FDA_DA2

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1.		Analyse the data that you have taken for your project.
	i)	Store the data in both .txt and .csv file type. Read the datasets of both file type.
	ii)	Discuss the purpose of data cleaning and data imputation process for your dataset by analyzing the various features in your data.
	iii)	Implement data cleaning process.
	iv)	Implement data Imputation techniques.
	v)	Visualize your dataset using various graphics packages in R

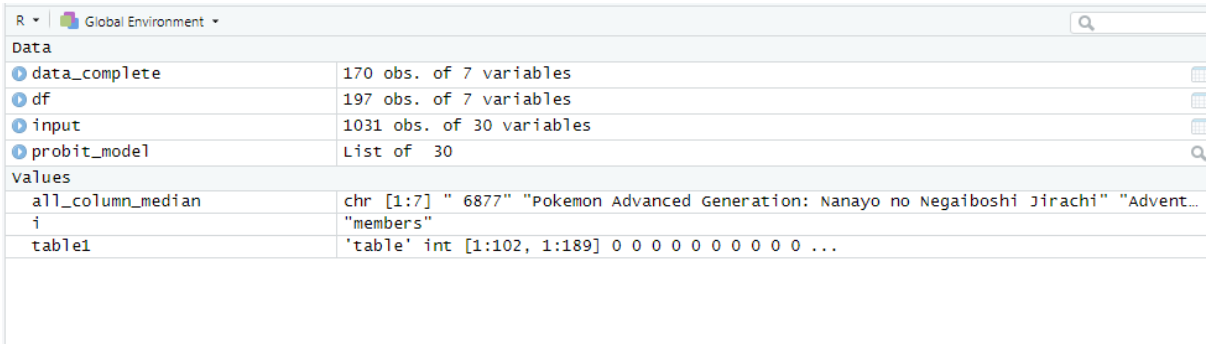
CODE:

#1q. Store the data in both .txt and .csv file type. Read the datasets of both file type

```
#getwd()

#setwd("C:\Users\91798\Documents\")

#list.files()

read.table("anime1.txt",header = FALSE,sep = "")

read.csv("anime1.csv",header = FALSE,sep = ",")
```

Output:-

```
> read.csv("anime1.csv",header = FALSE,sep = ",")
          V1
1   anime_id
2      32281
3       5114
4      28977
5       9253
6       9969
7      32935
8      11061
9        820
10     15335
11     15417
12      4181
13     28851
14       918
15      2904
16     28891
17       199
18     23273
19     24701
20     12355
21      1575
```



#2q Discuss the purpose of data cleaning and data imputation process for your dataset by analyzing the various features in your data.

The act of finding and eliminating faulty records from the dataset is known as data cleaning.

is.na() is used to test objects they are NA

#1
complete.cases(df)
data_complete<-df[complete.cases(df),]
data_complete

#2
df <- na.omit(df)
df <- df[!(is.na(df$episodes)),]
df

Here na.omit() function removes the incomplete rows or which contains NA in specific column or rows in a given data frame.

Data imputation

is replacing the missing values and then evaluating the entire set of data since the improved values were the real values that were observed.

```
#a, method 1 Imputing manually with 0/Mean/Median value
df = read.csv("anime1.csv",sep = ",")
df$rating[is.na(df$rating)]<-mean(df$rating,na.rm = T)
df

#b. Using Hmisc Library and imputing with Median value
library(Hmisc)
install.packages(Hmisc)
df = read.csv("anime1.csv",sep = ",")
impute(df$rating,median)

#Impute with a specific Constant value
impute(df$episodes,1)

#c. Impute the entire dataset:
Apply() function can be used to impute the Median value of each column with NA.
df = read.csv("anime1.csv",sep = ",")
all_column_median <- apply(df,2,median,na.rm=TRUE)

for(i in colnames(df))
  df[,i][is.na(df[,i])]<-all_column_median[i]

df
```

Data quality is improved, and overall productivity is increased, via data cleaning and imputation. When your data is cleaned, all inaccurate or out-of-date information is taken away, giving you only the best data.

#3q Implement data cleaning process.

```
df = read.csv("anime1.csv",sep = ",")

df

# Removing Missing Values

#cases

complete.cases(df)

data_complete<-df[complete.cases(df),]

data_complete



#omit

df = read.csv("anime1.csv",sep = ",")

df <- na.omit(df)

df <- df[!(is.na(df$episodes)),]

df
```

