Challenge-2

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Welcome! Hope you have watched the lecture videos and followed the instructions in code along. Go through the steps described below, carefully. It is totally fine to get stuck - **ASK FOR HELP**, reach out to your friends, TAs, or the discussion forum on Canvas.

Here is what you have to do,

1. **Pair** with a neighbor and work
2. **Download** the `Challenge-2.Rmd` and `playlist_data.csv` files from Canvas
3. **Move** the downloaded files to the folder, "Week-2"
4. **Set** it as the working directory
5. **Edit** content wherever indicated
6. **Remember** to set `eval=TRUE` after completing the code to generate the output
7. **Ensure** that `pdf=TRUE` so that the code is rendered in the final document
8. **Inform** the tutor/instructor upon completion
9. **Submit** the document on Canvas after they approve
10. **Attendance** will be marked only after submission
11. Once again, **do not hesitate** to reach out to the tutors/instructor, if you are stuck

I. Exploring music preferences

A. Background

Imagine that you have been hired as a data analyst by a radio station to analyze music preferences of their DJs. They have provided you with a dataset, `playlist_data.csv`, containing information about DJs, their preferred music genres, song titles, and ratings.

Using the data-set you are required to complete some tasks that are listed subsequently. All these tasks are based on the concepts taught in the video lectures. The questions may not be entirely covered in the lectures. To complete them, you are encouraged to use Google and the resources therein.

B.Tasks

Task-1

In the lecture, we used two data-sets, `airquality` and `auscomm`'s `quartet` that were readily available with the packages, `tidyverse` and `datas`, respectively. What we have to use custom-made data-sets or the ones like we downloaded from Canvas, we have to import it using the R commands before using them. All the questions below are related to this task.

Question 1.1: What does the term "CSV" in `playlist_data.csv` stand for, and why is it a popular format for storing tabular data?

Solution: *Comma Separated Values. CSVs can contain plain text that are structured using commas, that stores tabular data in columns and rows. It can be easily understood, imported and exported through many database applications. It can also be compressed more efficiently and tend to produced less errors that other formats or files, such as Excel.*

Question 1.2: load the `tidyverse` package to work with `.csv` files in R.

Solution:

```
# Load the necessary package to work with CSV files in R.
library(tidyverse)
```

```
## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──
## ✔ dplyr     1.1.2     ✔ readr     2.1.4
## ✔ forcats   1.0.0     ✔ stringr   1.5.0
## ✔ ggplot2   3.4.2     ✔ tibble    3.2.1
## ✔ lubridate 1.9.2     ✔ tidyr     1.3.0
## ✔ purrr     1.0.2
## ── Conflicts ────────────────────────────────────────── tidyverse_conflicts() ──
## ✖ dplyr::filter() masks stats::filter()
## ✖ dplyr::lag()    masks stats::lag()
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors
```

Question 1.3: Import the data-set, `playlist_data.csv`.

Solution:

```
# Import the "playlist_data.csv" dataset into R

read_csv("playlist_data.csv")
```

```
## Rows: 26 Columns: 7
## ── Column specification ────────────────────────────────────────────────────────
## Delimiter: ","
## chr (4): DJ_Name, Music_Genre, Experience, Location
## dbl (3): Rating, Age, Plays_Per_Week
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

```
## # A tibble: 26 × 7
##   DJ_Name Music_Genre Rating Experience     Age Location Plays_Per_Week
##   <chr>   <chr>        <dbl> <chr>        <dbl> <chr>             <dbl>
## 1 DJ A    Pop            4.2 Advanced        28 City A               80
## 2 DJ B    Rock           3.8 Intermediate    24 City B               65
## 3 DJ C    Electronic     4.5 Advanced        30 City C              100
## 4 DJ D    Pop            4   Intermediate    22 City D               70
## 5 DJ E    Electronic     4.8 Advanced        27 City E               90
## 6 DJ F    Rock           3.6 Intermediate    25 City F               55
## 7 DJ G    Pop            4.3 Advanced        29 City G               85
## 8 DJ H    Electronic     4.1 Intermediate    23 City H               75
## 9 DJ I    Rock           3.5 Advanced        26 City I               60
## 10 DJ J   Pop            4.5 Intermediate    24 City J               95
## # ℹ 16 more rows
```

Question 1.4: Assign the data-set to a variable, `playlist_data`

Solution:

```
# Assign the variable to a dataset

playlist_data <- read_csv("playlist_data.csv")
```

```
## Rows: 26 Columns: 7
## ── Column specification ────────────────────────────────────────────────────────
## Delimiter: ","
## chr (4): DJ_Name, Music_Genre, Experience, Location
## dbl (3): Rating, Age, Plays_Per_Week
##
## ℹ Use `spec()` to retrieve the full column specification for this data.
## ℹ Specify the column types or set `show_col_types = FALSE` to quiet this message.
```

From now on, you can use the name of the variable to view the contents of the data-set

Question 1.5: Get more information about `read_csv()` command and provide a screenshot of the information displayed in the "Help" tab of the "Files" pane

Solution:

```
# More information about the R command, complete the code

?read_csv()
```

Information displayed in the Help tab of the files pane

Question 1.6: What does the `skip` argument in the read_csv() function do?

Solution: *skip: Number of lines to skip before reading data. If comment is supplied any commented lines are ignored after skipping.*

Question 1.7: Display the contents of the data-set

Solution:

```
# Type the name of the variable, to see what it contains
playlist_data
```

```
## # A tibble: 26 × 7
##   DJ_Name Music_Genre Rating Experience     Age Location Plays_Per_Week
##   <chr>   <chr>        <dbl> <chr>        <dbl> <chr>             <dbl>
## 1 DJ A    Pop            4.2 Advanced        28 City A               80
## 2 DJ B    Rock           3.8 Intermediate    24 City B               65
## 3 DJ C    Electronic     4.5 Advanced        30 City C              100
## 4 DJ D    Pop            4   Intermediate    22 City D               70
## 5 DJ E    Electronic     4.8 Advanced        27 City E               90
## 6 DJ F    Rock           3.6 Intermediate    25 City F               55
## 7 DJ G    Pop            4.3 Advanced        29 City G               85
## 8 DJ H    Electronic     4.1 Intermediate    23 City H               75
## 9 DJ I    Rock           3.5 Advanced        26 City I               60
## 10 DJ J   Pop            4.5 Intermediate    24 City J               95
## # ℹ 16 more rows
```

Question 1.8: Assume you have a CSV file named `sales_data.csv` containing information about sales transactions. How would you use the `read_csv()` function to import this file into R and store it in a variable named `sales_data`?

Solution:

```
# No output is required for this code
# Only the list of commands that source the task mentioned in the question are required
sales_data <-read_csv("sales_data.csv")
```

Task-2

After learning to import a data-set, let us explore the contents of the data-set through the following questions

Question 2.1: Display the first few rows of the data-set to get an overview of its structure

Solution:

```
# Type the name of the variable we assigned the data-set to
head(playlist_data)
```

```
## # A tibble: 6 × 7
##   DJ_Name Music_Genre Rating Experience     Age Location Plays_Per_Week
##   <chr>   <chr>        <dbl> <chr>        <dbl> <chr>             <dbl>
## 1 DJ A    Pop            4.2 Advanced        28 City A               80
## 2 DJ B    Rock           3.8 Intermediate    24 City B               65
## 3 DJ C    Electronic     4.5 Advanced        30 City C              100
## 4 DJ D    Pop            4   Intermediate    22 City D               70
## 5 DJ E    Electronic     4.8 Advanced        27 City E               90
## 6 DJ F    Rock           3.6 Intermediate    25 City F               55
```

Question 2.2: Display all the columns of the variable stacked one below another

Solution:

```
glimpse(playlist_data)
```

```
## Rows: 26
## Columns: 7
## $ DJ_Name       <chr> "DJ A", "DJ B", "DJ C", "DJ D", "DJ E", "DJ F", "DJ G",…
## $ Music_Genre   <chr> "Pop", "Rock", "Electronic", "Pop", "Electronic", "Rock…
## $ Rating        <dbl> 4.2, 3.8, 4.5, 4.0, 4.8, 3.6, 4.3, 4.1, 3.5, 4.5, 4.0,…
## $ Experience    <chr> "Advanced", "Intermediate", "Advanced", "Intermediate",…
## $ Age           <dbl> 28, 24, 30, 22, 27, 25, 29, 23, 26, 24, 28, 30, 22, 27,…
## $ Location      <chr> "City A", "City B", "City C", "City D", "City E", "City…
## $ Plays_Per_Week <dbl> 80, 65, 100, 70, 90, 55, 85, 75, 60, 95, 110, 75, 65, 8…
```

Question 2.3: How many columns are there in the dataset?

Solution:

```
ncol(playlist_data)
```

```
## [1] 7
```

Question 2.4: What is the total count of DJs?

Solution:

```
# Number of DJs

nrow(playlist_data)
```

```
## [1] 26
```

Question 2.5: Display all the location of all the DJs

Solution:

```
# Location of DJs
 playlist_data$Location
```

```
##  [1] "City A" "City B" "City C" "City D" "City E" "City F" "City G" "City H"
##  [9] "City I" "City J" "City K" "City L" "City M" "City N" "City O" "City P"
## [17] "City Q" "City R" "City S" "City T" "City U" "City V" "City W" "City X"
## [25] "City Y" "City Z"
```

Question 2.6: Display the age of the DJs

Solution:

```
# Age of DJs
 playlist_data$Age
```

```
##  [1] 28 24 30 22 27 25 29 23 31 26 32 28 29 25 31 26 27 24 29 23 28 26 30 22 27
## [26] 24 25
```

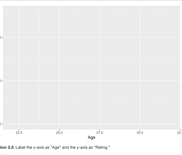
Task-3

Let us plot the data to get more insights about the DJs.

Question 3.1: Create a plot to visualize the relationship between DJs' ages and their ratings.

Solution:

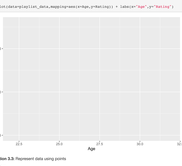
```
# complete the code to generate the plot
ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating))
```



Question 3.2: Label the x-axis as "Age" and the y-axis as "Rating."

Solution:

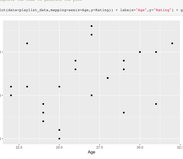
```
# complete the code to generate the plot
ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) + labs(x="Age",y="Rating")
```



Question 3.3: Represent data using points

Solution:

```
# complete the code to generate the plot
ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) + labs(x="Age",y="Rating") + geom_point()
```

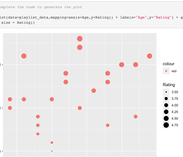


Question 3.4: Can you change the points represented by dots/small circles to any other shape of your liking?

Solution:

```
# complete the code to generate the plot

ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) + labs(x="Age",y="Rating") + geom_point(aes(colour = "re
d", size = Rating))
```



```
# <-- Hint: Use ? to learn more about geom_point and see appropriate values for shape
```

Question 3.5: Insert a suitable title and briefly provide your insights in the caption

Solution:

```
# complete the code to generate the plot

ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) + labs(x="Age",y="Rating", title="DJ's Ages and Ratings",
caption="Source: playlist_data.csv from Week-2 DA5107 Canvas") + geom_point(aes(colour = "red", size = Rating))
```