "%H%M", units="minutes") )
print(sleep_data)
```

```
## # A tibble: 64 x 9
##    Participant   Age Sex   Occupation 'Age Group'       Date                Day
##    <chr>       <dbl> <chr> <chr>      <chr>             <dttm>              <chr>
##  1 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-26 00:00:00 Satu~
##  2 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-27 00:00:00 Sund~
##  3 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-28 00:00:00 Mond~
##  4 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-29 00:00:00 Tues~
##  5 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-30 00:00:00 Wedn~
##  6 Sashi          42 Male  Work       Middle-aged adu~ 2024-10-31 00:00:00 Thur~
##  7 Sashi          42 Male  Work       Middle-aged adu~ 2024-11-01 00:00:00 Frid~
##  8 Sashi          42 Male  Work       Middle-aged adu~ 2024-11-02 00:00:00 Satu~
```

```
## 9 Sashi          42 Male  Work      Middle-aged adu~ 2024-11-03 00:00:00 Sund~
## 10 Sashi         42 Male  Work      Middle-aged adu~ 2024-11-04 00:00:00 Mond~
## # i 54 more rows
## # i 2 more variables: `Day Off` <chr>, `Sleep Duration` <dbl>
```

```r
# Converting "Sleep Duration" minutes to percentage of minute format
# 930 (9 hours 30 minutes) from previous step will now convert to ~9.5 hours
for(i in 1:nrow(sleep_data)){
  sleep_data$`Sleep Duration`[i] <- (sleep_data$`Sleep Duration`[i]%/%100) +
         ((sleep_data$`Sleep Duration`[i]%%100)*0.0166)
}
print(sleep_data)
```

```
## # A tibble: 64 x 9
##     Participant   Age Sex   Occupation `Age Group`      Date                Day
##     <chr>       <dbl> <chr> <chr>      <chr>            <dttm>              <chr>
##  1 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-26 00:00:00 Satu~
##  2 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-27 00:00:00 Sund~
##  3 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-28 00:00:00 Mond~
##  4 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-29 00:00:00 Tues~
##  5 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-30 00:00:00 Wedn~
##  6 Sashi          42 Male  Work      Middle-aged adu~ 2024-10-31 00:00:00 Thur~
##  7 Sashi          42 Male  Work      Middle-aged adu~ 2024-11-01 00:00:00 Frid~
##  8 Sashi          42 Male  Work      Middle-aged adu~ 2024-11-02 00:00:00 Satu~
##  9 Sashi          42 Male  Work      Middle-aged adu~ 2024-11-03 00:00:00 Sund~
## 10 Sashi          42 Male  Work      Middle-aged adu~ 2024-11-04 00:00:00 Mond~
## # i 54 more rows
## # i 2 more variables: `Day Off` <chr>, `Sleep Duration` <dbl>
```

```r
# class(sleep_data$`Sleep Duration`)
```

Calculating total average sleep per person

```r
# Average sleep per person total
avg_sleep <- sleep_data %>%
  group_by(Participant) %>%
  summarise(AverageSleep = mean(`Sleep Duration`))

# Graphing - Average sleep per person total
avg_sleep_graph <- avg_sleep%>%
  ggplot(aes(x=Participant, y = AverageSleep)) +
  geom_bar(stat = "identity", aes(fill=Participant)) +
  geom_text(aes(label=round(AverageSleep,2)))
print(avg_sleep_graph)
```
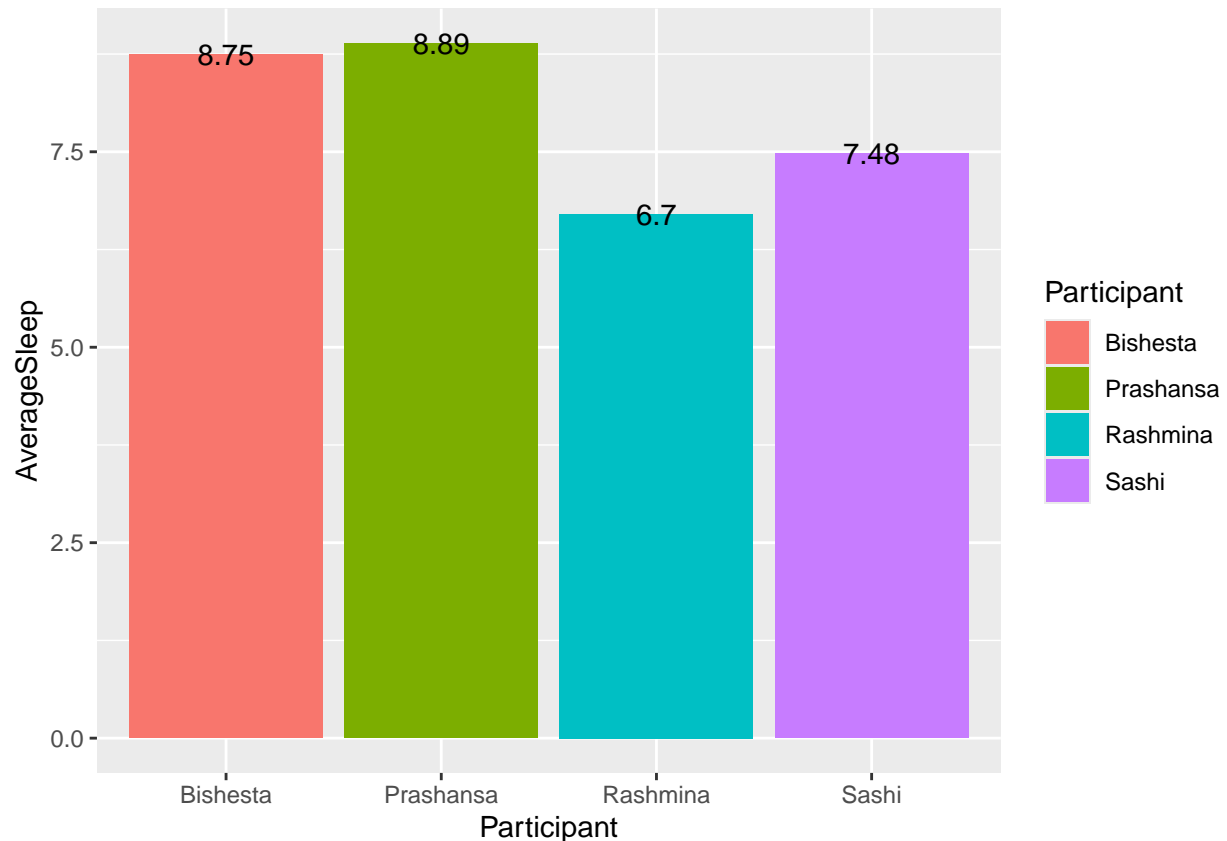
```
ggplotly(avg_sleep_graph)
```

Google Chrome was not found. Try setting the `CHROMOTE_CHROME` environment variable to the executable

Calculating total average sleep per person on Day Offs VS No Day Offs

```
# Average sleep per person on Day Offs and No Day Offs
avg_sleep_dayoff_yes_no <- sleep_data %>%
  group_by(Participant,`Day Off`) %>%
  summarise(AverageSleep = mean(`Sleep Duration`))
```

`summarise()` has grouped output by 'Participant'. You can override using the
`.groups` argument.

