# 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 `echo=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, `starwars` and `anscombe's quartet` that were readily available with the packages, `tidyverse` and `Tmisc`, respectively. When 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:** CSV stands for "Comma Separated Value(s)" and is a format to store structured data using text files. **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 --
## v dplyr     1.1.2     v readr     2.1.4
## v forcats   1.0.0     v stringr   1.5.0
## v ggplot2   3.4.3     v tibble    3.2.1
## v lubridate 1.9.2     v tidyr     1.3.0
## v purrr     1.0.1
## -- 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
```

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

**Solution:**

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

read.csv("playlist_data.csv")
```

```
##    DJ_Name Music_Genre Rating   Experience Age Location Plays_Per_Week
## 1     DJ A         Pop    4.2     Advanced  28   City X             80
## 2     DJ B        Rock    3.8 Intermediate  24   City Y             60
## 3     DJ C  Electronic    4.5     Advanced  30   City Z            100
## 4     DJ D         Pop    4.0 Intermediate  22   City X             70
## 5     DJ E  Electronic    4.8     Advanced  27   City Y             90
## 6     DJ F        Rock    3.6 Intermediate  25   City Z             55
## 7     DJ G         Pop    4.3     Advanced  29   City X             85
## 8     DJ H  Electronic    4.1 Intermediate  23   City Y             75
## 9     DJ I        Rock    3.9     Advanced  31   City Z             70
## 10    DJ J         Pop    4.4 Intermediate  26   City X             95
## 11    DJ K     Hip-Hop    4.6     Advanced  32   City Y            110
## 12    DJ L  Electronic    4.2 Intermediate  28   City Z             75
## 13    DJ M         Pop    3.8     Advanced  29   City X             60
## 14    DJ N        Rock    4.1 Intermediate  25   City Y             80
## 15    DJ O  Electronic    4.5     Advanced  31   City Z             95
## 16    DJ P     Hip-Hop    4.3 Intermediate  26   City X            105
## 17    DJ Q         Pop    4.0     Advanced  27   City Y             70
```

```
## 18    DJ R        Rock    3.7 Intermediate  24   City Z            50
## 19    DJ S  Electronic    4.4     Advanced  29   City X            85
## 20    DJ T     Hip-Hop    4.6 Intermediate  23   City Y           100
## 21    DJ U         Pop    4.2     Advanced  28   City Z            80
## 22    DJ V        Rock    3.9 Intermediate  24   City X            60
## 23    DJ W  Electronic    4.5     Advanced  30   City Y           100
## 24    DJ X         Pop    4.1 Intermediate  22   City Z            70
## 25    DJ Y  Electronic    4.7     Advanced  27   City X            90
## 26    DJ Z        Rock    3.5 Intermediate  25   City Y            55
```

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

**Solution:**

```
# Assign the variable to a dataset

insert_name_of_variable <- 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("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 x 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 X               80
##  2 DJ B    Rock           3.8 Intermediate    24 City Y               60
##  3 DJ C    Electronic     4.5 Advanced        30 City Z              100
##  4 DJ D    Pop            4   Intermediate    22 City X               70
```

```
##  5 DJ E    Electronic     4.8 Advanced        27 City Y              90
##  6 DJ F    Rock           3.6 Intermediate    25 City Z              55
##  7 DJ G    Pop            4.3 Advanced        29 City X              85
##  8 DJ H    Electronic     4.1 Intermediate    23 City Y              75
##  9 DJ I    Rock           3.9 Advanced        31 City Z              70
## 10 DJ J    Pop            4.4 Intermediate    26 City X              95
## # i 16 more rows
```

```
knitr::include_graphics("/Users/jarenong/Desktop/NM2207/Week 2/Screenshot 2023-08-23 at 6.31.22 PM.png")
```

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

**Solution:** It allows you to specify the number of lines to skip at the beginning of the file before you start to read the actual data.

