p8105_hw1_yc4384

Yangyang Chen

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Problem_1

```
#Introduce the dataset
library(moderndive)
data("early_january_weather") #load dataset
str(early_january_weather) #the variables in this dataset, including names / values of important variab
```

```
## tibble [358 x 15] (S3: tbl_df/tbl/data.frame)
##  $ origin    : chr [1:358] "EWR" "EWR" "EWR" "EWR" ...
##  $ year      : int [1:358] 2013 2013 2013 2013 2013 2013 2013 2013 2013 2013 ...
##  $ month     : int [1:358] 1 1 1 1 1 1 1 1 1 1 ...
##  $ day       : int [1:358] 1 1 1 1 1 1 1 1 1 1 ...
##  $ hour      : int [1:358] 1 2 3 4 5 6 7 8 9 10 ...
##  $ temp      : num [1:358] 39 39 39 39.9 39 ...
##  $ dewp      : num [1:358] 26.1 27 28 28 28 ...
##  $ humid     : num [1:358] 59.4 61.6 64.4 62.2 64.4 ...
##  $ wind_dir  : num [1:358] 270 250 240 250 260 240 240 250 260 260 ...
##  $ wind_speed: num [1:358] 10.36 8.06 11.51 12.66 12.66 ...
##  $ wind_gust : num [1:358] NA NA NA NA NA NA NA NA NA NA ...
##  $ precip    : num [1:358] 0 0 0 0 0 0 0 0 0 0 ...
##  $ pressure  : num [1:358] 1012 1012 1012 1012 1012 ...
##  $ visib     : num [1:358] 10 10 10 10 10 10 10 10 10 10 ...
##  $ time_hour : POSIXct[1:358], format: "2013-01-01 01:00:00" "2013-01-01 02:00:00" ...
```

```
nrow(early_january_weather) #the size of the dataset
```

```
## [1] 358
```

```
ncol(early_january_weather) # the size of the dataset
```

```
## [1] 15
```

```
attach(early_january_weather) #Make a scatterplot of temp (y) vs time_hour (x)
```

```
## The following objects are masked from package:datasets:
##
##     precip, pressure
```

```
mean(temp)#The mean
```

```
## [1] 39.58212
```

```
cat("There are 15 variables in the dataset. The variable 'origin' is an character type variable, and va
```

```
## There are 15 variables in the dataset. The variable 'origin' is an character type variable, and varia
```

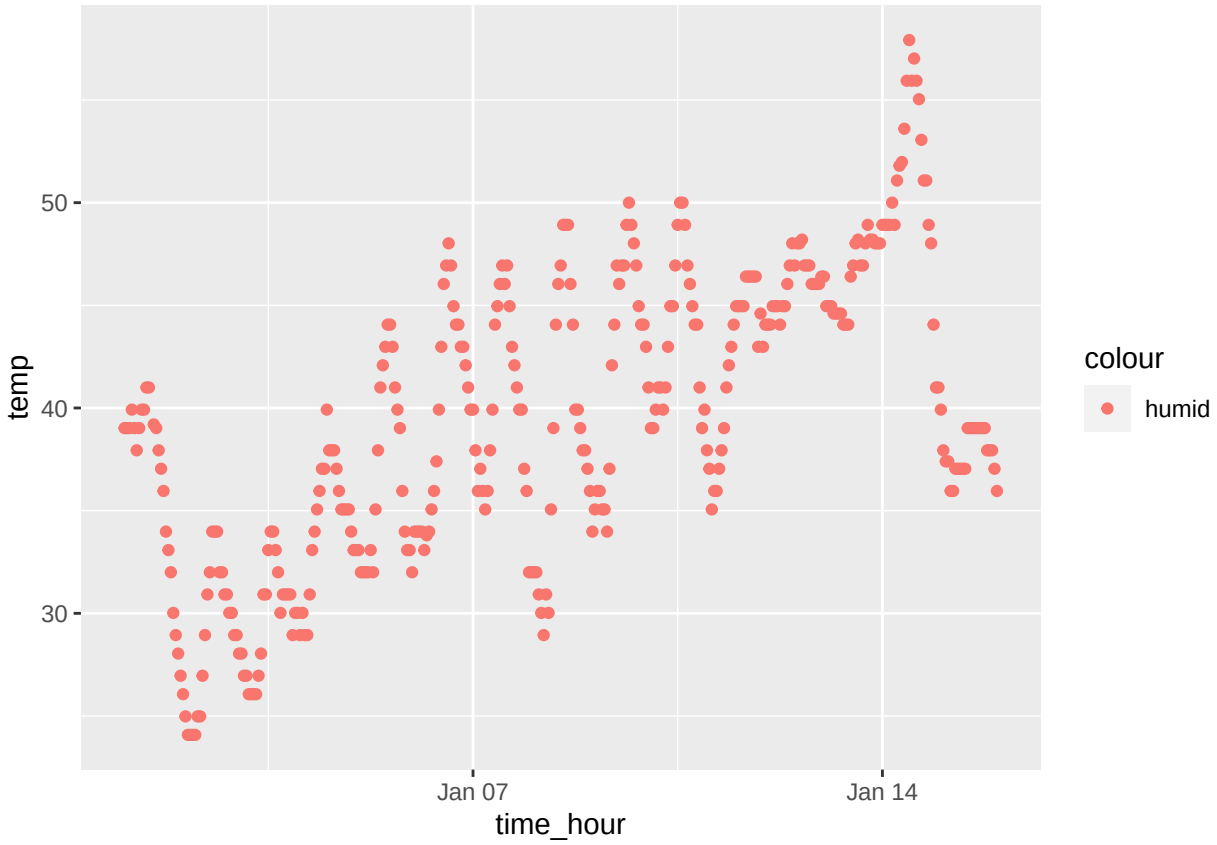
```r
cat("The dataset has 358 rows and 15 columns.")
```

```
## The dataset has 358 rows and 15 columns.
```

```r
cat("The mean of 'temp' is 39.58212.")
```

```
## The mean of 'temp' is 39.58212.
```

```r
#Scatterplot of dataset and save image
library(ggplot2)
scatter_plot = ggplot(early_january_weather, aes(x = time_hour, y= temp, color = 'humid')) #color point
scatter_plot + geom_point()
```




```r
cat("The temperature is fluctuated increasing from 30 to 50 on Jan_01 to Jan_15.")
```

```
## The temperature is fluctuated increasing from 30 to 50 on Jan_01 to Jan_15.
```

```r
ggsave("scatterplot.png", plot = scatter_plot + geom_point(), width = 6, height = 4) #Export scatterplo
```