```
print(avg_sleep_dayoff_yes_no)
```

A tibble: 8 x 3
Groups: Participant [4]
Participant `Day Off` AverageSleep
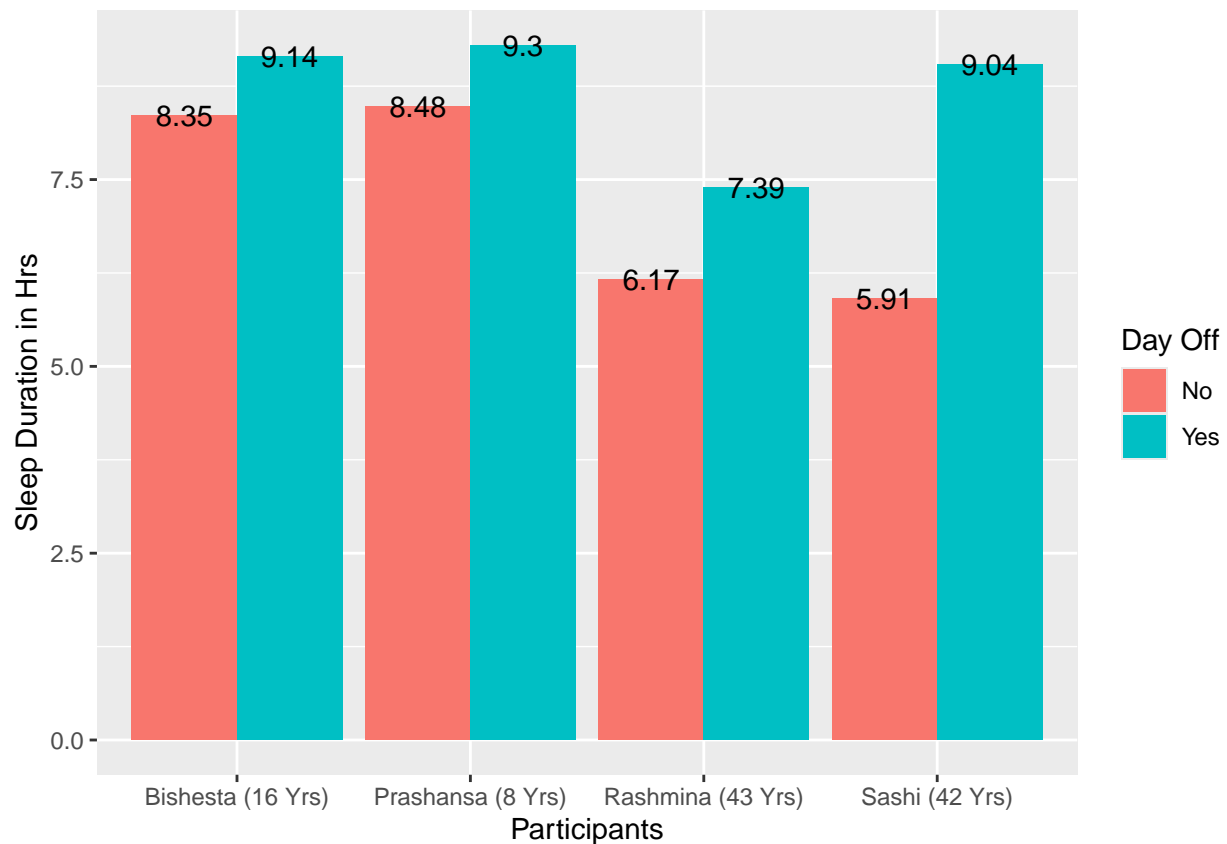##   <chr>   <chr>   <dbl>

```
## 1 Bishesta     No              8.35
## 2 Bishesta     Yes             9.14
## 3 Prashansa    No              8.48
## 4 Prashansa    Yes             9.30
## 5 Rashmina     No              6.17
## 6 Rashmina     Yes             7.39
## 7 Sashi        No              5.91
## 8 Sashi        Yes             9.04
```

```r
# Graphing - Average sleep per person on Day Offs and No Day Offs
avg_sleep_dayoff_yes_no_graph <- sleep_data %>%
  group_by(Participant,`Day Off`) %>%
  summarise(AverageSleep = mean(`Sleep Duration`)) %>%
  ggplot(aes(x=Participant, y=AverageSleep, fill = `Day Off`)) +
  geom_bar(stat = "identity", position=position_dodge(width=0.9)) +
  geom_text(aes(label=round(AverageSleep,2)),position=position_dodge(width=0.9)) +
  scale_x_discrete(labels= c("Bishesta"="Bishesta (16 Yrs)","Prashansa"="Prashansa (8 Yrs)", "Rashmina"=
  labs(x="Participants",
       y="Sleep Duration in Hrs")
```

```
## `summarise()` has grouped output by 'Participant'. You can override using the
## `.groups` argument.
```

```r
print(avg_sleep_dayoff_yes_no_graph)
```

```r
ggplotly(avg_sleep_dayoff_yes_no_graph)
```

```r
# Add another graph with mutated column
```
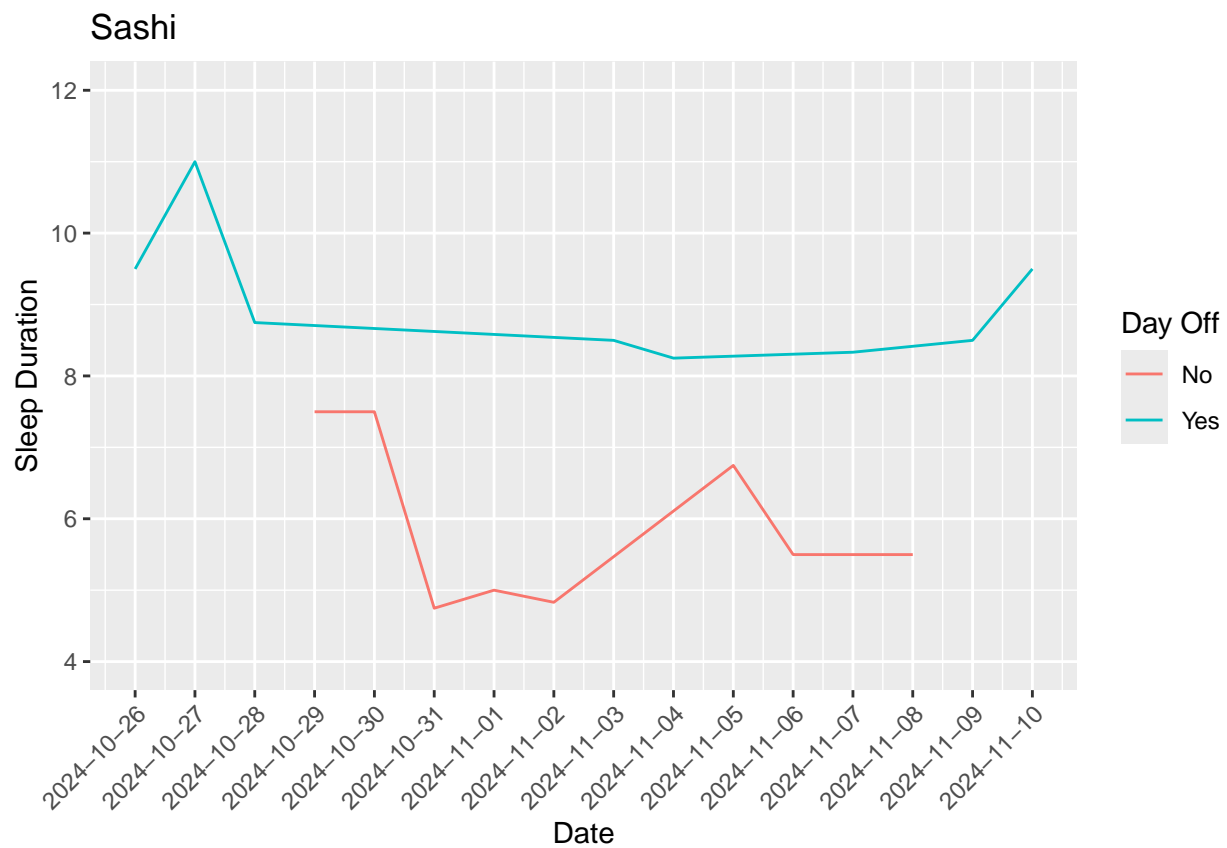
Sleep data of Sashi

```r
# All Sleep Data for Sashi
sleep_data_Sashi <- sleep_data %>%
  filter(Participant == "Sashi") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
print(sleep_data_Sashi)
```

```
## # A tibble: 16 x 5
##    Participant Date                Day       `Day Off` `Sleep Duration`
##    <chr>       <dttm>              <chr>     <chr>                <dbl>
##  1 Sashi       2024-10-26 00:00:00 Saturday  Yes                   9.50
##  2 Sashi       2024-10-27 00:00:00 Sunday    Yes                  11
##  3 Sashi       2024-10-28 00:00:00 Monday    Yes                   8.75
##  4 Sashi       2024-10-29 00:00:00 Tuesday   No                    7.50
##  5 Sashi       2024-10-30 00:00:00 Wednesday No                    7.50
##  6 Sashi       2024-10-31 00:00:00 Thursday  No                    4.75
##  7 Sashi       2024-11-01 00:00:00 Friday    No                    5
##  8 Sashi       2024-11-02 00:00:00 Saturday  No                    4.83
##  9 Sashi       2024-11-03 00:00:00 Sunday    Yes                   8.50
## 10 Sashi       2024-11-04 00:00:00 Monday    Yes                   8.25
## 11 Sashi       2024-11-05 00:00:00 Tuesday   No                    6.75
## 12 Sashi       2024-11-06 00:00:00 Wednesday No                    5.50
## 13 Sashi       2024-11-07 00:00:00 Thursday  Yes                   8.33
## 14 Sashi       2024-11-08 00:00:00 Friday    No                    5.50
## 15 Sashi       2024-11-09 00:00:00 Saturday  Yes                   8.50
## 16 Sashi       2024-11-10 00:00:00 Sunday    Yes                   9.50
```

