Reproducible Research: Peer Assessment 1

Loading and preprocessing the data

```
activity_data <- read.csv("../dataset/activity.csv")
activity_data$date <- as.POSIXct(strptime(activity_data$date,"%Y-%m-%d"))
activity_data$date <- as.Date(activity_data$date)
```

What is mean total number of steps taken per day?

```
mean_steps <- mean(activity_data$steps,na.rm = TRUE)
print(mean_steps)
```

```
## [1] 37.3826
```

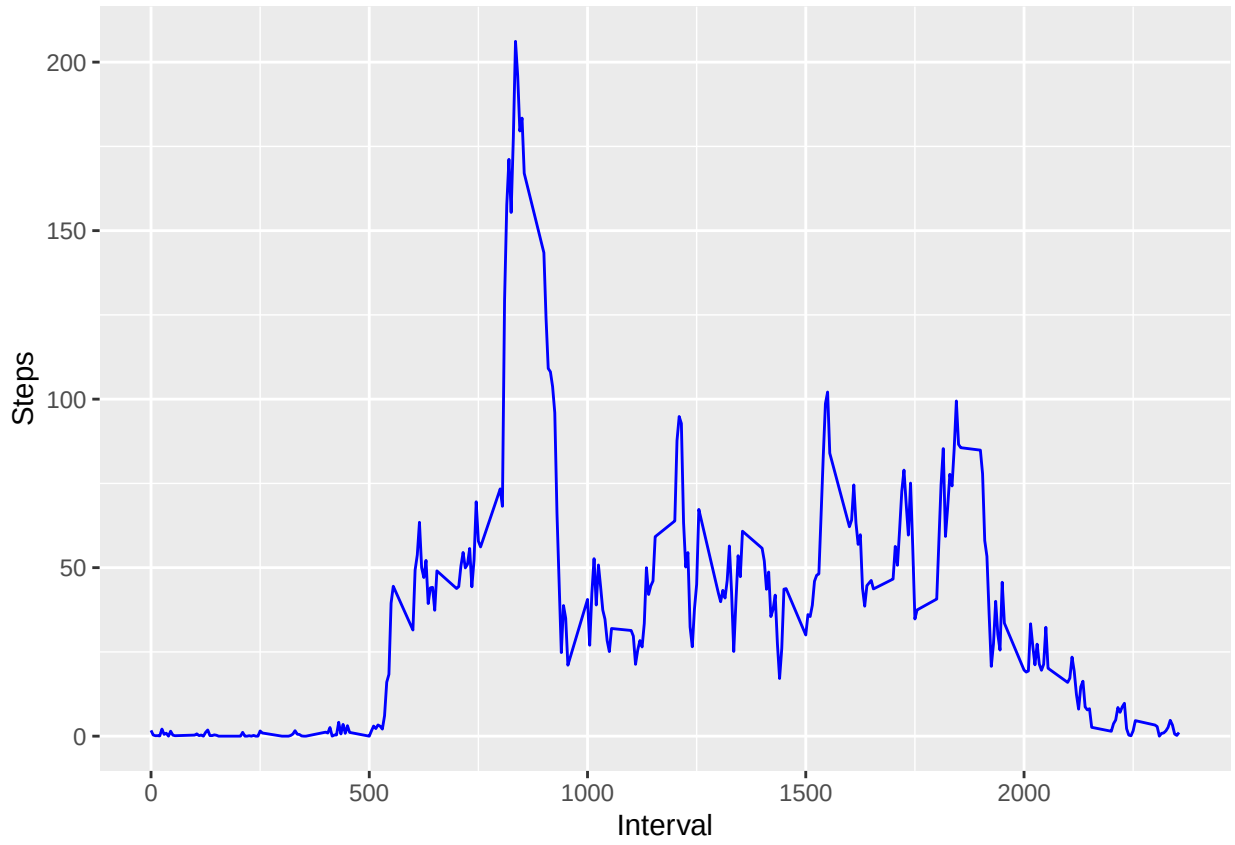
Mean total number of steps are 37.3825996

What is the average daily activity pattern?

```
library(tidyverse)
```

```
## -- Attaching packages --------------------------------------- tidyverse 1.3.0 --

## v ggplot2 3.3.1     v purrr   0.3.4
## v tibble  3.0.1     v dplyr   1.0.0
## v tidyr   1.1.0     v stringr 1.4.0
## v readr   1.3.1     v forcats 0.5.0

## -- Conflicts ------------------------------------------ tidyverse_conflicts() --
## x dplyr::filter() masks stats::filter()
## x dplyr::lag()    masks stats::lag()
```

```
complete_data <- na.omit(activity_data)
daily_steps <- tapply(complete_data$steps, complete_data$interval, mean)
intervals <- as.integer(names(daily_steps))
step_list <- data.frame("Steps" = daily_steps,"Interval" = intervals)


steps_plot <- ggplot(step_list,aes(x = Interval,y = Steps)) +
        geom_line(col = "blue")

print(steps_plot)
```