Problem_2

```r
#Create a dataset
v1 = rnorm(10) #a random sample of size 10 from a standard Normal distribution
v2 = ifelse(v1>0, "T", "F") #a logical vector indicating whether elements of the sample are greater tha
v3 = c('a','b','c','d','e','f','g','h','i','j') #a character vector of length 10
v4 = c('1','2','3','3','2','1','2','3','1','3') #a factor vector of length 10, with 3 different factor
df = data.frame(v1,v2,v3,v4) #create a data frame
df
```

```
##             v1 v2 v3 v4
## 1  -0.89654022  F  a  1
## 2  -0.18095697  F  b  2
## 3  -0.84482748  F  c  3
## 4  -0.45653885  F  d  3
## 5  -0.95551917  F  e  2
## 6  -0.47332171  F  f  1
## 7   1.43834621  T  g  2
## 8   0.04541114  T  h  3
## 9  -0.68753019  F  i  1
## 10 -0.88078643  F  j  3
```

```
#Compute mean of each vector
library(tidyverse)# Use pull() to extract the each column as a vector
```

```
## -- Attaching core tidyverse packages ------------------------ tidyverse 2.0.0 --
## v dplyr     1.1.3     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v lubridate 1.9.2     v tibble    3.2.1
## v purrr     1.0.2     v tidyr     1.3.0
## -- 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
```

```
vector <- df %>% pull(v1)
mean(vector)
```

```
## [1] -0.3892264
```

```
vector <- df %>% pull(v2)
mean(vector)
```

```
## Warning in mean.default(vector): argument is not numeric or logical: returning
## NA
```

```
## [1] NA
```

```
vector <- df %>% pull(v3)
mean(vector)
```

```
## Warning in mean.default(vector): argument is not numeric or logical: returning
## NA
```

```
## [1] NA
```

```
vector <- df %>% pull(v4)
mean(vector)
```

```
## Warning in mean.default(vector): argument is not numeric or logical: returning
## NA
```

```
## [1] NA
```

```
# Convert variables from one type to another and calculate their means
vector <- df %>% pull(v2)
mean(as.numeric(vector))
```

```
## Warning in mean(as.numeric(vector)): NAs introduced by coercion
```

```
## [1] NA
```

```r
vector <- df %>% pull(v3)
mean(as.numeric(vector))
```

```
## Warning in mean(as.numeric(vector)): NAs introduced by coercion
```

```
## [1] NA
```

```r
vector <- df %>% pull(v4)
mean(as.numeric(vector))
```

```
## [1] 2.1
```

```r
print("Because v2 and v3 still are NA values after coercion, therefore they don't have mean values.")
```

```
## [1] "Because v2 and v3 still are NA values after coercion, therefore they don't have mean values."
```