```r
# Sleeping pattern graph
sleep_data_Sashi_graph <- sleep_data_Sashi %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(color="purple") +
  geom_point(aes(color=`Day Off`)) +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Sashi$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))+
  labs(title="Sashi")
ggplotly(sleep_data_Sashi_graph)
```

```r
# Comparing amount of sleep during work day and non-working days
sleep_data_Sashi %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(aes(group=`Day Off`, color=`Day Off`))+
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Sashi$Date) +
```

```
    theme(axis.text.x = element_text(angle=45, hjust=1)) +
    labs(title="Sashi")
```

Sashi


```
# Sleep Duration on Day Offs
sleep_data_Sashi_day_off <- sleep_data_Sashi %>%
  filter(Participant == "Sashi" & `Day Off`=="Yes") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Day Offs - Graph
sleep_data_Sashi_day_off %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="blue") +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Sashi$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
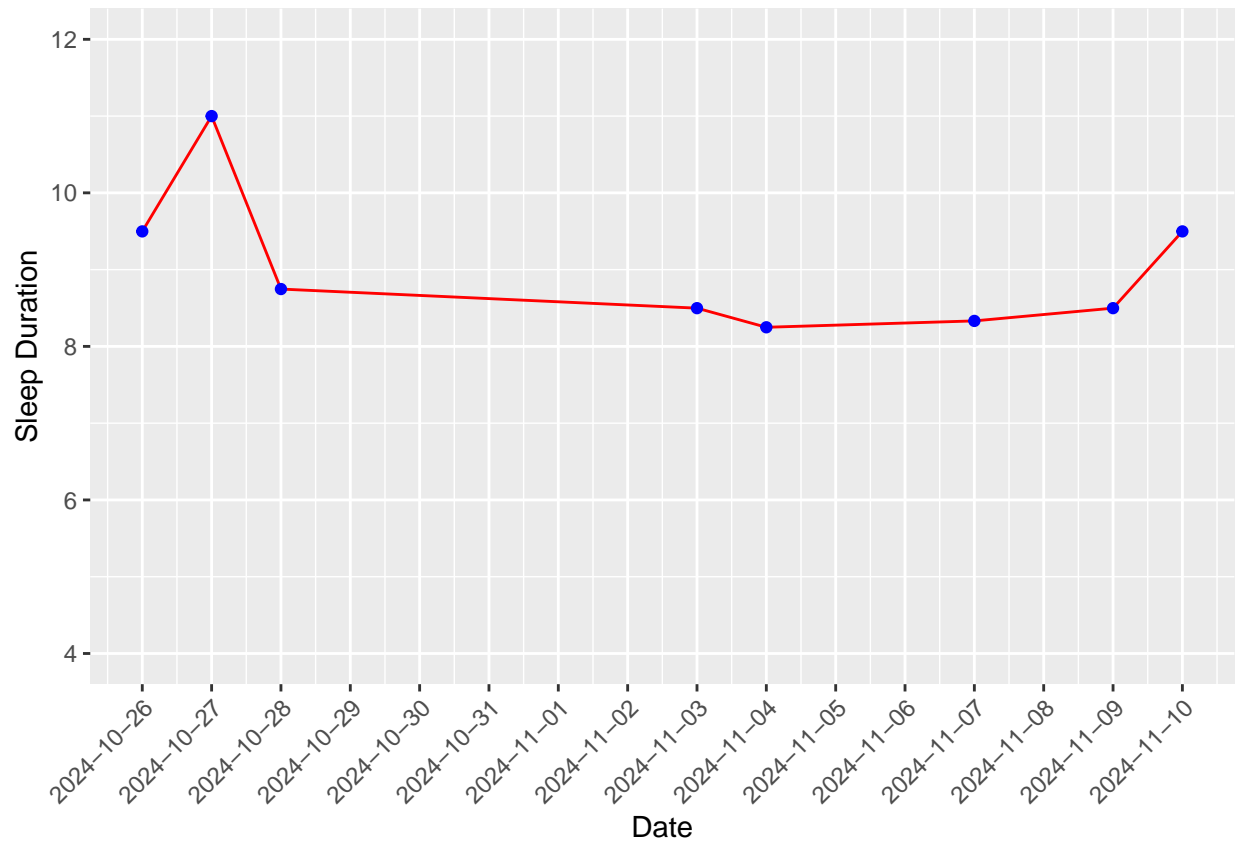
```r
# Sleep Duration on Work Day
sleep_data_Sashi_day_off_no <- sleep_data_Sashi %>%
  filter(Participant == "Sashi" & `Day Off`=="No") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Work Day - Graph
sleep_data_Sashi_day_off_no %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="red") +
  ylim(c(4,12))  +
  scale_x_continuous(breaks=sleep_data_Sashi$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
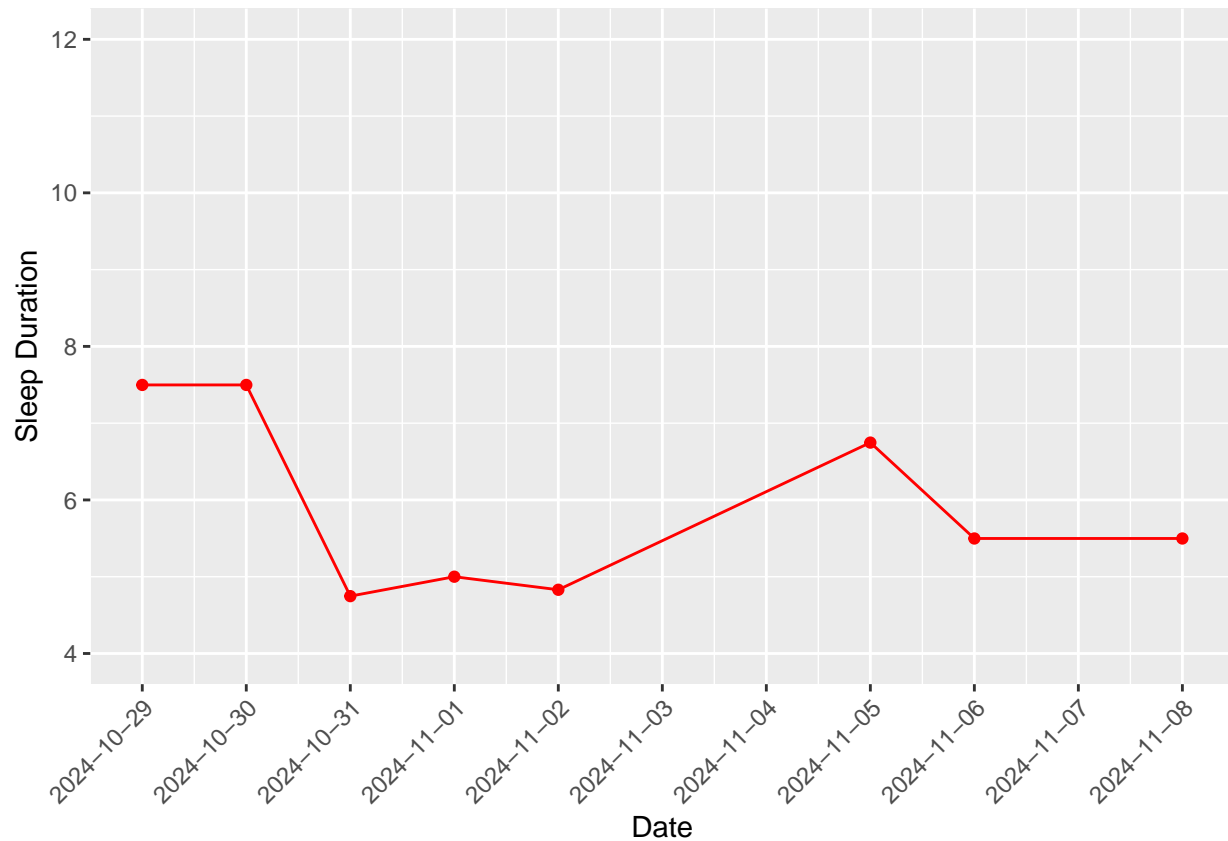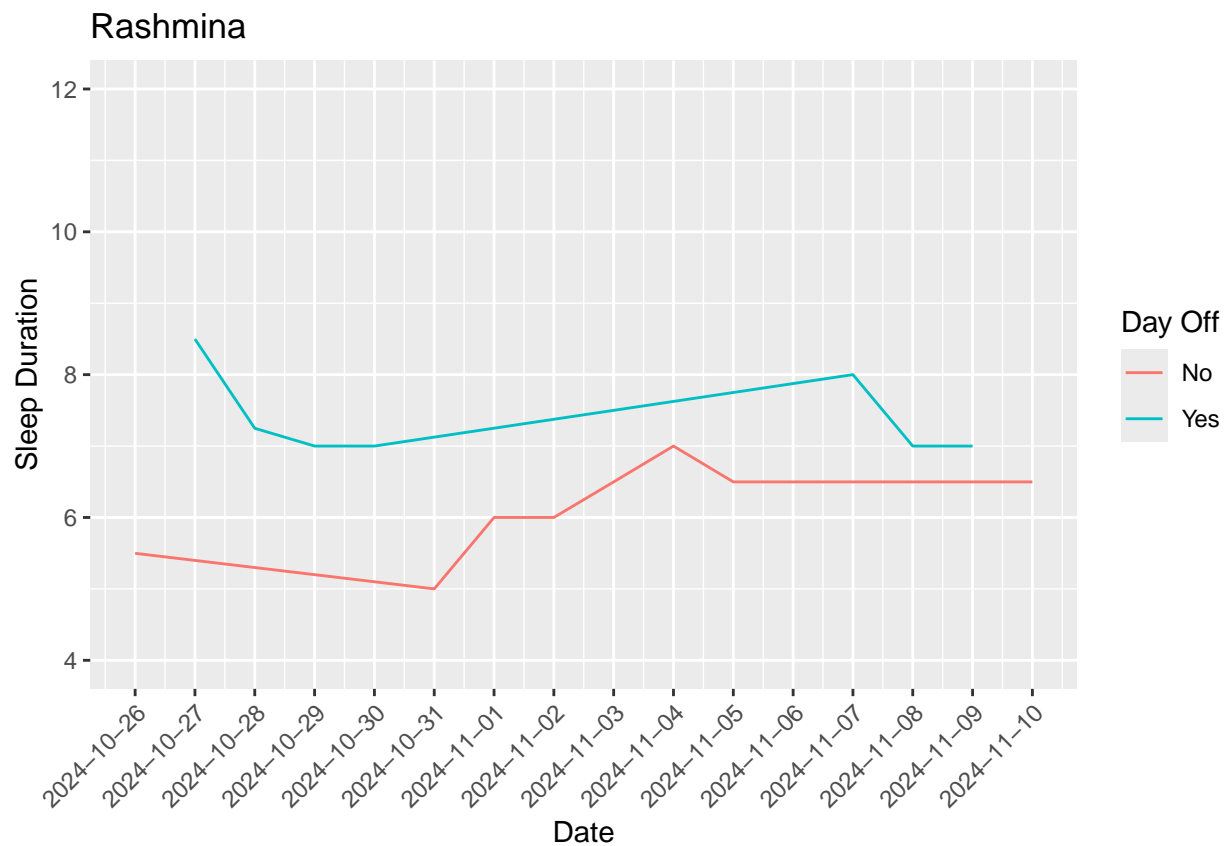
Sleep Data for Rashmina

