Challenge 2

JingYing

21-08-2023

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 Values' and is a popular format because it can be used across platforms. **Question 1.2:** load the `tidyverse` package to work with `.csv` files in R.

Solution:

```r
# 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     1.0.2
## -- 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
```

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

Solution:

```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 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
```

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

Solution:

```r
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

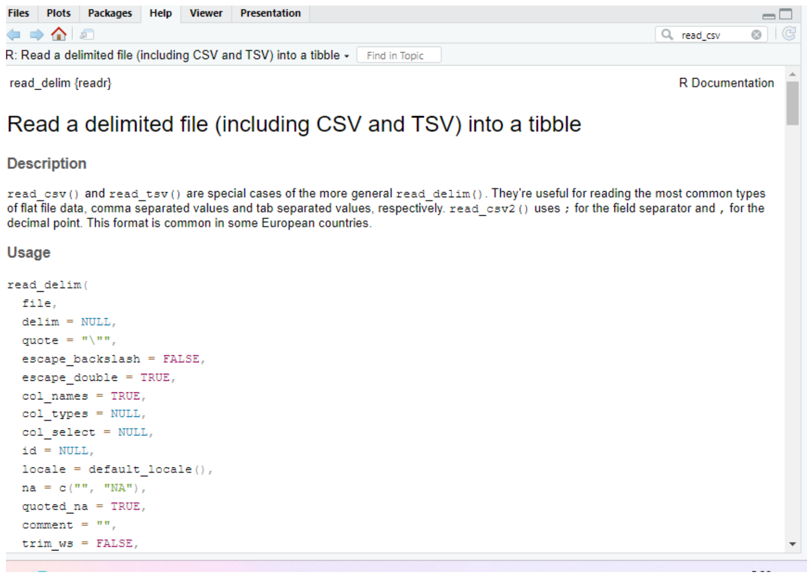
Question 1.5: Get more information about `read_csv()` command and provide a screenshot of the information displayed in the "Help" tab of the "Files" pane

Solution:

```
?read_csv()
```

```
## starting httpd help server ... done
```

```
knitr::include_graphics("C:/Users/yeojy/Pictures/screensho210803.png")
```



Files
Plots
Packages
Help
Viewer
Presentation
read_csv
R: Read a delimited file (including CSV and TSV) into a tibble
Find in Topic

read_delim {readr} R Documentation

Read a delimited file (including CSV and TSV) into a tibble

Description

read_csv() and read_tsv() are special cases of the more general read_delim(). They're useful for reading the most common types of flat file data, comma separated values and tab separated values, respectively. read_csv2() uses ; for the field separator and , for the decimal point. This format is common in some European countries.

Usage

```
read_delim(
  file,
  delim = NULL,
  quote = "\"",
  escape_backslash = FALSE,
  escape_double = TRUE,
  col_names = TRUE,
  col_types = NULL,
  col_select = NULL,
  id = NULL,
  locale = default_locale(),
  na = c("", "NA"),
  quoted_na = TRUE,
  comment = "",
  trim_ws = FALSE,
```

Figure 1: here's the screenshot!

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

Solution: The 'skip' argument in the function allows us to skip the specified amount of rows before reading data.

Question 1.7: Display the contents of the data-set

Solution:

```
playlist_data
```

```
## # 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
```

```r
print(playlist_data, n=26)
```

```
## # 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
## 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   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:

```r
read_csv("sales_data.csv")

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:

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

```
## # 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(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, 3.9, 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(playlist_data)
```

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

Question 2.4: What is the total count of DJs?

Solution:

26 DJs

Question 2.5: Display all the location of all the DJs

Solution:

```
# Location of DJs

playlist_data$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:

```r
# 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 24 30 22 27
## [26] 25
```

