FML Assignment 1

Yashwanth Reddy Sadala

2023-09-10

#PART A-READING THE DATASET

```
library(readr)
Games <- read_csv("~/Downloads/Games.csv")
```

```
## Rows: 175 Columns: 8
## -- Column specification ---------------------------------------------------
## Delimiter: ","
## chr (6): Name, Series, Release, Genre, Developer, Publisher
## dbl (2): Sales, Tax
##
## 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.
```

```
View(Games)
```

#PART B-DESCRIPTIVE STATISTICS FOR NUMERIC VARIABLES

```
summary(Games)
```

```
##      Name                Sales            Series            Release
##  Length:175          Min.   : 1.000   Length:175        Length:175
##  Class :character    1st Qu.: 1.000   Class :character  Class :character
##  Mode  :character    Median : 1.500   Mode  :character  Mode  :character
##                      Mean   : 3.141
##                      3rd Qu.: 3.000
##                      Max.   :42.000
##      Genre            Developer          Publisher            Tax
##  Length:175        Length:175         Length:175        Min.   : 0.00
##  Class :character  Class :character   Class :character  1st Qu.: 4.00
##  Mode  :character  Mode  :character   Mode  :character  Median : 6.00
##                                                         Mean   : 5.72
##                                                         3rd Qu.: 8.00
##                                                         Max.   :11.00
```

```
mean(Games$Sales)
```

```
## [1] 3.141143
```

```
median(Games$Sales)
```

```
## [1] 1.5
```

```
min(Games$Sales)
```

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

```
max(Games$Sales)
```

```
## [1] 42
```

```
var(Games$Sales)
```

```
## [1] 24.60669
```

```
sd(Games$Sales)
```

```
## [1] 4.960513
```

```
str(Games$Sales)
```

```
##  num [1:175] 42 33 20 20 17.2 14 12 12 11 11 ...
```

#PART C-DESCRIPTIVE STATISTICS FOR QUALITATIVE DATA

```
table(Games$Sales)
```

```
##
##    1  1.1  1.2  1.3  1.5  1.8    2  2.1  2.5  2.7    3  3.3  3.6    4  4.5    5
##   77    2    2    3    4    1   33    1    5    1    9    1    1    7    1    4
##  5.5    6  6.5    7    8    9   10   11   12   14 17.2   20   33   42
##    2    4    1    1    1    2    2    2    2    1    1    2    1    1
```

```
Games$Sales
```

```
##   [1] 42.0 33.0 20.0 20.0 17.2 14.0 12.0 12.0 11.0 11.0 10.0 10.0  9.0  9.0  8.0
##  [16]  7.0  6.5  6.0  6.0  6.0  6.0  5.5  5.5  5.0  5.0  5.0  5.0  4.5  4.0  4.0
##  [31]  4.0  4.0  4.0  4.0  4.0  3.6  3.3  3.0  3.0  3.0  3.0  3.0  3.0  3.0  3.0
##  [46]  3.0  2.7  2.5  2.5  2.5  2.5  2.5  2.1  2.0  2.0  2.0  2.0  2.0  2.0  2.0
##  [61]  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0
##  [76]  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  2.0  1.8  1.5  1.5  1.5
##  [91]  1.5  1.3  1.3  1.3  1.2  1.2  1.1  1.1  1.0  1.0  1.0  1.0  1.0  1.0  1.0
## [106]  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0
## [121]  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0
## [136]  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0
## [151]  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0
## [166]  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0  1.0
```

```
table(Games$Genre)
```

```
##
##                                   Action
##                                        4
##                        Action role-playing
##                                       12
##                   Action role-playing game
##                                        1
##        Action role-playing, hack and slash
##                                        1
##                           Action-adventure
##                                        6
##                Action-adventure, platformer
##                                        1
##                Action-adventure, roguelike
##                                        1
##                  Action-adventure, stealth
```

```
##                                            1
##                Action-adventure, Survival
##                                            1
##                                Adventure
##                                            2
##                         Adventure, puzzle
##                                            1
##                Amateur flight simulation
##                                            1
##                             Battle royale
##                                            2
##                 Beat 'em up, run-and-gun
##                                            1
##                       Business simulation
##                                            3
##                             City-building
##                                            6
##                        City-building game
##                                            3
##                               Compilation
##                                            1
##                Computer role-playing game
##                                            1
##   Construction and management simulation
##                                            9
##                               Educational
##                                            1
##                                  Fighting
##                                            3
##                      First-person shooter
##                                           19
##                                  God game
##                                            3
##                             Grand strategy
##                                            3
##                          Graphic adventure
##                                            2
##                 Graphic adventure, puzzle
##                                            1
##                         Interactive fiction
##                                            1
##                          Interactive movie
##                                            2
##                           Life simulation
##                                            3
##                              Maze, arcade
##                                            1
##                              Metroidvania
##                                            1
##                                    MMORPG
##                                            6
##                                  Platform
##                                            1
##                            Point-and-click
```

```
##                                                   1
##                                              Puzzle
##                                                   1
##                                         Racing game
##                                                   1
##                                         Rail shooter
##                                                   1
##                                    Real-time strategy
##                                                  24
## Real-time strategy, grand strategy wargame
##                                                   1
##                                     Real-time tactics
##                                                   1
##                                    Role-playing game
##                                                   8
##                               RTS, 4X, Grand Strategy
##                                                   1
##                                         Run and gun
##                                                   1
##                                             Sandbox
##                                                   1
##                                    Sandbox, survival
##                                                   1
##                                           Sim racing
##                                                   1
##                                           Simulation
##                                                   1
##                         Simulation, role-playing game
##                                                   1
##                               Space combat simulation
##                                                   1
##                                               Sports
##                                                   1
##                                             Survival
##                                                   5
##                                      Survival horror
##                                                   1
##                                     Tactical shooter
##                                                   3
##                                  Third-person shooter
##                                                   1
##                  Third-person shooter, survival horror
##                                                   3
##                                          Trivia game
##                                                   1
##                                   Turn-based strategy
##                                                   1
##                               Turn-based strategy, 4X
##                                                   4
##                                    Vehicle simulation
##                                                   2
##                               Visual novel, adventure
##                                                   2
```

```
str(Games$Genre)
```

```
##  chr [1:175] "Battle royale" "Sandbox, survival" "Action role-playing" ...
```