```r
# All Sleep Data for Rashmina
sleep_data_Rashmina <- sleep_data %>%
  filter(Participant == "Rashmina") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
print(sleep_data_Rashmina)
```

```
## # A tibble: 16 x 5
##    Participant Date                Day       `Day Off` `Sleep Duration`
##    <chr>       <dttm>              <chr>     <chr>                <dbl>
##  1 Rashmina    2024-10-26 00:00:00 Saturday  No                    5.50
##  2 Rashmina    2024-10-27 00:00:00 Sunday    Yes                   8.50
##  3 Rashmina    2024-10-28 00:00:00 Monday    Yes                   7.25
##  4 Rashmina    2024-10-29 00:00:00 Tuesday   Yes                   7
##  5 Rashmina    2024-10-30 00:00:00 Wednesday Yes                   7
##  6 Rashmina    2024-10-31 00:00:00 Thursday  No                    5
##  7 Rashmina    2024-11-01 00:00:00 Friday    No                    6
##  8 Rashmina    2024-11-02 00:00:00 Saturday  No                    6
##  9 Rashmina    2024-11-03 00:00:00 Sunday    No                    6.50
## 10 Rashmina    2024-11-04 00:00:00 Monday    No                    7
## 11 Rashmina    2024-11-05 00:00:00 Tuesday   No                    6.50
## 12 Rashmina    2024-11-06 00:00:00 Wednesday No                    6.50
```

```
## 13 Rashmina      2024-11-07 00:00:00 Thursday    Yes                    8
## 14 Rashmina      2024-11-08 00:00:00 Friday      Yes                    7
## 15 Rashmina      2024-11-09 00:00:00 Saturday    Yes                    7
## 16 Rashmina      2024-11-10 00:00:00 Sunday      No                     6.50
```

```r
# Sleeping pattern graph
sleep_data_Rashmina_graph <- sleep_data_Rashmina %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(color="purple") +
  geom_point(aes(color=`Day Off`)) +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Rashmina$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))+
  labs(title="Rashmina")
ggplotly(sleep_data_Rashmina_graph)
```

```r
# Comparing amount of sleep during work day and non-working days
sleep_data_Rashmina %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(aes(group=`Day Off`, color=`Day Off`))+
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Rashmina$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1)) +
  labs(title="Rashmina")
```