OUTPUT:-

#Casses

```
> data_complete<-df[complete.cases(df),]
> data_complete
    anime_id
1      32281
2       5114
3      28977
4       9253
5       9969
6      32935
7      11061
8        820
9      15335
11      4181
12     28851
13       918
14      2904
15     28891
16       199
17     23273
18     24701
19     12355
20      1575
21       263
```

```
138    3565
139    3571
140   13040
141    2865
142    1358
 [ reached 'max' / getOption("max.print") -- omitted 55 rows ]
> # Removing Missing Values
> #cases
> complete.cases(df)
  [1]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
 [17]  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE
 [33]  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE
 [49]  TRUE FALSE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE
 [65] FALSE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE FALSE
 [81]  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE
 [97]  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
[113]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE
[129]  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
[145]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE
[161]  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE
[177] FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE FALSE  TRUE  TRUE  TRUE  TRUE  TRUE  TRUE
[193]  TRUE FALSE  TRUE  TRUE  TRUE
>
```

```
24                                                                                  One Punch Man
25                                                                                  Mononoke Hime
26                                                                 Suzumiya Haruhi no Shoushitsu
27                                                                       Vampire Hunter D (2000)
28                                                                       Yuru Yuri Nachuyachumi!
29                                                                 Break Blade 3: Kyoujin no Ato
30                                                          Danshi Koukousei no Nichijou Specials
32                                                  Detective Conan Movie 12: Full Score of Fear
33                                                        Final Fantasy VII: Advent Children
34                                                                  Free!: Eternal Summer
35                                                        Hakuouki Movie 1: Kyoto Ranbu
37                                                                      K: Missing Kings
38                                                                           Last Exile
39                                                                  Little Busters!: EX
40                                                  Mobile Suit Gundam Wing: Endless Waltz Movie
42                                                                  Pokemon: The Origin
43                                                                      Yuru Yuriâ™âª
45                                                                      3-gatsu no Lion
46                                                                           91 Days
47                                                              Akagami no Shirayuki-hime
48                                                                          Drifters
49                                                                  Gake no Ue no Ponyo
51                                                        Haikyuu!! Movie 1: Owari to Hajimari
53                                                                  Hoozuki no Reitetsu OVA
```

```
R 4.0.2 · ~/
164                                  Doraemon Movie 33: Nobita no Himitsu Dougu Museum
165                                       Doraemon Movie 07: Nobita to Tetsujin Heidan
                                                                genre    type episodes rating
1                                        Drama, Romance, School, Supernatural   Movie        1   9.37
2                        Action, Adventure, Drama, Fantasy, Magic, Military, Shounen      TV       64   9.26
3                      Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen      TV       51   9.25
4                                                      Sci-Fi, Thriller      TV       24   9.17
5                      Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen      TV       51   9.16
6                                    Comedy, Drama, School, Shounen, Sports      TV       10   9.15
7                                  Action, Adventure, Shounen, Super Power      TV      148   9.13
8                                       Drama, Military, Sci-Fi, Space     OVA      110   9.11
9                      Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen   Movie        1   9.10
11                            Drama, Fantasy, Romance, Slice of Life, Supernatural      TV       24   9.06
12                                                Drama, School, Shounen   Movie        1   9.05
13                     Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen      TV      201   9.04
14                              Action, Drama, Mecha, Military, Sci-Fi, Super Power      TV       25   8.98
15                                   Comedy, Drama, School, Shounen, Sports      TV       25   8.93
16                                        Adventure, Drama, Supernatural   Movie        1   8.93
17                                   Drama, Music, Romance, School, Shounen      TV       22   8.92
18  Adventure, Fantasy, Historical, Mystery, Seinen, Slice of Life, Supernatural      TV       10   8.88
19                                                Fantasy, Slice of Life   Movie        1   8.84
20                           Action, Mecha, Military, School, Sci-Fi, Super Power      TV       25   8.83
21                                       Comedy, Drama, Shounen, Sports      TV       75   8.83
```

```
156     2673
158     7045
159     2392
160     5096
161     2672
162      501
163     2656
164    15925
165     2665
                                                                                                  name
1                                                                                          Kimi no Na wa.
2                                                                          Fullmetal Alchemist: Brotherhood
3                                                                                               GintamaÅ¯
4                                                                                            Steins;Gate
5                                                                                          Gintama&#039;
6                                                 Haikyuu!!: Karasuno Koukou VS Shiratorizawa Gakuen Koukou
7                                                                                        Hunter x Hunter (2011)
8                                                                                          Ginga Eiyuu Densetsu
9                                                       Gintama Movie: Kanketsu-hen - Yorozuya yo Eien Nare
11                                                                                         Clannad: After Story
12                                                                                               Koe no Katachi
13                                                                                                     Gintama
14                                                                       Code Geass: Hangyaku no Lelouch R2
```

#omit

```
> #omit
> df = read.csv("anime1.csv",sep = ",")
> df <- na.omit(df)
> df <- df[!(is.na(df$episodes)),]
> df
    anime_id
1      32281
2       5114
3      28977
4       9253
5       9969
6      32935
7      11061
8        820
9      15335
11      4181
12     28851
13       918
14      2904
15     28891
16       199
17     23273
18     24701
144     3586
145     2270
146     1701
147     1829
148     1509
149      485
150     2829
151     1544
153     5712
154    14233
155     1317
156     1583
158     1970
159     2262
160     1651
161     1321
162     9366
163     1269
164      787
165     1272
 [ reached 'max' / getOption("max.print") -- omitted 28 rows ]
>
```

105	Pokemon Best Wishes!: Victini to Shiroki Eiyuu Reshiram				
106	Pokemon Best Wishes! Season 2: Decolora Adventure - Dent to Takeshi! Gyarados no Gekirin!!				
107	Pokemon Fushigi no Dungeon: Sora no Tankentai - Toki to Yami wo Meguru Saigo no Bouken				
108	Pokemon: Mewtwo - Kakusei e no Prologue				
109	Pokemon: Pikachu no Natsuyasumi				
110	Pokemon Best Wishes! Season 2: Decolora Adventure - Iris vs. Ibuki! Dragon Master e no Michi!!				
111	Pokemon: Pichu to Pikachu				
112	Pokemon Best Wishes!				
113	Pokemon Best Wishes! Season 2				
114	Pokemon Fushigi no Dungeon: Toki no Tankentai, Yami no Tankentai				
115	Pokemon: Bokutachi Pichu Brothers - Party wa Oosawagi! no Maki				
116	Pokemon XY: Hakai no Mayu to Diancie				
117	Pokemon: Ash's Journey				
118	Pokemon: Odoru Pokemon Himitsu Kichi				
119	Pokemon: Pika Pika Hoshizora Camp				
120	Pokemon: Meloetta no Kirakira Recital				
121	Pokemon: Pikachu no Fuyuyasumi				
122	Pokemon Best Wishes! Season 2: Kyurem vs. Seikenshi				
123	Pokemon Ranger: Hikari no Kiseki				
124	Pokemon: Pikachu no Dokidoki Kakurenbo				
125	Pokemon XY&Z: Subete no Nazo wo Tokiakase!				
127	Pokemon: Pikachu Koori no Daibouken				
128	Pokemon: Pikachu no Fuyuyasumi (2000)				