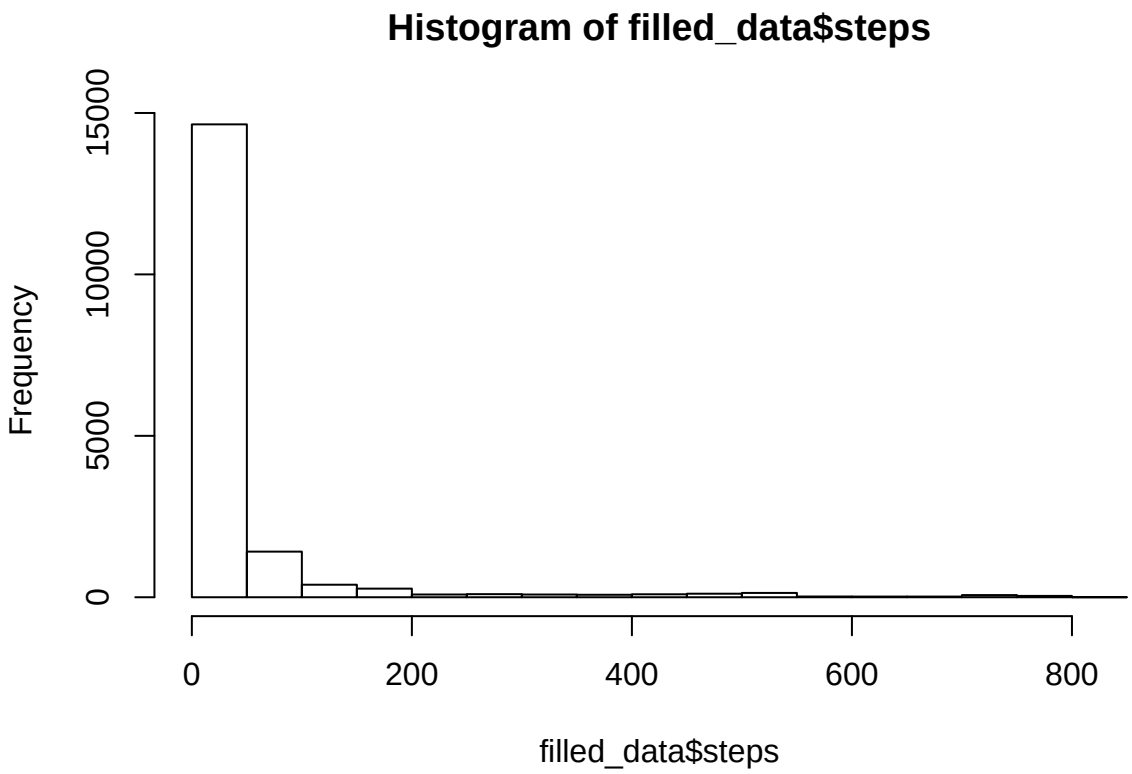

```
Max_steps <- filter(step_list,Steps == max(step_list$Steps))$Interval
```

Maximum steps

Maximum steps is in the interval value of 835

Imputing missing values

```
missing_data <- is.na(activity_data)
sum_na_data <- sum(missing_data)

# Function for completing NA step values from interval means
data_fill <- function(data_set){
        for(i in seq_along(data_set[,1])){
                index = data_set[i,3]
                if(is.na(data_set[i,1])){data_set[i,1] <- mean(subset(data_set,interval==index)$steps,na
        }
return(data_set)
}

filled_data <- data_fill(activity_data)

hist(filled_data$steps)
```




```
mean_fill <- mean(filled_data$steps)
median_fill <- median(filled_data$steps)
```

Mean and Median Values for Steps

Mean steps for the completed activity data is 37.3825996.

Median steps for the completed activity data is 0.

Are there differences in activity patterns between weekdays and weekends?

```
library(lubridate)
```

```
##
## Attaching package: 'lubridate'

## The following objects are masked from 'package:base':
##
##     date, intersect, setdiff, union
```

```
activity_data <- mutate(activity_data, Days = wday(date))
activity_data <- mutate(activity_data, Weekend = as.integer(Days > 5))
activity_data$Weekend <- as.factor(activity_data$Weekend)

variable_names <- list("0" = "Weekdays","1" = "Weekends")
variable_labeller <- function(variable,value){
  return(variable_names[value])
}

mean_activity <- activity_data %>%
  group_by(Weekend,interval) %>%
  summarise(
    means_Steps = mean(steps,na.rm = TRUE)
  )
```

```
## `summarise()` regrouping output by 'Weekend' (override with `.groups` argument)
```

```
ggplot(mean_activity,aes(interval,means_Steps)) +
        geom_line(col= "blue") +
        facet_wrap(~Weekend,nrow = 2,ncol = 1,labeller =   variable_labeller) +
        xlab("Intervals") +
        ylab("Mean Steps")
```

```
## Warning: The labeller API has been updated. Labellers taking `variable` and
## `value` arguments are now deprecated. See labellers documentation.
```