```r
# Sleep Duration on Day Offs
sleep_data_Rashmina_day_off <- sleep_data_Rashmina %>%
  filter(Participant == "Rashmina" & `Day Off`=="Yes") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Day Offs - Graph
sleep_data_Rashmina_day_off %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="blue") +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Rashmina$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
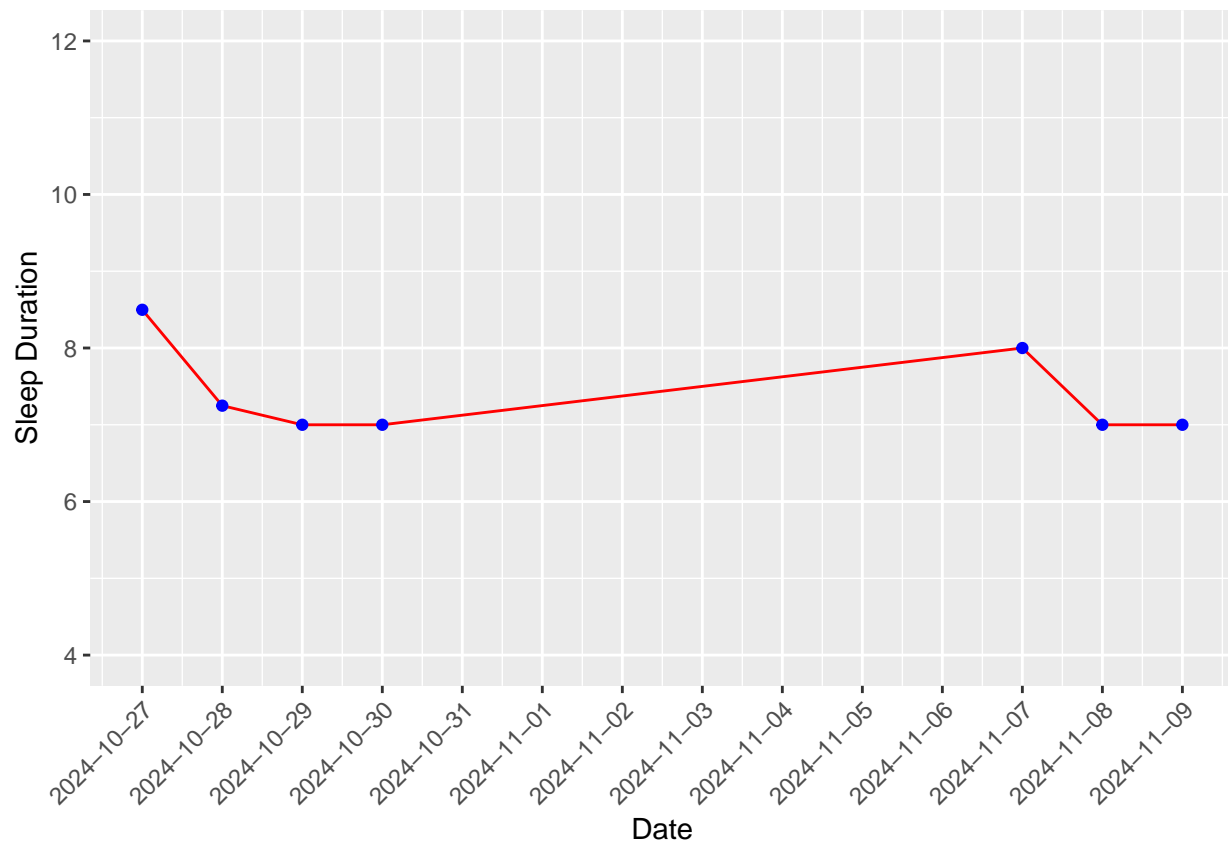


```r
# Sleep Duration on Work Day
sleep_data_Rashmina_day_off_no <- sleep_data_Rashmina %>%
  filter(Participant == "Rashmina" & `Day Off`=="No") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Work Day - Graph
sleep_data_Rashmina_day_off_no %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="red") +
  ylim(c(4,12))  +
  scale_x_continuous(breaks=sleep_data_Rashmina$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
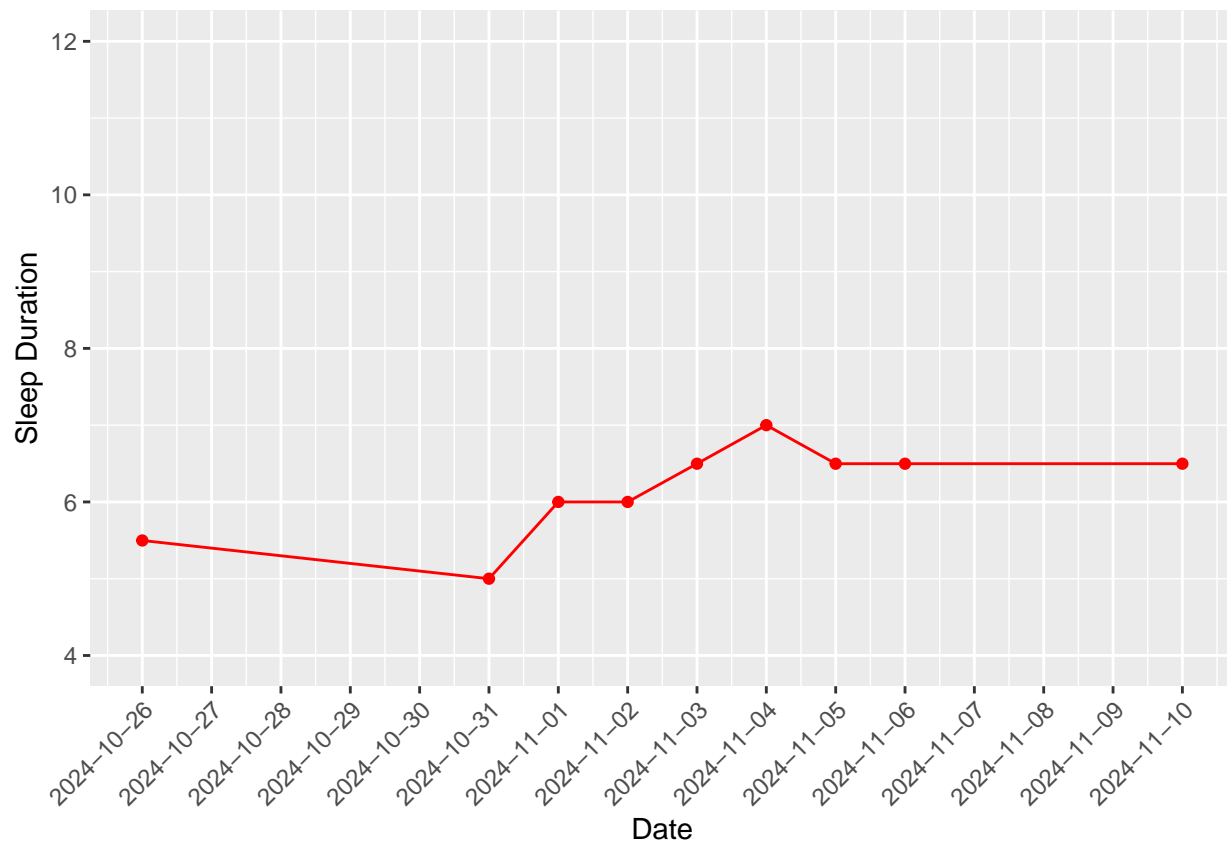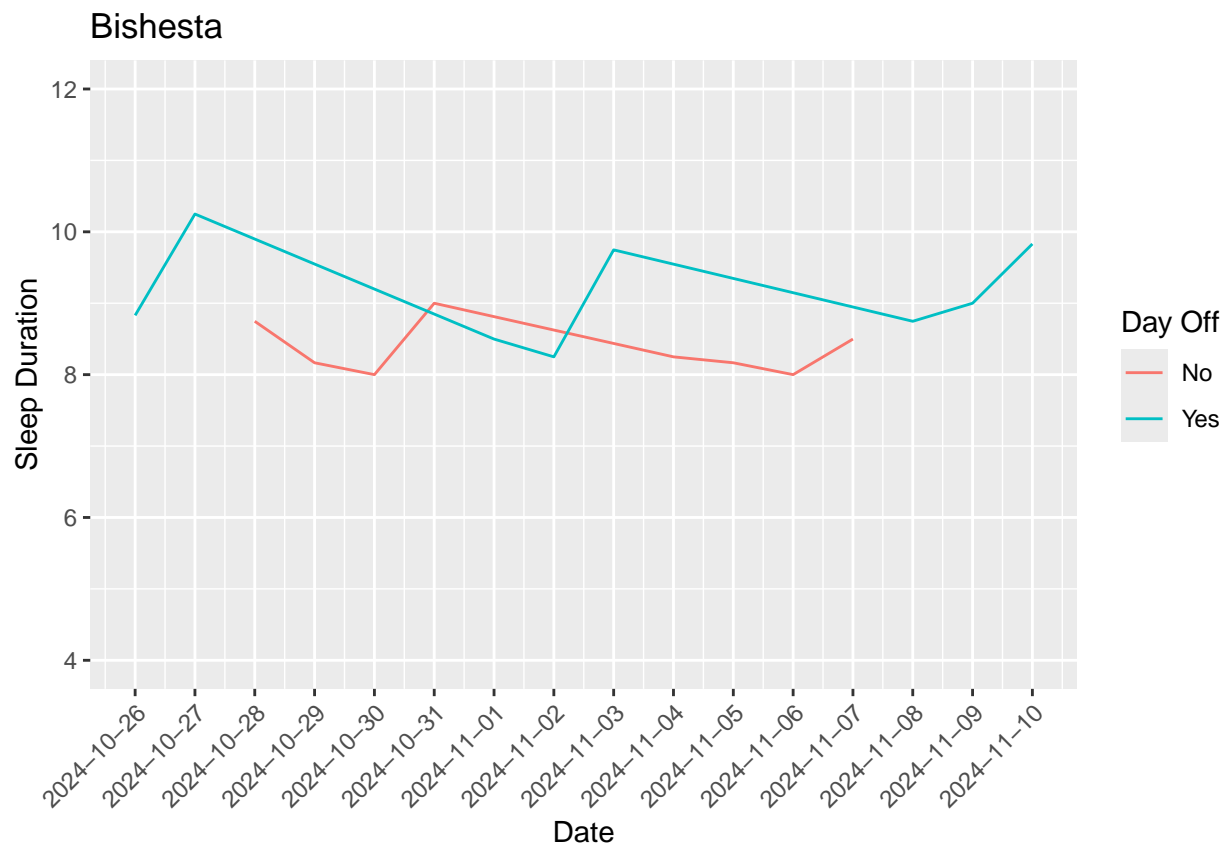
Sleep data for Bishesta

```r
# All Sleep Data for Bishesta
sleep_data_Bishesta <- sleep_data %>%
  filter(Participant == "Bishesta") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
print(sleep_data_Bishesta)
```