34	Comedy, School, Slice of Life, Sports	TV	13	7.94	
35	Action, Drama, Historical, Josei, Samurai, Supernatural	Movie	1	7.94	
37	Action, Super Power, Supernatural	Movie	1	7.94	
38	Action, Adventure, Sci-Fi	TV	26	7.94	
39	Comedy, Drama, Romance, School, Slice of Life, Supernatural	Special	8	7.94	
40	Action, Drama, Mecha, Military, Sci-Fi, Space	Movie	1	7.94	
42	Action, Adventure, Comedy, Fantasy, Kids	Special	4	7.94	
43	Comedy, School, Shoujo Ai, Slice of Life	TV	12	7.94	
45	Drama, Game, Seinen, Slice of Life	TV	23	7.93	
46	Action, Drama, Historical	TV	12	7.93	
47	Drama, Fantasy, Romance, Shoujo	TV	12	7.93	
48	Action, Adventure, Comedy, Fantasy, Historical, Samurai, Seinen	TV	12	7.93	
49	Adventure, Fantasy	Movie	1	7.93	
51	Comedy, Drama, School, Shounen, Sports	Movie	1	7.94	
53	Comedy, Fantasy, Supernatural	OVA	3	7.93	
54	Comedy, Sci-Fi, Shounen	TV	358	7.93	
55	Action, Adventure, Comedy, Shounen	TV	155	7.93	
56	Action, Mecha, Military, Music, Romance, Sci-Fi, Space	Movie	1	7.93	
58	Comedy, Josei, Music, Romance	Special	1	7.93	
60	Adventure, Sci-Fi, Shounen	Special	2	7.93	
61	Historical, Samurai, Seinen	TV	12	7.93	
62	Horror, Mystery, Supernatural, Vampire	Special	2	7.93	
63	Adventure, Comedy, Demons, Fantasy, Magic, Shounen	TV	26	7.93	

#4q Implement data Imputation techniques.

#a, method 1 Imputing manually with 0/Mean/Median value

df = read.csv("anime1.csv",sep = ",")

df$rating[is.na(df$rating)]<-mean(df$rating,na.rm = T)

df

#b. Using Hmisc Library and imputing with Median value

library(Hmisc)

install.packages(Hmisc)

```
df = read.csv("anime1.csv",sep = ",")

impute(df$rating,median)


#Impute with a specific Constant value

impute(df$episodes,1)




#c. Impute the entire dataset:

df = read.csv("anime1.csv",sep = ",")

all_column_median <- apply(df,2,median,na.rm=TRUE)


for(i in colnames(df))

  df[,i][is.na(df[,i])]<-all_column_median[i]


df
```

OUTPUT:-

```
122 6.680000   14498
123 6.680000    4770
124 6.680000    7539
125 6.670000    1043
126 7.518541   12517
127 6.660000    3447
128 6.670000    4379
129 6.650000    6379
130 7.518541   13702
131 6.640000    4079
132 6.630000    8541
133 6.610000   12499
134 6.610000    3088
135 6.590000    2213
136 6.580000    3786
137 6.570000    2535
138 6.570000    3365
139 6.570000    3571
140 6.570000   13040
141 6.560000    2865
142 6.560000    1358
 [ reached 'max' / getOption("max.print") -- omitted 55 rows ]
>
```

```
> #b. Using Hmisc Library and imputing with Median value
> library(Hmisc)
Loading required package: survival
Loading required package: Formula

Attaching package: 'Hmisc'

The following objects are masked from 'package:base':

    format.pval, units

Warning messages:
1: package 'Hmisc' was built under R version 4.0.5
2: package 'Formula' was built under R version 4.0.3
> install.packages(Hmisc)
Error in install.packages : object 'Hmisc' not found
> df = read.csv("anime1.csv",sep = ",")
> impute(df$rating,median)
    1     2     3     4     5     6     7     8     9    10    11    12    13    14    15    16    17
 9.37  9.26  9.25  9.17  9.16  9.15  9.13  9.11  9.10  9.11  9.06  9.05  9.04  8.98  8.93  8.93  8.92
   18    19    20    21    22    23    24    25    26    27    28    29    30    31    32    33    34
 8.88  8.84  8.83  8.83  8.83  8.82  8.82  8.81  8.81  7.95  7.95  7.94  7.94 7.40*  7.94  7.94  7.94
   35    36    37    38    39    40    41    42    43    44    45    46    47    48    49    50    51
 7.94  7.94  7.94  7.94  7.94  7.94  7.94  7.94  7.94 7.40*  7.93  7.93  7.93  7.93  7.93 7.40*  7.94
   52    53    54    55    56    57    58    59    60    61    62    63    64    65    66    67    68
7.40*  7.93  7.93  7.93  7.93 7.40*  7.93  7.93  7.93  7.93  7.93  7.93  7.93  7.93  7.93 7.40*  7.94
   69    70    71    72    73    74    75    76    77    78    79    80    81    82    83    84    85
 7.91  7.71  7.70  7.66  7.52  7.46  7.43  7.40  7.34  7.33  7.32  7.23  7.23  7.20  7.18  7.21  7.17
   86    87    88    89    90    91    92    93    94    95    96    97    98    99   100   101   102
 7.16  7.14  7.14  7.13  7.10 7.40*  7.05  7.05  7.05  7.04  7.04  7.04  7.04  7.02  6.99  6.97  6.94
  103   104   105   106   107   108   109   110   111   112   113   114   115   116   117   118   119
 6.94  6.93  6.92  6.90  6.88  6.87  6.86  6.79  6.79  6.78  6.78  6.78  6.78  6.75  6.75  6.72  6.71
  120   121   122   123   124   125   126   127   128   129   130   131   132   133   134   135   136
 6.70  6.70  6.68  6.68  6.68  6.67 7.40*  6.66  6.67  6.65 7.40*  6.64  6.63  6.61  6.61  6.59  6.58
  137   138   139   140   141   142   143   144   145   146   147   148   149   150   151   152   153
 6.57  6.57  6.57  6.57  6.56  6.56  6.55  6.52  6.49  6.49  6.47  6.45  6.43  6.40  6.25 7.40*  8.12
  154   155   156   157   158   159   160   161   162   163   164   165   166   167   168   169   170
 7.76  7.73  7.65  7.59  7.57  7.56  7.54  7.51  7.49  7.47  7.47  7.46  7.46  7.44  7.43  7.43  7.42
  171   172   173   174   175   176   177   178   179   180   181   182   183   184   185   186   187
 7.42  7.42  7.41  7.41  7.40  7.39 7.40*  7.39  7.38  7.37  7.34  7.34  7.33  7.33  7.33  7.32  7.29
  188   189   190   191   192   193   194   195   196   197
 7.27  7.27  7.26  7.25  7.25  7.23 7.40*  7.20  7.18  7.15
```


```
 7.27  7.27  7.26  7.25  7.25  7.23 7.40*  7.20  7.18  7.15
```


```
>
> #Impute with a specific Constant value
> impute(df$episodes,1)
    1     2     3     4     5     6     7     8     9    10    11    12    13    14    15    16    17
    1    64    51    24    51    10   148   110     1    1*    24     1   201    25    25     1    22
   18    19    20    21    22    23    24    25    26    27    28    29    30    31    32    33    34
   10     1    25    75     4    26    12     1     1     1     1     1     6     1     1     1    13
   35    36    37    38    39    40    41    42    43    44    45    46    47    48    49    50    51
    1     2     1    26     8     1    1*     4    12     2    23    12    12    12     1     1     1
   52    53    54    55    56    57    58    59    60    61    62    63    64    65    66    67    68
    2     3   358   155     1    50     1    12     2    12     2    26     2    1*     1    26     4
   69    70    71    72    73    74    75    76    77    78    79    80    81    82    83    84    85
   47     1     4     1    93     1   276     1     1    1*     1    1*   191   192     1    18     2
   86    87    88    89    90    91    92    93    94    95    96    97    98    99   100   101   102
    1     1     1     1     1     1     1     2     1    14     1     1    1*     1    16     1     1
  103   104   105   106   107   108   109   110   111   112   113   114   115   116   117   118   119
    1     1     1     1     1     1     1     1     1    84    24     1     1     1     1     1     1
  120   121   122   123   124   125   126   127   128   129   130   131   132   133   134   135   136
    1     2     1     2     1     1     1     1     2     1     1     3     1    20     1     1     1
  137   138   139   140   141   142   143   144   145   146   147   148   149   150   151   152   153
    1     1     1     1     1     1     2     1     1     1     1     1     3     1     6     1     1
  154   155   156   157   158   159   160   161   162   163   164   165   166   167   168   169   170
 1787     1     1    1*     1     1     1     1    26     1     1     1     1     1     1     1     1
  171   172   173   174   175   176   177   178   179   180   181   182   183   184   185   186   187
   1*     1     1     1     1     1     1     1     1     1     1     1     1     1     1    1*     1
  188   189   190   191   192   193   194   195   196   197
    1     1     1     1     1     1     1     1     1     1
> #c. Impute the entire dataset:
> df = read.csv("anime1.csv",sep = ",")
> all_column_median <- apply(df,2,median,na.rm=TRUE)
Warning message:
```

```
> for(i in colnames(df))
+   df[,i][is.na(df[,i])]<-all_column_median[i]
>
> df
    anime_id
1      32281
2       5114
3      28977
4       9253
5       9969
6      32935
7      11061
8        820
9      15335
10     15417
11      4181
12     28851
13       918
14      2904
15     28891
16       199
17     23273
18     24701
19     12355
20      1575
21       263
22        44
23         1
24     30276
25       164
26      7311
27       543
28     23225
29      9252
30     12893
31      1505
32      4447
33       317
34     22265
35     13117
36      9563
37     16904
```