**Question 1.7:** Display the contents of the data-set

**Solution:**

```
# Type the name of the variable, to see what it contains
library(tidyverse)
read.csv("playlist_data.csv")
```

```
##    DJ_Name Music_Genre Rating   Experience Age Location Plays_Per_Week
## 1     DJ A         Pop    4.2     Advanced  28   City X             80
## 2     DJ B        Rock    3.8 Intermediate  24   City Y             60
## 3     DJ C  Electronic    4.5     Advanced  30   City Z            100
## 4     DJ D         Pop    4.0 Intermediate  22   City X             70
## 5     DJ E  Electronic    4.8     Advanced  27   City Y             90
## 6     DJ F        Rock    3.6 Intermediate  25   City Z             55
## 7     DJ G         Pop    4.3     Advanced  29   City X             85
## 8     DJ H  Electronic    4.1 Intermediate  23   City Y             75
## 9     DJ I        Rock    3.9     Advanced  31   City Z             70
## 10    DJ J         Pop    4.4 Intermediate  26   City X             95
## 11    DJ K     Hip-Hop    4.6     Advanced  32   City Y            110
## 12    DJ L  Electronic    4.2 Intermediate  28   City Z             75
## 13    DJ M         Pop    3.8     Advanced  29   City X             60
## 14    DJ N        Rock    4.1 Intermediate  25   City Y             80
## 15    DJ O  Electronic    4.5     Advanced  31   City Z             95
## 16    DJ P     Hip-Hop    4.3 Intermediate  26   City X            105
## 17    DJ Q         Pop    4.0     Advanced  27   City Y             70
## 18    DJ R        Rock    3.7 Intermediate  24   City Z             50
## 19    DJ S  Electronic    4.4     Advanced  29   City X             85
## 20    DJ T     Hip-Hop    4.6 Intermediate  23   City Y            100
## 21    DJ U         Pop    4.2     Advanced  28   City Z             80
## 22    DJ V        Rock    3.9 Intermediate  24   City X             60
## 23    DJ W  Electronic    4.5     Advanced  30   City Y            100
## 24    DJ X         Pop    4.1 Intermediate  22   City Z             70
## 25    DJ Y  Electronic    4.7     Advanced  27   City X             90
## 26    DJ Z        Rock    3.5 Intermediate  25   City Y             55
```

**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 execute the task mentioned in the question are required
sales_data <- read_csv("sales_data")
```

**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(insert_name_of_variable)
```

```
## # A tibble: 6 x 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 X                80
## 2 DJ B    Rock           3.8 Intermediate    24 City Y                60
## 3 DJ C    Electronic     4.5 Advanced        30 City Z               100
## 4 DJ D    Pop            4   Intermediate    22 City X                70
## 5 DJ E    Electronic     4.8 Advanced        27 City Y                90
## 6 DJ F    Rock           3.6 Intermediate    25 City Z                55
```

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

**Solution:**

```
# Stack columns of playlist_data
glimpse(insert_name_of_variable)
```

```
## 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, 3.9, 4.4, 4.6, ~
## $ Experience     <chr> "Advanced", "Intermediate", "Advanced", "Intermediate",~
## $ Age            <dbl> 28, 24, 30, 22, 27, 25, 29, 23, 31, 26, 32, 28, 29, 25,~
## $ Location       <chr> "City X", "City Y", "City Z", "City X", "City Y", "City~
## $ Plays_Per_Week <dbl> 80, 60, 100, 70, 90, 55, 85, 75, 70, 95, 110, 75, 60, 8~
```

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

**Solution:**

```
# Number of columns
ncol(insert_name_of_variable)
```

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

**Question 2.4:** What is the total count of DJs?

**Solution:**

```
# Number of DJs = 26
insert_name_of_variable$DJ_Name
```

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

```
nrow(insert_name_of_variable)
```