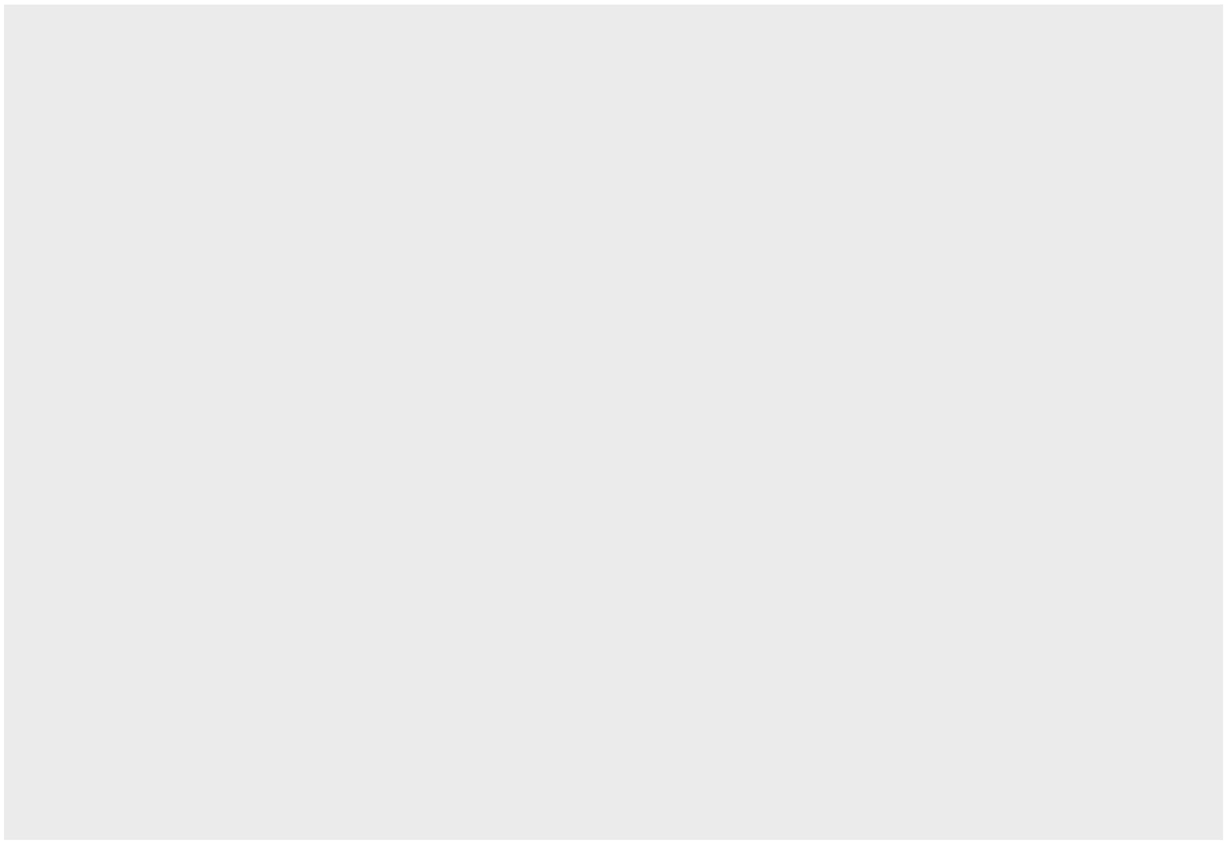
Task-3 Let us plot the data to get more insights about the DJs.

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

Solution:

```r
# complete the code to generate the plot

ggplot(playlist_data)
```



```r
aes(x=Age,y=Rating)
```