R 4.0.2 · ~/

```
137    11853
138     5844
139     7550
140     1527
141    21695
142    29419
                                                                   name
1                                                         Kimi no Na wa.
2                                          Fullmetal Alchemist: Brotherhood
3                                                               GintamaÂ°
4                                                             Steins;Gate
5                                                            Gintama&#039;
6                    Haikyuu!!: Karasuno Koukou VS Shiratorizawa Gakuen Koukou
7                                                     Hunter x Hunter (2011)
8                                                      Ginga Eiyuu Densetsu
9                       Gintama Movie: Kanketsu-hen - Yorozuya yo Eien Nare
10                                               Gintama&#039;: Enchousen
11                                                    Clannad: After Story
12                                                         Koe no Katachi
13                                                                Gintama
14                                          Code Geass: Hangyaku no Lelouch R2
15                                                  Haikyuu!! Second Season
16                                             Sen to Chihiro no Kamikakushi
17                                                  Shigatsu wa Kimi no Uso
18                                             Mushishi Zoku Shou 2nd Season
19                                              Ookami Kodomo no Ame to Yuki
20                                             Code Geass: Hangyaku no Lelouch
21                                                          Hajime no Ippo
22                      Rurouni Kenshin: Meiji Kenkaku Romantan - Tsuioku-hen
23                                                            Cowboy Bebop
24                                                           One Punch Man
25                                                           Mononoke Hime
26                                              Suzumiya Haruhi no Shoushitsu
27                                                   Vampire Hunter D (2000)
28                                                  Yuru Yuri Nachuyachumi!
29                                              Break Blade 3: Kyoujin no Ato
30                                         Danshi Koukousei no Nichijou Specials
31                       Detective Conan Movie 09: Strategy Above the Depths
32                               Detective Conan Movie 12: Full Score of Fear
33                                        Final Fantasy VII: Advent Children
34                                                     Free!: Eternal Summer
35                                               Hakuouki Movie 1: Kyoto Ranbu
```