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

**Question 2.5:** Display all the location of all the DJs

**Solution:**

```
# Location of DJs
insert_name_of_variable$Location
```

```
##  [1] "City X" "City Y" "City Z" "City X" "City Y" "City Z" "City X" "City Y"
##  [9] "City Z" "City X" "City Y" "City Z" "City X" "City Y" "City Z" "City X"
## [17] "City Y" "City Z" "City X" "City Y" "City Z" "City X" "City Y" "City Z"
## [25] "City X" "City Y"
```

**Question 2.6:** Display the age of the DJs

**Solution:**

```
# Age of DJs
insert_name_of_variable$Age
```

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

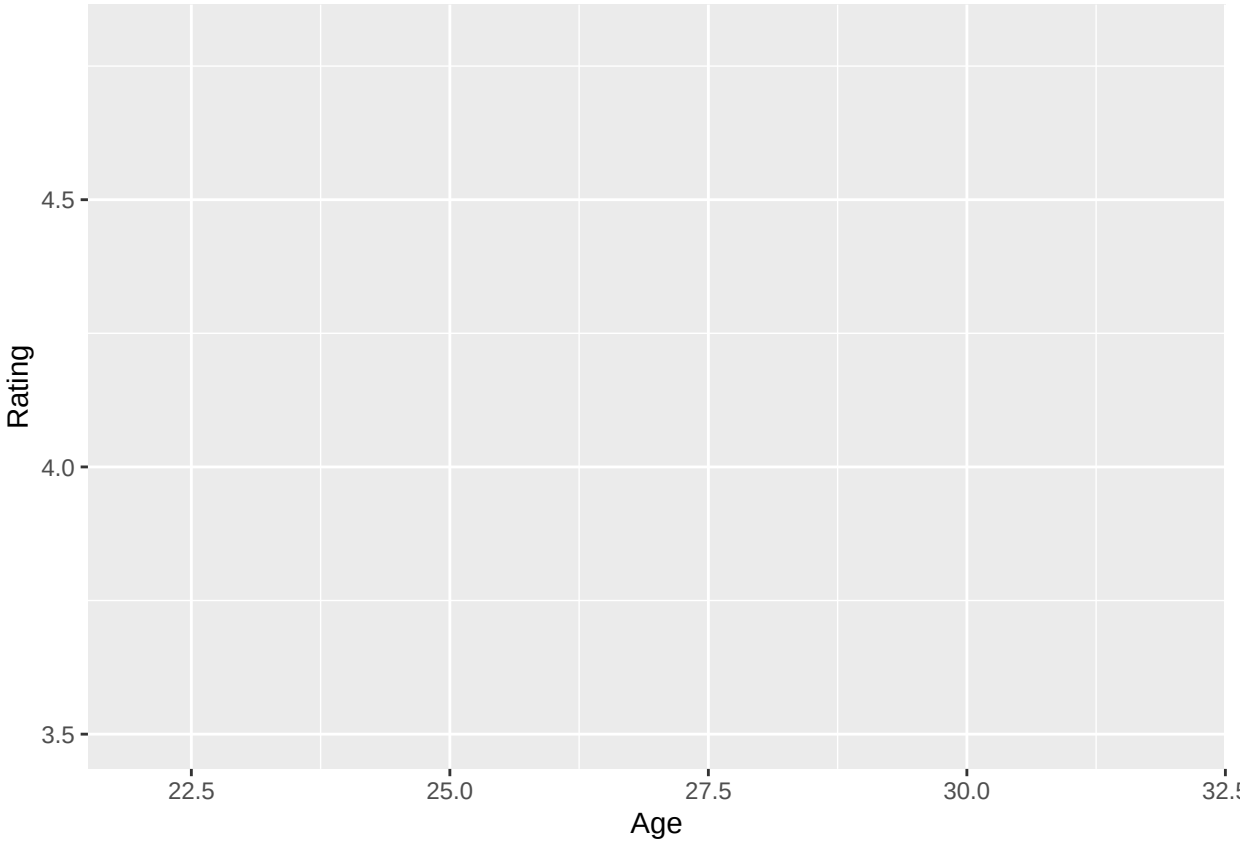
**Task-3** Let us plot the data to get more insights about the DJs.