```
## # A tibble: 16 x 5
##    Participant Date                Day       `Day Off` `Sleep Duration`
##    <chr>       <dttm>              <chr>     <chr>                <dbl>
##  1 Bishesta    2024-10-26 00:00:00 Saturday  Yes                   8.83
##  2 Bishesta    2024-10-27 00:00:00 Sunday    Yes                  10.2
##  3 Bishesta    2024-10-28 00:00:00 Monday    No                    8.75
##  4 Bishesta    2024-10-29 00:00:00 Tuesday   No                    8.17
##  5 Bishesta    2024-10-30 00:00:00 Wednesday No                    8
##  6 Bishesta    2024-10-31 00:00:00 Thursday  No                    9
##  7 Bishesta    2024-11-01 00:00:00 Friday    Yes                   8.50
##  8 Bishesta    2024-11-02 00:00:00 Saturday  Yes                   8.25
##  9 Bishesta    2024-11-03 00:00:00 Sunday    Yes                   9.75
## 10 Bishesta    2024-11-04 00:00:00 Monday    No                    8.25
## 11 Bishesta    2024-11-05 00:00:00 Tuesday   No                    8.17
## 12 Bishesta    2024-11-06 00:00:00 Wednesday No                    8
```

```
## 13 Bishesta    2024-11-07 00:00:00 Thursday   No              8.50
## 14 Bishesta    2024-11-08 00:00:00 Friday      Yes             8.75
## 15 Bishesta    2024-11-09 00:00:00 Saturday    Yes             9
## 16 Bishesta    2024-11-10 00:00:00 Sunday      Yes             9.83
```

```r
# Sleeping pattern graph
sleep_data_Bishesta_graph <- sleep_data_Bishesta %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(color="purple") +
  geom_point(aes(color=`Day Off`)) +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Bishesta$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))+
  labs(title="Bishesta")
ggplotly(sleep_data_Bishesta_graph)
```

```r
# Comparing amount of sleep during work day and non-working days
sleep_data_Bishesta %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(aes(group=`Day Off`, color=`Day Off`))+
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Bishesta$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1)) +
  labs(title="Bishesta")
```

```r
# Sleep Duration on Day Offs
sleep_data_Bishesta_day_off <- sleep_data_Bishesta %>%
  filter(Participant == "Bishesta" & `Day Off`=="Yes") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Day Offs - Graph
sleep_data_Bishesta_day_off %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="blue") +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Bishesta$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
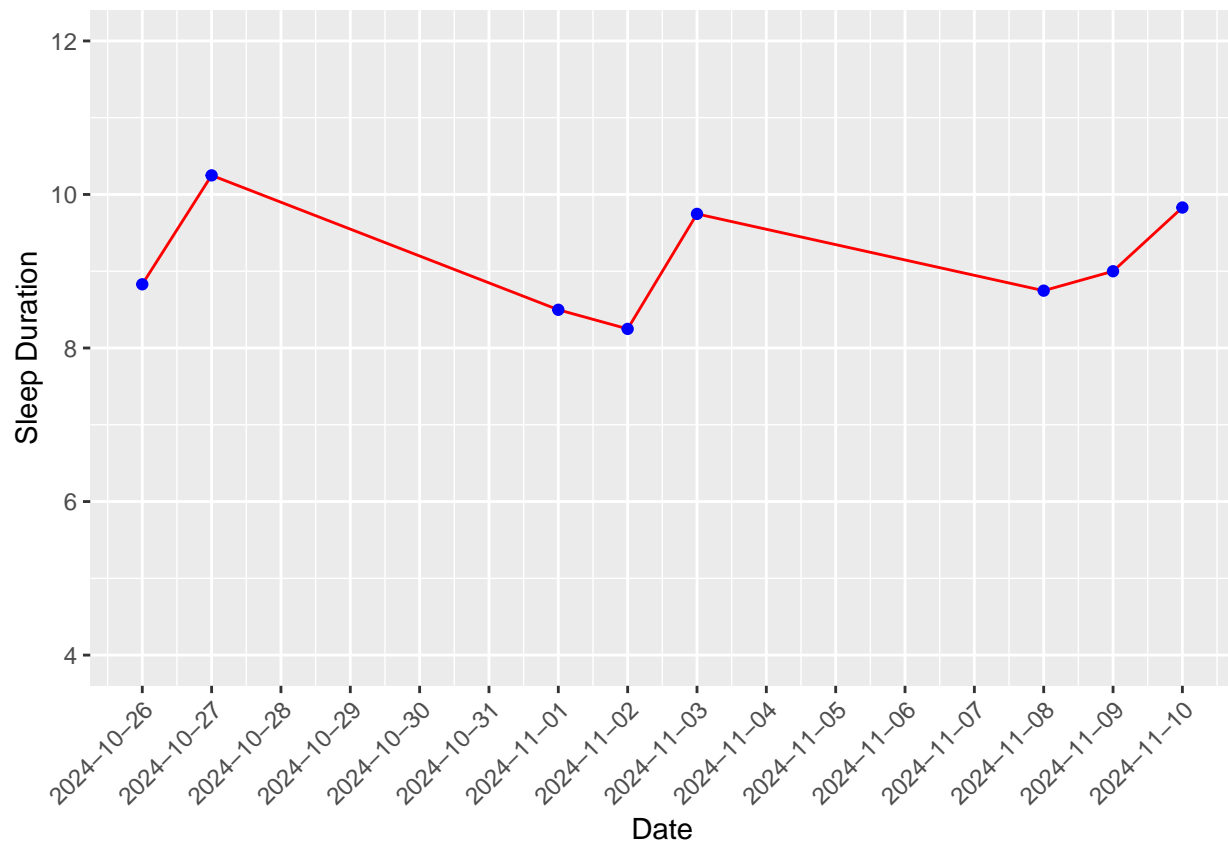


```r
# Sleep Duration on Work Day
sleep_data_Bishesta_day_off_no <- sleep_data_Bishesta %>%
  filter(Participant == "Bishesta" & `Day Off`=="No") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Work Day - Graph
sleep_data_Bishesta_day_off_no %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="red") +
  ylim(c(4,12))  +
  scale_x_continuous(breaks=sleep_data_Bishesta$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
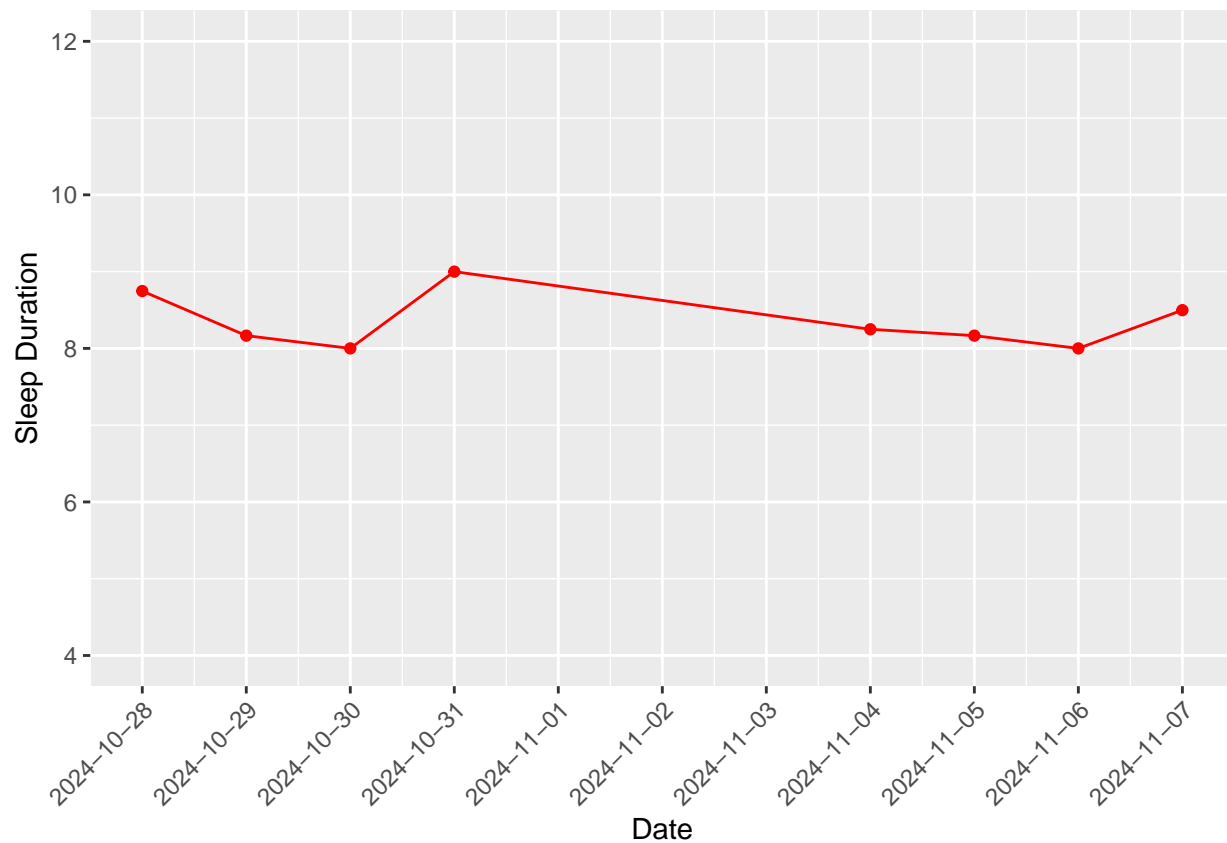
Sleep data for Prashansa