58	Nodame Cantabile Finale Special
59	Paradise Kiss
60	Saint Seiya: The Hades Chapter Sanctuary - Yomigaerishi Gold Saint-tachi no Shinwa
61	Saraiya Goyou
62	Shiki Specials
63	Slayers Try
64	To LOVE-Ru Darkness 2nd Specials
65	Transformers the Movie
66	Uchuu Senkan Yamato 2199: Hoshimeguru Hakobune
67	Wolf's Rain
68	Pokemon: The Origin
69	Pokemon XY&Z
70	Pokemon Black and White 2: Introduction Movie
71	Pokemon XY: Mega Evolution
72	Pokemon: Mewtwo no Gyakushuu
73	Pokemon XY
74	Pokemon: Maboroshi no Pokemon Lugia Bakutan
75	Pokemon
76	Pokemon Advanced Generation: Mew to Hadou no Yuusha Lucario
77	Pokemon Diamond & Pearl: Dialga vs. Palkia vs. Darkrai
78	Pokemon 3D Adventure: Mew wo Sagase!
79	Pokemon: Mizu no Miyako no Mamorigami Latias to Latios
80	Pokemon Sun & Moon
81	Pokemon Diamond & Pearl
82	Pokemon Advanced Generation
83	Pokemon 3D Adventure 2: Pikachu no Kaitei Daibouken
84	Pokemon Generations
85	Pokemon Diamond & Pearl Specials
86	Pokemon: Kesshoutou no Teiou Entei
87	Pokemon Diamond & Pearl: Arceus Choukoku no Jikuu e
88	Pokemon: Mewtwo! Ware wa Koko ni Ari
89	Pokemon Diamond & Pearl: Genei no Hasha Zoroark
90	Pokemon Advanced Generation: Rekkuu no Houmonsha Deoxys
91	Pokemon Diamond & Pearl: Giratina to Sora no Hanataba Sheimi
92	Pokemon the Movie XY&Z: Volcanion to Karakuri no Magiana
93	Pokemon XY&Z Specials
94	Pokemon: Celebi Toki wo Koeta Deai
95	Pokemon Best Wishes! Season 2: Episode N
96	Pokemon Crystal: Raikou Ikazuchi no Densetsu
97	Pokemon: Pikachu to Eevee Friends
98	Pokemon Omega Ruby & Alpha Sapphire: Mega Special Animation
99	Pokemon Advanced Generation: Pokemon Ranger to Umi no Ouji Manaphy
100	Pokemon Housoukyoku

141	Pokemon XY SP: Road to Kalos				
142	Pokemon XY: New Year's Eve 2014 Super Mega Special				
		genre	type	episodes	rating
1		Drama, Romance, School, Supernatural	Movie	1	9.37
2		Action, Adventure, Drama, Fantasy, Magic, Military, Shounen	TV	64	9.26
3		Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen	TV	51	9.25
4		Sci-Fi, Thriller	TV	24	9.17
5		Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen	TV	51	9.16
6		Comedy, Drama, School, Shounen, Sports	TV	10	9.15
7		Action, Adventure, Shounen, Super Power	TV	148	9.13
8		Drama, Military, Sci-Fi, Space	OVA	110	9.11
9		Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen	Movie	1	9.1
10		Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen	TV	<NA>	9.11
11		Drama, Fantasy, Romance, Slice of Life, Supernatural	TV	24	9.06
12		Drama, School, Shounen	Movie	1	9.05
13		Action, Comedy, Historical, Parody, Samurai, Sci-Fi, Shounen	TV	201	9.04
14		Action, Drama, Mecha, Military, Sci-Fi, Super Power	TV	25	8.98
15		Comedy, Drama, School, Shounen, Sports	TV	25	8.93
16		Adventure, Drama, Supernatural	Movie	1	8.93
17		Drama, Music, Romance, School, Shounen	TV	22	8.92
18	Adventure, Fantasy, Historical, Mystery, Seinen, Slice of Life, Supernatural		TV	10	8.88
19		Fantasy, Slice of Life	Movie	1	8.84
20		Action, Mecha, Military, School, Sci-Fi, Super Power	TV	25	8.83
21		Comedy, Drama, Shounen, Sports	TV	75	8.83
22		Action, Drama, Historical, Martial Arts, Romance, Samurai	OVA	4	8.83
23		Action, Adventure, Comedy, Drama, Sci-Fi, Space	TV	26	8.82
24		Action, Comedy, Parody, Sci-Fi, Seinen, Super Power, Supernatural	TV	12	8.82
25		Action, Adventure, Fantasy	Movie	1	8.81
26		Comedy, Mystery, Romance, School, Sci-Fi, Supernatural	Movie	1	8.81
27		Action, Drama, Fantasy, Horror, Romance, Sci-Fi, Vampire	Movie	1	7.95
28		Comedy, Shoujo Ai, Slice of Life	OVA	1	7.95
29		Action, Fantasy, Mecha, Military, Shounen	Movie	1	7.94
30		Comedy, School, Shounen, Slice of Life	Special	6	7.94
31		Adventure, Comedy, Mystery, Police, Shounen	Movie	1	7.40
32		Adventure, Comedy, Mystery, Police, Shounen	Movie	1	7.94
33		Action, Fantasy, Super Power	Movie	1	7.94
34		Comedy, School, Slice of Life, Sports	TV	13	7.94
35		Action, Drama, Historical, Josei, Samurai, Supernatural	Movie	1	7.94
36		Comedy, School, Slice of Life	Special	2	7.94
37		Action, Super Power, Supernatural	Movie	1	7.94
38		Action, Adventure, Sci-Fi	TV	26	7.94
39		Comedy, Drama, Romance, School, Slice of Life, Supernatural	Special	8	7.94
40		Action, Drama, Mecha, Military, Sci-Fi, Space	Movie	1	7.94