**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 = insert_name_of_variable) +
 aes(x=Age,y=Rating)
```

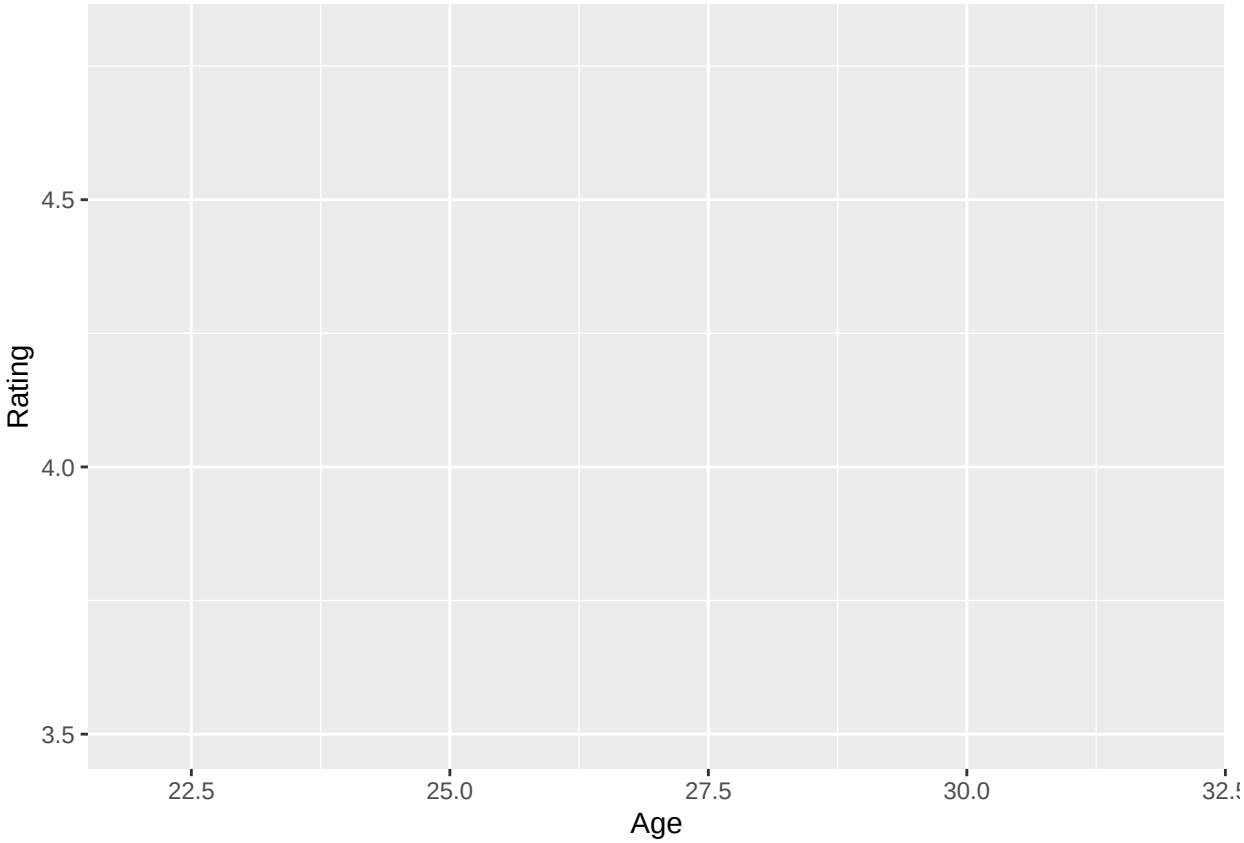



**Question 3.2:** Label the x-axis as "Age" and the y-axis as "Rating."

**Solution:**