#PART D-TRANSFORMING VARIABLES

```
log(Games$Sales)
```

```
##   [1] 3.73766962 3.49650756 2.99573227 2.99573227 2.84490938 2.63905733
##   [7] 2.48490665 2.48490665 2.39789527 2.39789527 2.30258509 2.30258509
##  [13] 2.19722458 2.19722458 2.07944154 1.94591015 1.87180218 1.79175947
##  [19] 1.79175947 1.79175947 1.79175947 1.70474809 1.70474809 1.60943791
##  [25] 1.60943791 1.60943791 1.60943791 1.50407740 1.38629436 1.38629436
##  [31] 1.38629436 1.38629436 1.38629436 1.38629436 1.38629436 1.28093385
##  [37] 1.19392247 1.09861229 1.09861229 1.09861229 1.09861229 1.09861229
##  [43] 1.09861229 1.09861229 1.09861229 1.09861229 0.99325177 0.91629073
##  [49] 0.91629073 0.91629073 0.91629073 0.91629073 0.74193734 0.69314718
##  [55] 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718
##  [61] 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718
##  [67] 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718
##  [73] 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718
##  [79] 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718 0.69314718
##  [85] 0.69314718 0.69314718 0.58778666 0.40546511 0.40546511 0.40546511
##  [91] 0.40546511 0.26236426 0.26236426 0.26236426 0.18232156 0.18232156
##  [97] 0.09531018 0.09531018 0.00000000 0.00000000 0.00000000 0.00000000
## [103] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [109] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [115] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [121] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [127] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [133] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [139] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [145] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [151] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [157] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [163] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [169] 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000 0.00000000
## [175] 0.00000000
```

```
log(Games$Tax)
```

```
##   [1] 1.7917595 1.9459101 1.7917595 1.3862944 2.0794415 2.1972246      -Inf
##   [8] 2.1972246 1.9459101 1.7917595 1.6094379 1.3862944 1.7917595 1.7917595
##  [15] 1.9459101 2.0794415 1.0986123 0.6931472 2.3025851 2.3978953 1.7917595
##  [22] 1.9459101 2.0794415 1.3862944 1.6094379 1.3862944 1.0986123 0.6931472
##  [29] 0.0000000 2.1972246 1.3862944 2.0794415 2.1972246      -Inf 2.1972246
##  [36] 1.9459101 1.7917595 1.6094379 1.3862944 1.7917595 1.7917595 1.9459101
##  [43] 2.0794415 1.0986123 0.6931472 2.3025851 2.3978953 1.7917595 1.9459101
##  [50] 2.0794415 1.3862944 1.6094379 1.3862944 1.0986123 0.6931472 0.0000000
##  [57] 2.1972246 1.3862944 2.0794415 2.1972246      -Inf 2.1972246 1.9459101
##  [64] 1.7917595 1.6094379 1.3862944 1.7917595 1.7917595 1.9459101 2.0794415
##  [71] 1.0986123 0.6931472 2.3025851 2.3978953 1.7917595 1.9459101 2.0794415
##  [78] 1.3862944 1.6094379 1.3862944 1.0986123 0.6931472 0.0000000 2.1972246
##  [85] 1.3862944 2.0794415 2.1972246      -Inf 2.1972246 1.9459101 1.7917595
##  [92] 1.6094379 1.3862944 1.7917595 1.7917595 1.9459101 2.0794415 1.0986123
##  [99] 0.6931472 2.3025851 2.3978953 1.7917595 1.9459101 2.0794415 1.3862944
```

```
## [106] 1.6094379 1.3862944 1.0986123 0.6931472 0.0000000 2.1972246 1.3862944
## [113] 2.0794415 2.1972246        -Inf 2.1972246 1.9459101 1.7917595 1.6094379
## [120] 1.3862944 1.7917595 1.7917595 1.9459101 2.0794415 1.0986123 0.6931472
## [127] 2.3025851 2.3978953 1.7917595 1.9459101 2.0794415 1.3862944 1.6094379
## [134] 1.3862944 1.0986123 0.6931472 0.0000000 2.1972246 1.3862944 2.0794415
## [141] 2.1972246        -Inf 2.1972246 1.9459101 1.7917595 1.6094379 1.3862944
## [148] 1.7917595 1.7917595 1.9459101 2.0794415 1.0986123 0.6931472 2.3025851
## [155] 2.3978953 1.7917595 1.9459101 2.0794415 1.3862944 1.6094379 1.3862944
## [162] 1.0986123 0.6931472 0.0000000 2.1972246 1.3862944 2.0794415 2.1972246
## [169]        -Inf 2.1972246 1.9459101 1.7917595 1.6094379 1.3862944 1.7917595
```

```r
y<-Games$Sales-mean(Games$Sales)/sd(Games$Sales)
y
```

```
##   [1] 41.3667706 32.3667706 19.3667706 19.3667706 16.5667706 13.3667706
##   [7] 11.3667706 11.3667706 10.3667706 10.3667706  9.3667706  9.3667706
##  [13]  8.3667706  8.3667706  7.3667706  6.3667706  5.8667706  5.3667706
##  [19]  5.3667706  5.3667706  5.3667706  4.8667706  4.8667706  4.3667706
##  [25]  4.3667706  4.3667706  4.3667706  3.8667706  3.3667706  3.3667706
##  [31]  3.3667706  3.3667706  3.3667706  3.3667706  3.3667706  2.9667706
##  [37]  2.6667706  2.3667706  2.3667706  2.3667706  2.3667706  2.3667706
##  [43]  2.3667706  2.3667706  2.3667706  2.3667706  2.0667706  1.8667706
##  [49]  1.8667706  1.8667706  1.8667706  1.8667706  1.4667706  1.3667706
##  [55]  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706
##  [61]  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706
##  [67]  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706
##  [73]  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706
##  [79]  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706  1.3667706
##  [85]  1.3667706  1.3667706  1.1667706  0.8667706  0.8667706  0.8667706
##  [91]  0.8667706  0.6667706  0.6667706  0.6667706  0.5667706  0.5667706
##  [97]  0.4667706  0.4667706  0.3667706  0.3667706  0.3667706  0.3667706
## [103]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [109]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [115]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [121]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [127]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [133]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [139]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [145]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [151]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [157]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [163]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [169]  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706  0.3667706
## [175]  0.3667706
```