101		Adventure, Fantasy, Kids	Movie	1	6.97
102		Adventure, Comedy, Drama, Fantasy, Kids	Movie	1	6.94
103		Adventure, Fantasy, Kids	Movie	1	6.94
104		Adventure, Comedy, Drama, Fantasy, Kids	Movie	1	6.93
105		Adventure, Comedy, Drama, Fantasy, Kids	Movie	1	6.92
106		Action, Adventure, Comedy, Fantasy, Kids	Special	1	6.9
107		Adventure, Fantasy, Kids	Special	1	6.88
108		Adventure, Fantasy, Kids	Special	1	6.87
109		Comedy, Fantasy, Kids	Movie	1	6.86
110		Action, Adventure, Comedy, Fantasy, Kids	Special	1	6.79
111		Adventure, Comedy, Fantasy, Kids	Movie	1	6.79
112		Action, Adventure, Comedy, Fantasy, Kids	TV	84	6.78
113		Action, Adventure, Comedy, Fantasy, Kids	TV	24	6.78
114		Adventure, Fantasy	Special	1	6.78
115		Adventure, Comedy, Fantasy, Kids	Special	1	6.78
116		Adventure, Fantasy, Kids	Movie	1	6.75
117		Fantasy, Kids	Movie	1	6.75
118		Comedy, Fantasy, Kids	Movie	1	6.72
119		Adventure, Comedy, Fantasy, Kids	Movie	1	6.71
120		Adventure, Comedy, Fantasy, Kids, Music	Movie	1	6.7
121		Adventure, Comedy, Fantasy, Kids	OVA	2	6.7
122		Action, Adventure, Comedy, Drama, Fantasy, Kids	Movie	1	6.68
123		Adventure, Comedy, Fantasy, Kids	Special	2	6.68
124		Adventure, Comedy, Fantasy, Kids	Movie	1	6.68
125		Action, Adventure, Fantasy, Kids	Special	1	6.67
126		Action, Adventure, Comedy, Fantasy, Kids	Movie	1	7.40
127		Adventure, Comedy, Fantasy, Kids	Special	1	6.66
128		Adventure, Comedy, Fantasy, Kids	OVA	2	6.67
129		Adventure, Comedy, Fantasy, Kids	Special	1	6.65
130		Adventure, Comedy, Fantasy, Kids	Movie	1	7.40
131		Adventure, Comedy, Fantasy, Kids	OVA	3	6.64
132		Adventure, Fantasy	Special	1	6.63
133		Action, Adventure, Comedy, Fantasy, Kids	TV	20	6.61
134		Adventure, Comedy, Fantasy, Kids	Special	1	6.61
135		Adventure, Comedy, Fantasy, Kids	Movie	1	6.59
136		Adventure, Comedy, Fantasy, Kids	Special	1	6.58
137		Adventure, Comedy, Fantasy, Kids	Special	1	6.57
138		Adventure, Comedy, Fantasy, Kids	Special	1	6.57
139		Adventure, Comedy, Fantasy, Kids	Special	1	6.57
140		Adventure, Comedy, Fantasy, Kids	Special	1	6.57
141		Action, Adventure, Comedy, Fantasy, Kids	Special	1	6.56
142		Action, Adventure, Comedy, Fantasy, Kids	Special	1	6.56

	members
1	200630
2	793665
3	114262
4	673572
5	151266
6	93351
7	425855
8	80679
9	72534
10	81109
11	456749
12	102733
13	336376
14	572888
15	179342
16	466254
17	416397
18	75894
19	226193
20	715151
21	157670
22	10227
23	486824
24	552458
25	339556
26	240297
27	68229
28	28339
29	42653
30	49891
31	20347
32	19290
33	138659
34	150596
35	12076
36	10227
37	98549
38	104193
39	26709
40	35711
41	533578

```
102   17120
103   10227
104   10227
105   15377
106    3395
107    5719
108    4146
109   19960
110    2935
111   22352
112   33730
113   19603
114    6671
115    6907
116    9290
117    4578
118    5846
119   10143
120    3937
121    8135
122   14498
123    4770
124    7539
125    1043
126   12517
127    3447
128    4379
129    6379
130   13702
131    4079
132    8541
133   12499
134    3088
135    2213
136    3786
137    2535
138    3365
139    3571
140   13040
141    2865
142    1358
 [ reached 'max' / getOption("max.print") -- omitted 55 rows ]
```

#5q

Visualization in R

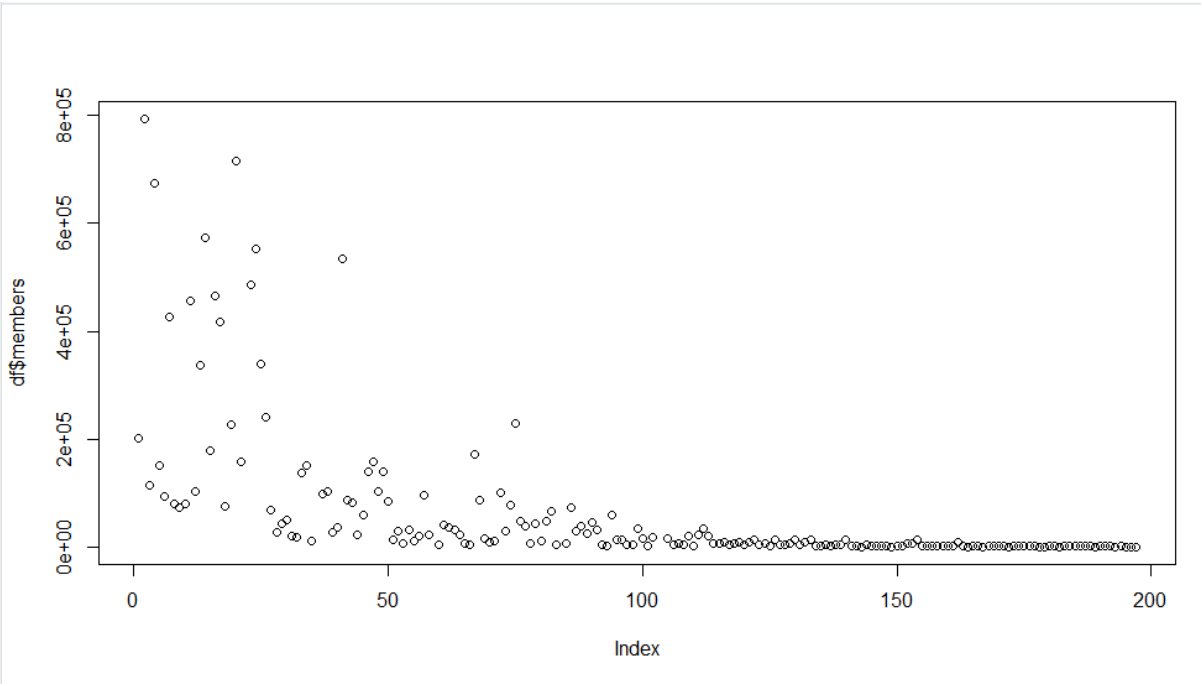
```
library("graphics")
df = read.csv("anime1.csv",sep = ",")
plot(df$members)
```