```
# complete the code to generate the plot

ggplot(data=insert_name_of_variable,mapping=aes(x=Age,y=Rating))
```

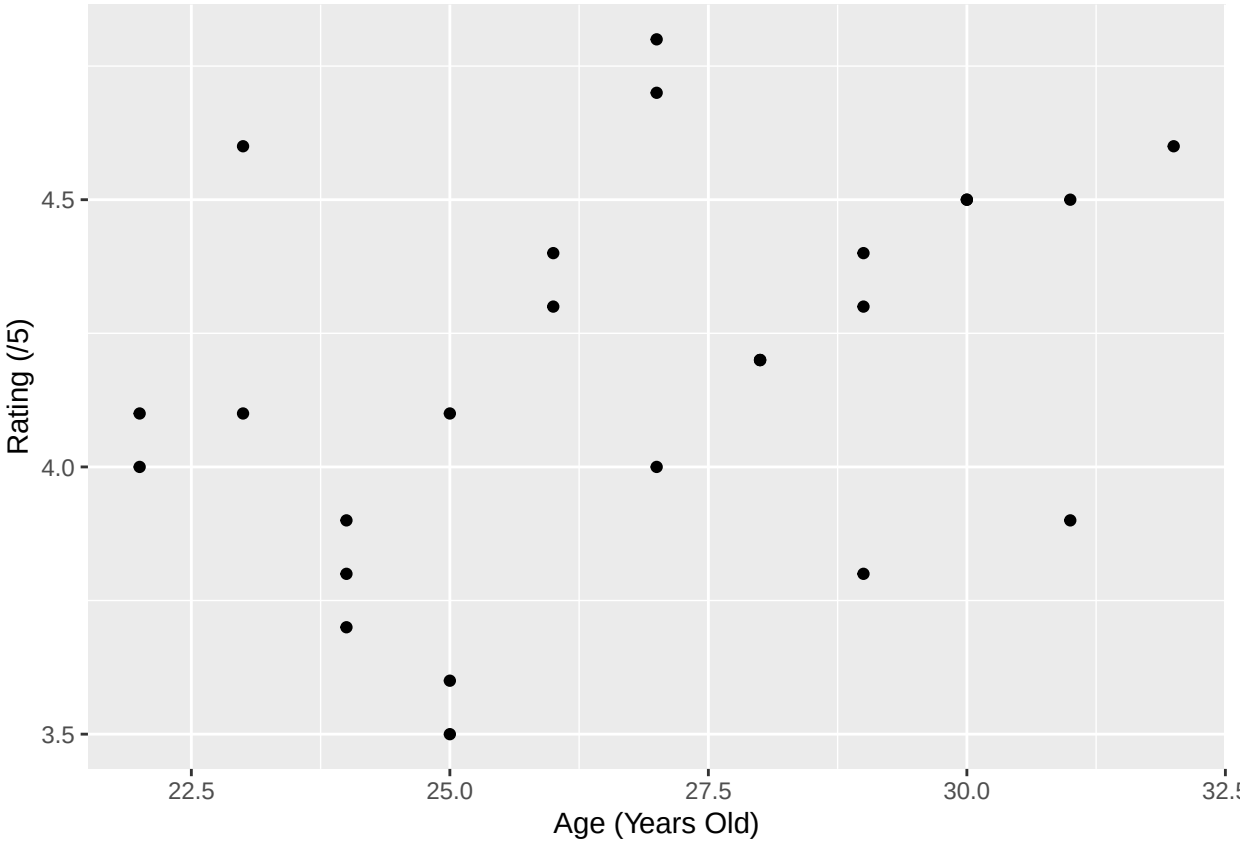



**Question 3.3:** Represent data using points

**Solution:**