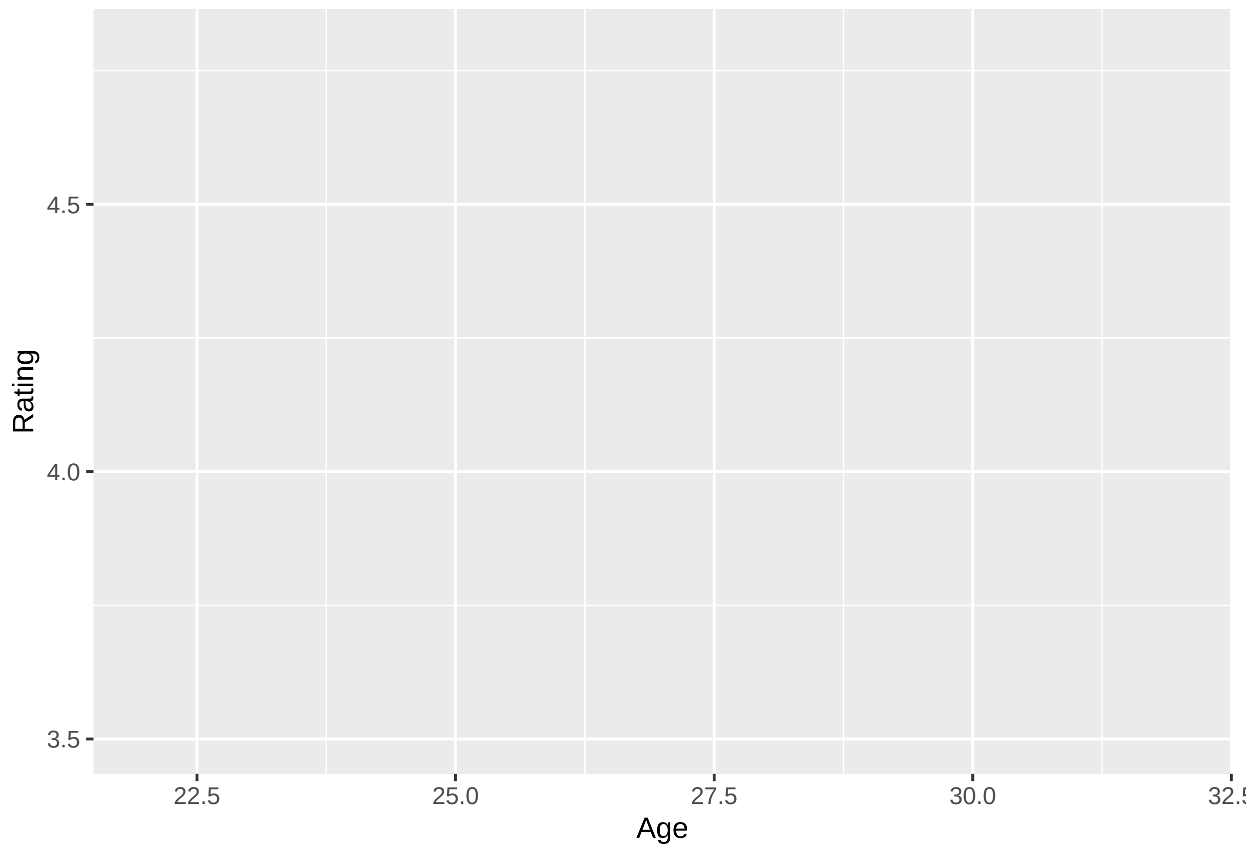
```
## Aesthetic mapping:
## * `x` -> `Age`
## * `y` -> `Rating`
```

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")
```

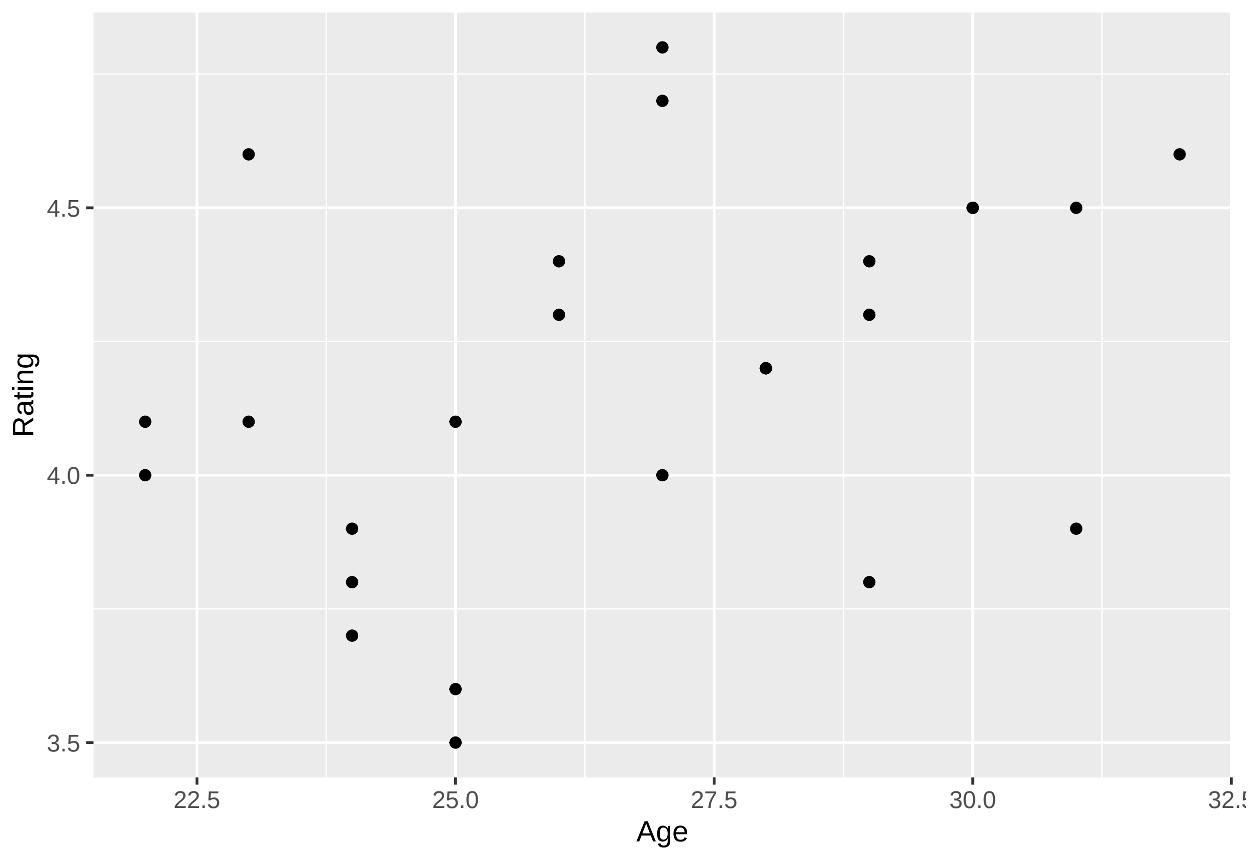


Question 3.3: Represent data using points

Solution:

```
# complete the code to generate the plot

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

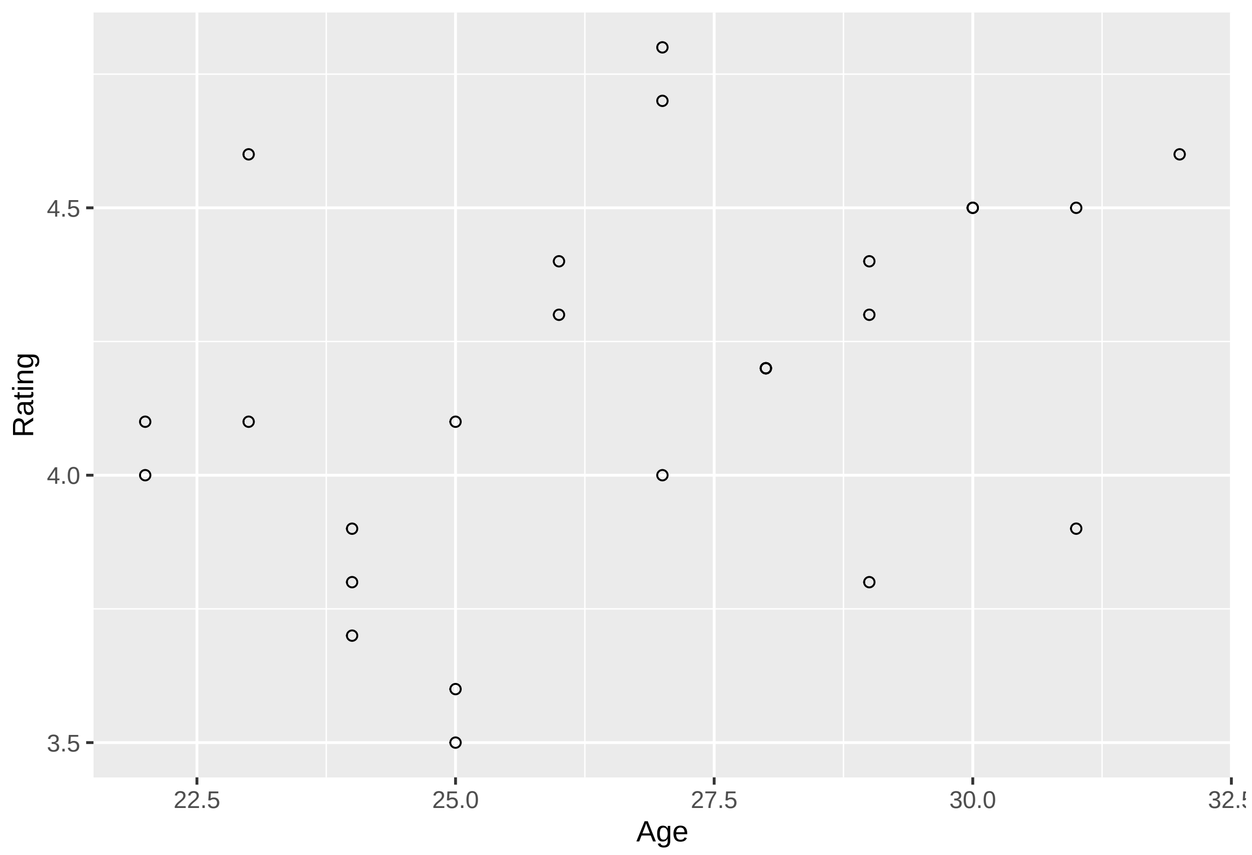


Question 3.4: Can you change the points represented by dots/small circles to any other shape of your liking?