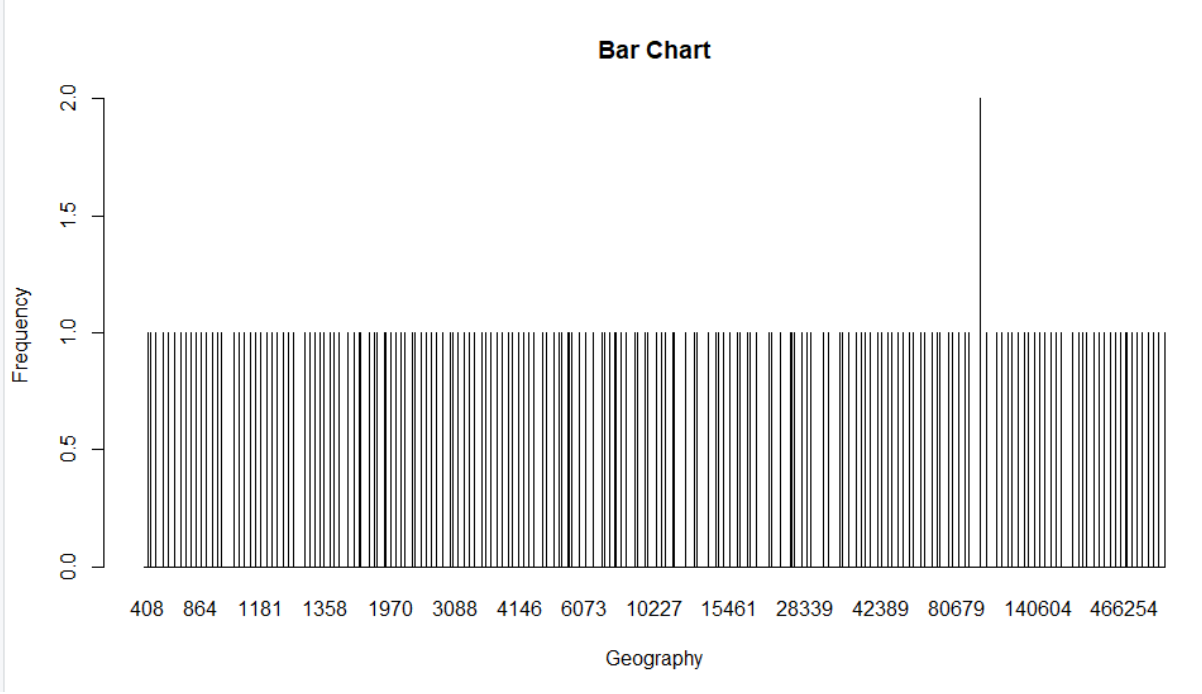
```
#bar plot
table1 <- table(df$rating, df$members, dnn=c("Exit Count", "Geography"))
barplot(table1, ylab="Frequency", xlab="Geography", main="Bar Chart",
      col=c("turquoise4", "turquoise2" ), beside=TRUE, width=.2)
```

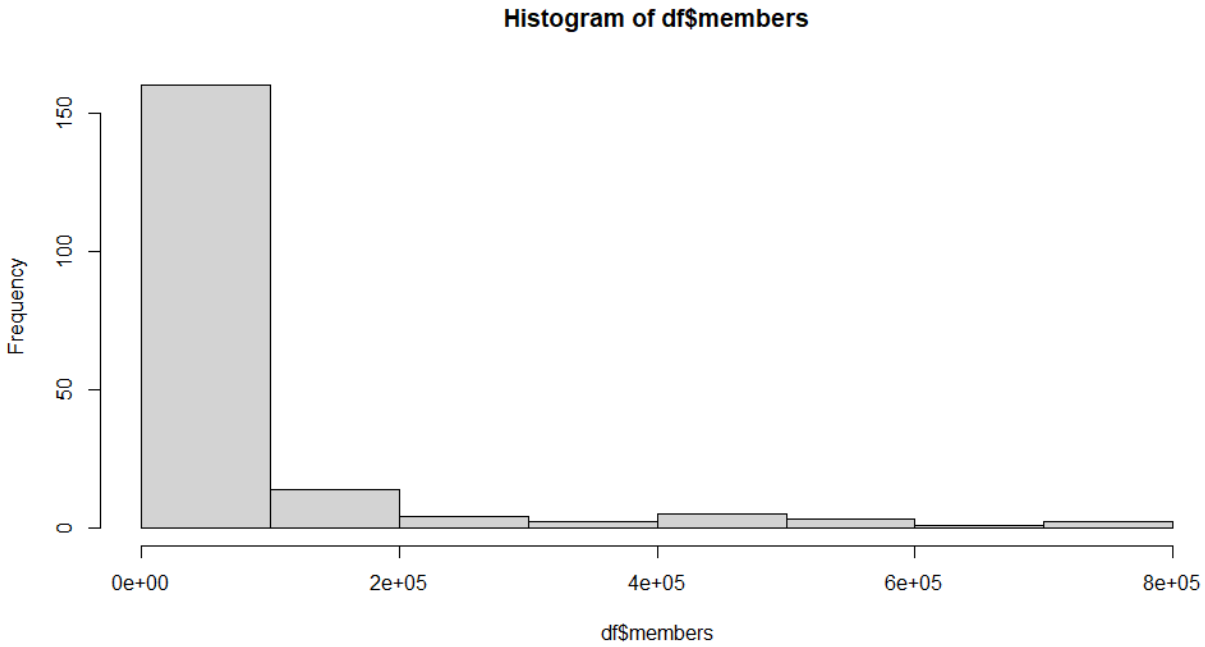
```
#histogram
hist(df$members)
hist(df$rating, breaks = 5)
hist(df$rating, breaks = 10)
hist(df$rating)


#Box plot
boxplot(df$members)
boxplot(df$rating)



library(lattice)
densityplot(df$rating)



library(ggplot2)
ggplot(df, aes(x = factor(rating))) + geom_bar()
ggplot(df, aes(x = factor(episodes))) + geom_bar()
ggplot(df, aes(x = members)) + geom_bar()
```