```
# complete the code to generate the plot

ggplot(data=insert_name_of_variable,mapping=aes(x=Age,y=Rating)) + geom_point() +
 labs(x="Age (Years Old)",y="Rating (/5)")
```

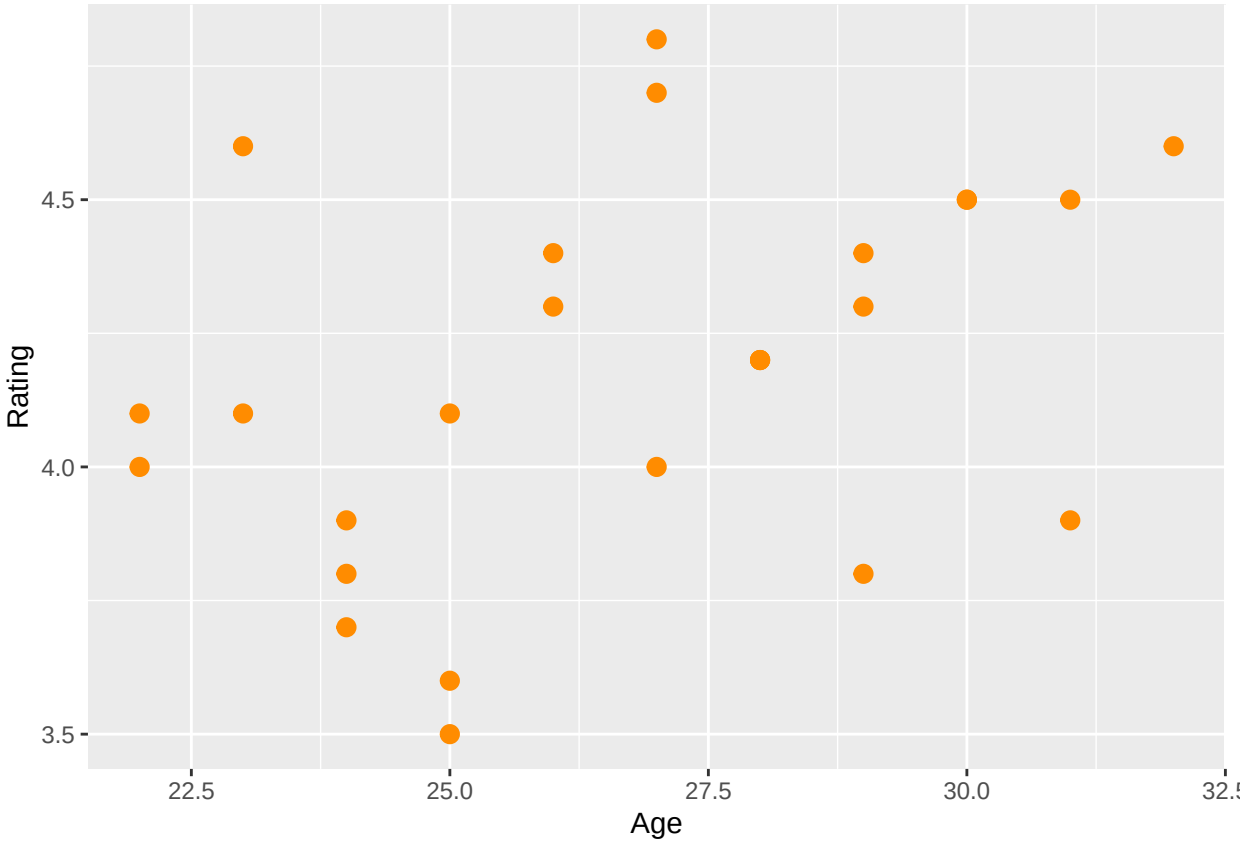



**Question 3.4:** Can you change the points represented by dots/small circles to any other shape of your liking?

**Solution:**