Solution:

```
# complete the code to generate the plot

ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) + geom_point(shape=21) + labs(x="Age",y="Rating"
```



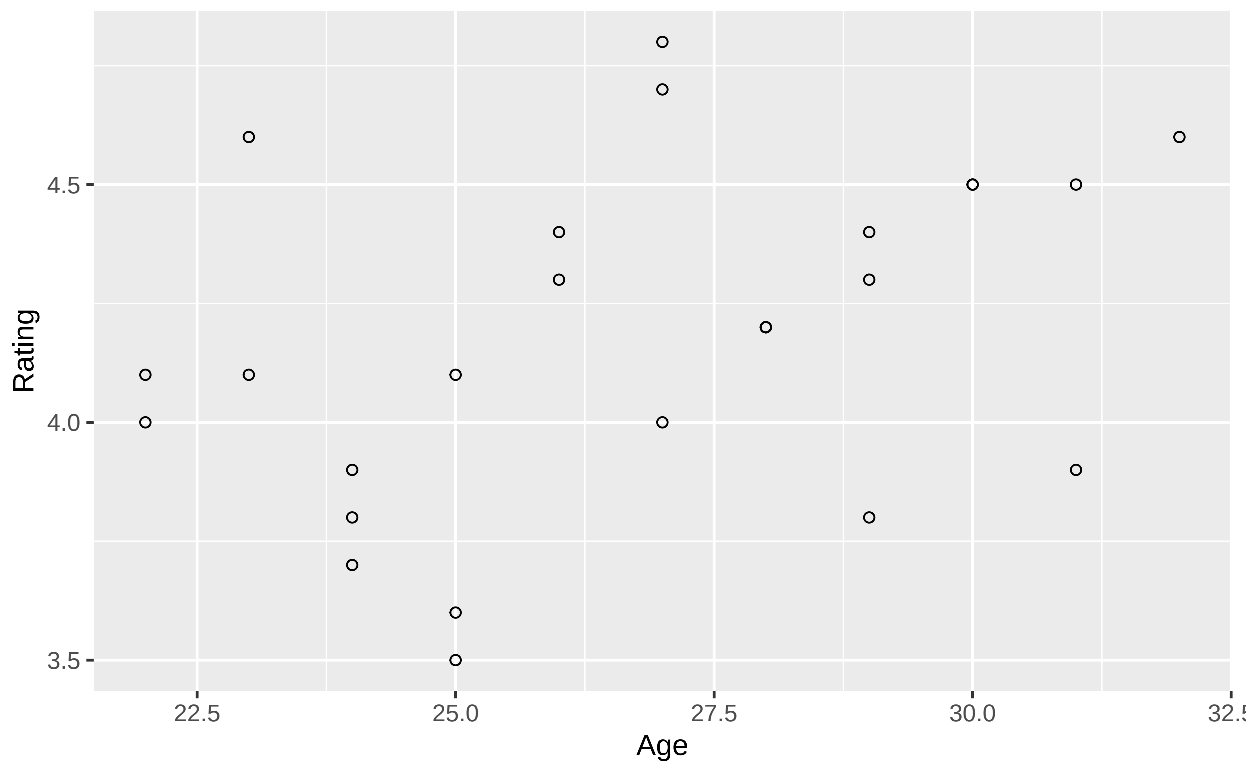
Question 3.5: Insert a suitable title and briefly provide your insights in the caption

Solution:

```r
# complete the code to generate the plot

ggplot(data=playlist_data,mapping=aes(x=Age,y=Rating)) +
 geom_point(shape=21) + labs(x="Age",y="Rating",
 title="Age of DJs and their Ratings",
 caption="There appears to be no correlation between age and rating of DJs")
```

Age of DJs and their Ratings



There appears to be no correlation between age and rating of DJs