```
# All Sleep Data for Prashansa
sleep_data_Prashansa <- sleep_data %>%
  filter(Participant == "Prashansa") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
print(sleep_data_Prashansa)
```

```
## # A tibble: 16 x 5
##    Participant Date                Day       `Day Off` `Sleep Duration`
##    <chr>       <dttm>              <chr>     <chr>                <dbl>
##  1 Prashansa   2024-10-26 00:00:00 Saturday  Yes                   9
##  2 Prashansa   2024-10-27 00:00:00 Sunday    Yes                  10.7
##  3 Prashansa   2024-10-28 00:00:00 Monday    No                    8.15
##  4 Prashansa   2024-10-29 00:00:00 Tuesday   No                    8.50
##  5 Prashansa   2024-10-30 00:00:00 Wednesday No                    8.83
##  6 Prashansa   2024-10-31 00:00:00 Thursday  No                    8.25
##  7 Prashansa   2024-11-01 00:00:00 Friday    Yes                   8.50
##  8 Prashansa   2024-11-02 00:00:00 Saturday  Yes                   9.08
##  9 Prashansa   2024-11-03 00:00:00 Sunday    Yes                   9.25
## 10 Prashansa   2024-11-04 00:00:00 Monday    No                    8.91
## 11 Prashansa   2024-11-05 00:00:00 Tuesday   No                    8.17
## 12 Prashansa   2024-11-06 00:00:00 Wednesday No                    8
```

```
## 13 Prashansa   2024-11-07 00:00:00 Thursday   No                9
## 14 Prashansa   2024-11-08 00:00:00 Friday     Yes               8.75
## 15 Prashansa   2024-11-09 00:00:00 Saturday   Yes               9.41
## 16 Prashansa   2024-11-10 00:00:00 Sunday     Yes               9.65
```

```r
# Sleeping pattern graph
sleep_data_Prashansa_graph <- sleep_data_Prashansa %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(color="purple") +
  geom_point(aes(color=`Day Off`)) +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Prashansa$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))+
  labs(title="Prashansa")
ggplotly(sleep_data_Prashansa_graph)
```