```
# complete the code to generate the plot

ggplot(data=insert_name_of_variable, aes(x=Age,y=Rating)) +
  geom_point(shape = 20, colour = "darkorange", fill = "black", size = 2, stroke = 2)
```

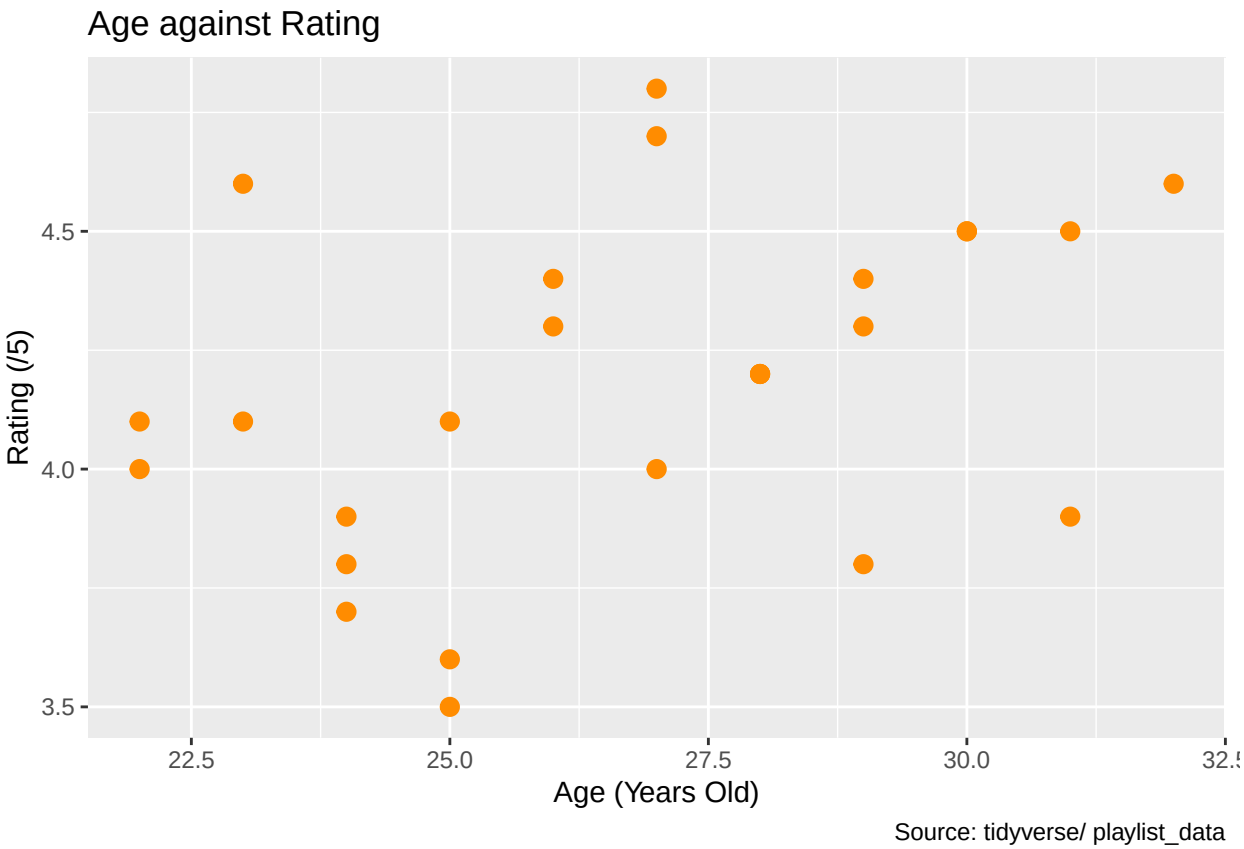



**Question 3.5:** Insert a suitable title and briefly provide your insights in the caption

**Solution:**

```
# complete the code to generate the plot

ggplot(data=insert_name_of_variable,mapping=aes(x=Age,y=Rating)) + geom_point() +
 labs(x="Age (Years Old)",y="Rating (/5)", title="Age against Rating",
caption="Source: tidyverse/ playlist_data") +
  geom_point(shape = 20, colour = "darkorange", fill = "black", size = 2, stroke = 2)
```


Age against Rating
Rating (/5)
4.5
4.0
3.5
22.5
25.0
27.5
30.0
Age (Years Old)
Source: tidyverse/ playlist_data