#PART E-PLOTTING THE VARIABLE

```r
hist(Games$Sales,main="HISTOGRAM OF SALES")
```

HISTOGRAM OF SALES
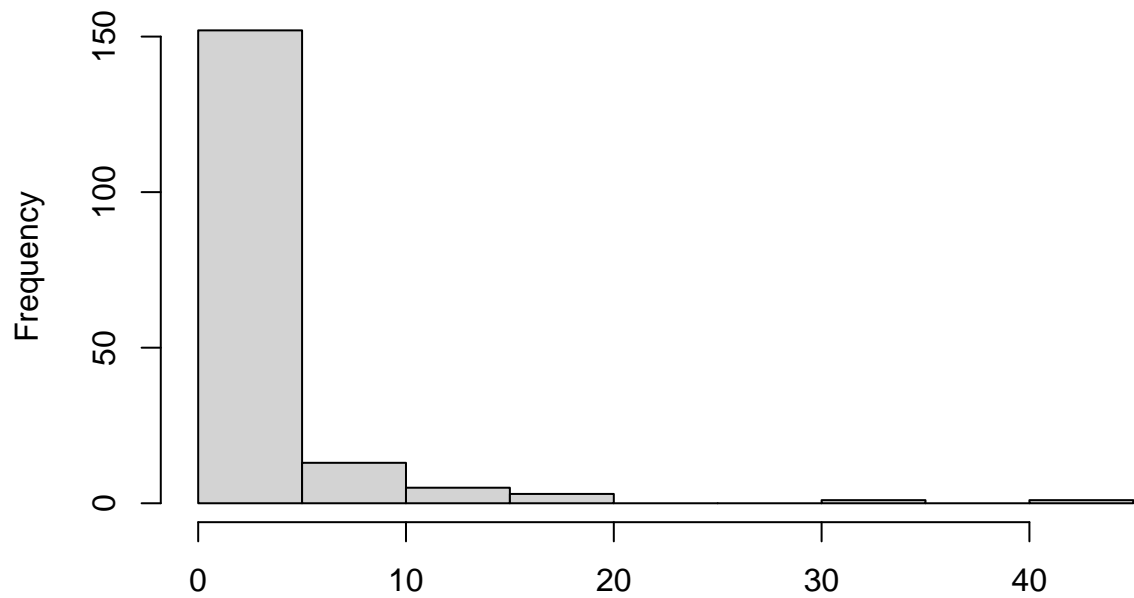
F-SCATTER PLOT

```
plot(Games$Sales,Games$Tax,main="scatterplot")
```

scatterplot