```r
# Comparing amount of sleep during work day and non-working days
sleep_data_Prashansa %>%
  ggplot(aes(x=Date, y=`Sleep Duration`)) +
  geom_line(aes(group=`Day Off`, color=`Day Off`))+
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Prashansa$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1)) +
  labs(title="Prashansa")
```
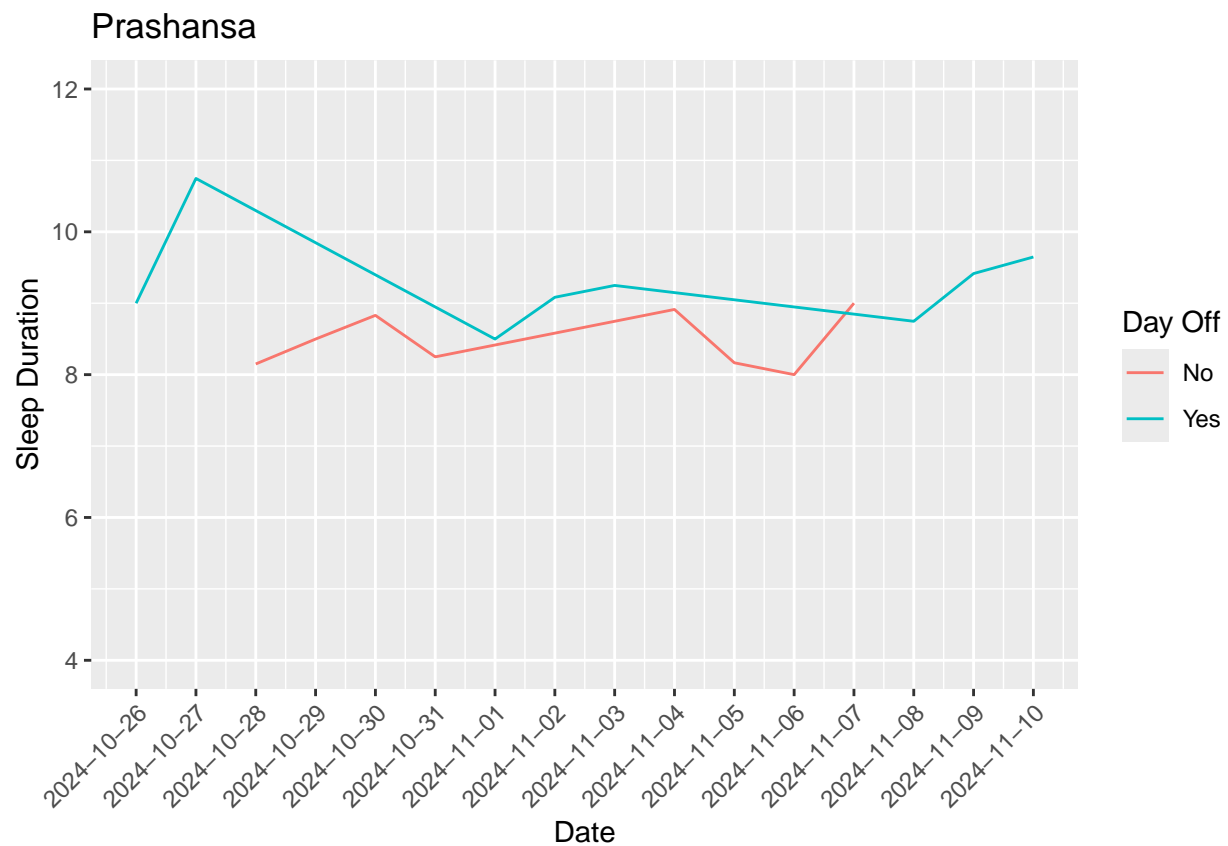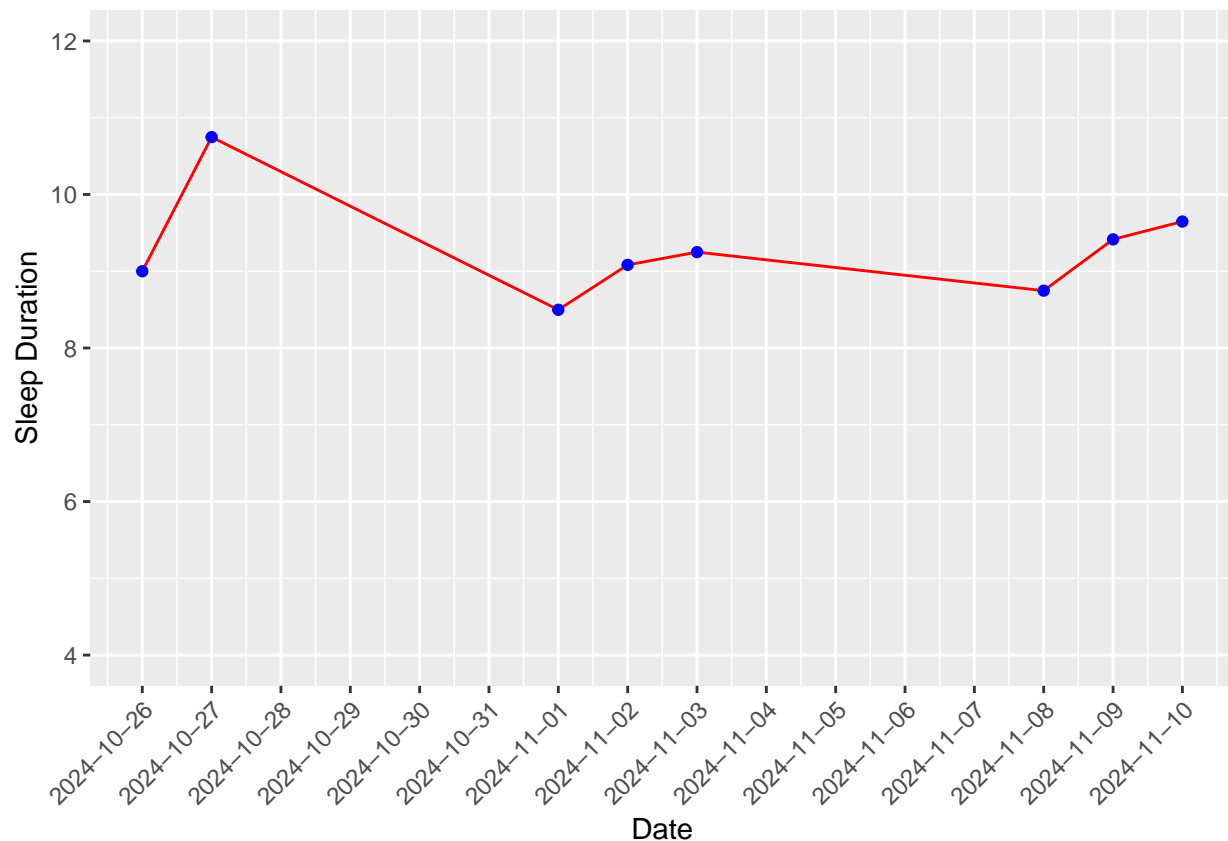
```r
# Sleep Duration on Day Offs
sleep_data_Prashansa_day_off <- sleep_data_Prashansa %>%
  filter(Participant == "Prashansa" & `Day Off`=="Yes") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Day Offs - Graph
sleep_data_Prashansa_day_off %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="blue") +
  ylim(c(4,12)) +
  scale_x_continuous(breaks=sleep_data_Prashansa$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```



```r
# Sleep Duration on Work Day
sleep_data_Prashansa_day_off_no <- sleep_data_Prashansa %>%
  filter(Participant == "Prashansa" & `Day Off`=="No") %>%
  select(Participant,Date,Day,`Day Off`,`Sleep Duration`)
# Sleep Duration on Work Day - Graph
sleep_data_Prashansa_day_off_no %>%
  ggplot(aes(x=Date, y=`Sleep Duration`))+
  geom_line(color="red") +
  geom_point(color="red") +
  ylim(c(4,12))  +
  scale_x_continuous(breaks=sleep_data_Prashansa$Date) +
  theme(axis.text.x = element_text(angle=45, hjust=1))
```
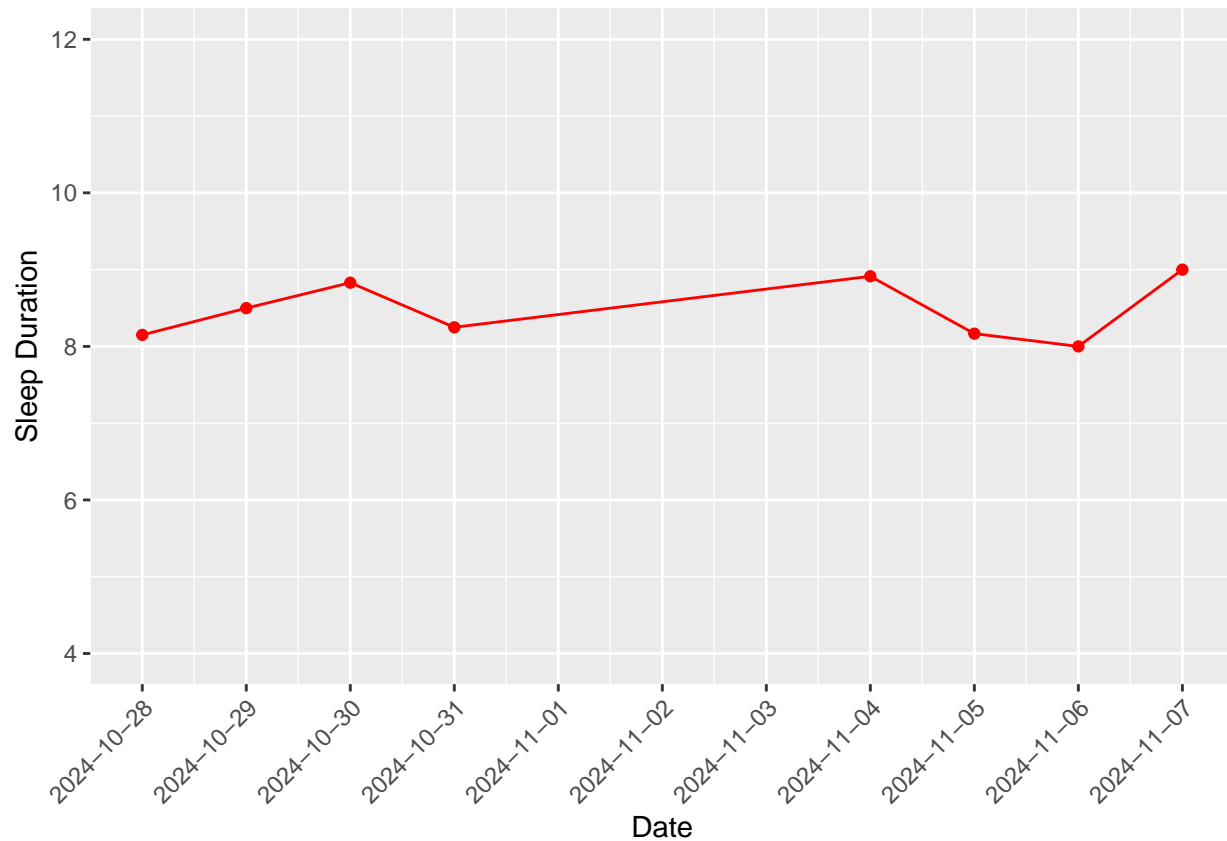
T-test

```r
# T-test for Sashi
t.test(sleep_data_Sashi$`Sleep Duration`, mu = 7, alternative = "less")
```

```
##
##  One Sample t-test
##
## data:  sleep_data_Sashi$`Sleep Duration`
## t = 1.0009, df = 15, p-value = 0.8336
## alternative hypothesis: true mean is less than 7
## 95 percent confidence interval:
##      -Inf 8.313148
## sample estimates:
## mean of x
##   7.47725
```

```r
# T-test for Rashmina
t.test(sleep_data_Rashmina$`Sleep Duration`, mu = 7, alternative = "less")
```

```
##
##  One Sample t-test
```

```
##
## data:  sleep_data_Rashmina$`Sleep Duration`
## t = -1.381, df = 15, p-value = 0.09376
## alternative hypothesis: true mean is less than 7
## 95 percent confidence interval:
##       -Inf 7.080205
## sample estimates:
## mean of x
##   6.702312
```

```r
# T-test for Bishesta
t.test(sleep_data_Bishesta$`Sleep Duration`, mu = 8, alternative = "less")
```

```
##
##  One Sample t-test
##
## data:  sleep_data_Bishesta$`Sleep Duration`
## t = 4.3906, df = 15, p-value = 0.9997
## alternative hypothesis: true mean is less than 8
## 95 percent confidence interval:
##       -Inf 9.047353
## sample estimates:
## mean of x
##     8.7485
```

```r
# T-test for Rashmina
t.test(sleep_data_Prashansa$`Sleep Duration`, mu = 9, alternative = "less")
```

```
##
##  One Sample t-test
##
## data:  sleep_data_Prashansa$`Sleep Duration`
## t = -0.65727, df = 15, p-value = 0.2605
## alternative hypothesis: true mean is less than 9
## 95 percent confidence interval:
##       -Inf 9.188412
## sample estimates:
## mean of x
##   8.886988
```

One sample proportion test

```r
prop.test(x=0, n=4, p=0.5, alternative="greater")
```

```
## Warning in prop.test(x = 0, n = 4, p = 0.5, alternative = "greater"):
## Chi-squared approximation may be incorrect
```

```
##
##  1-sample proportions test with continuity correction
```

```
## 
## data:  0 out of 4, null probability 0.5
## X-squared = 2.25, df = 1, p-value = 0.9332
## alternative hypothesis: true p is greater than 0.5
## 95 percent confidence interval:
##  0 1
## sample estimates:
## p
## 0
```