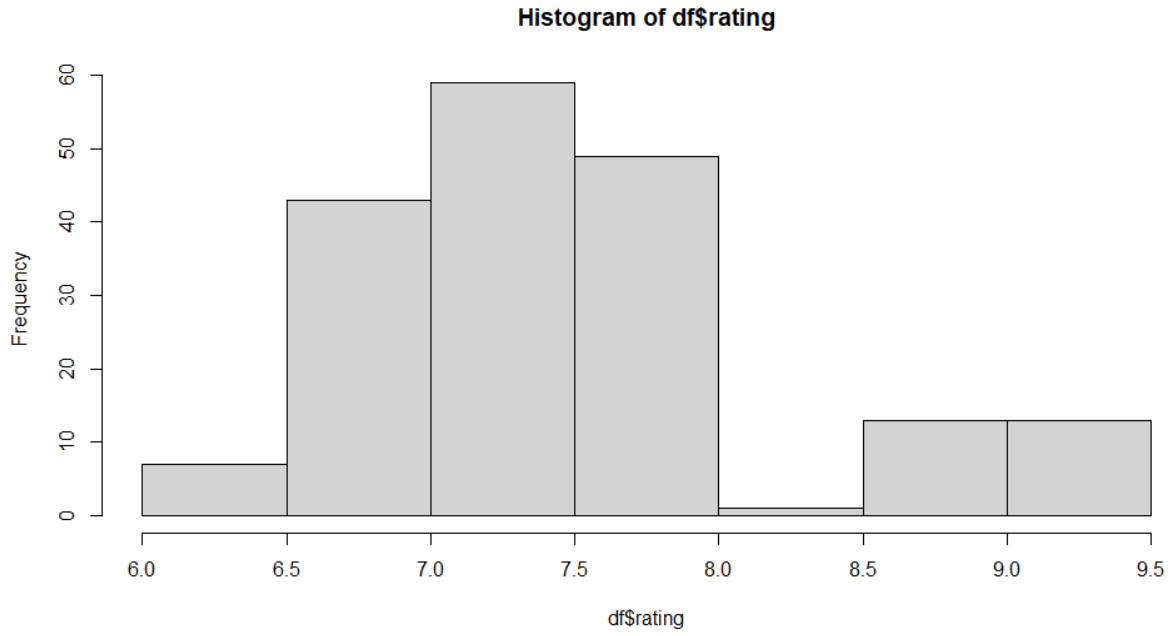
output:-

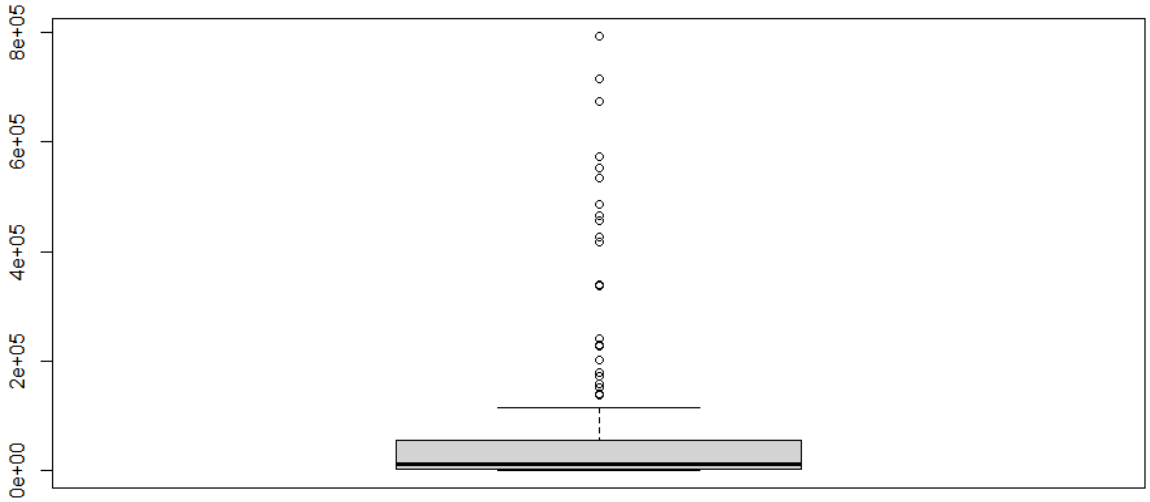
```
> # Visualization in R
>
> library("graphics")
> df = read.csv("anime1.csv",sep = ",")
> plot(df$members)
>
>
> #bar plot
> table1 <- table(df$rating, df$members, dnn=c("Exit Count", "Geography"))
> barplot(table1, ylab="Frequency", xlab="Geography", main="Bar Chart",
+         col=c("turquoise4", "turquoise2" ), beside=TRUE, width=.2)
>
> #histogram
> hist(df$members)
> hist(df$rating, breaks = 5)
> hist(df$rating, breaks = 10)
> hist(df$rating)
>
>
> #Box plot
> boxplot(df$members)
> #Box plot
> boxplot(df$members)
>
>
>
>
> library(lattice)
> densityplot(df$rating)
>
>
>
> library(ggplot2)
> ggplot(df, aes(x = factor(rating))) + geom_bar()
> ggplot(df, aes(x = factor(episodes))) + geom_bar()
> ggplot(df, aes(x = members)) + geom_bar()
Warning messages:
1: Removed 3 rows containing non-finite values (stat_count).
> library("graphics")
> df = read.csv("anime1.csv",sep = ",")
> plot(df$members)
>
>
> #bar plot
> table1 <- table(df$rating, df$members, dnn=c("Exit Count", "Geography"))
> barplot(table1, ylab="Frequency", xlab="Geography", main="Bar Chart",
+         col=c("turquoise4", "turquoise2" ), beside=TRUE, width=.2)
>
> #histogram
> hist(df$members)
> hist(df$rating, breaks = 5)
> hist(df$rating, breaks = 10)
> hist(df$rating)
>
>
> #Box plot
> boxplot(df$members)
>
>
>
>
> library(lattice)
> densityplot(df$rating)
>
>
>
> library(ggplot2)
> ggplot(df, aes(x = factor(rating))) + geom_bar()
> ggplot(df, aes(x = factor(episodes))) + geom_bar()
> ggplot(df, aes(x = factor(members))) + geom_bar()
>
```


df$members
0e+00
2e+05
4e+05
6e+05
8e+05
0
50
100
150
200
Index

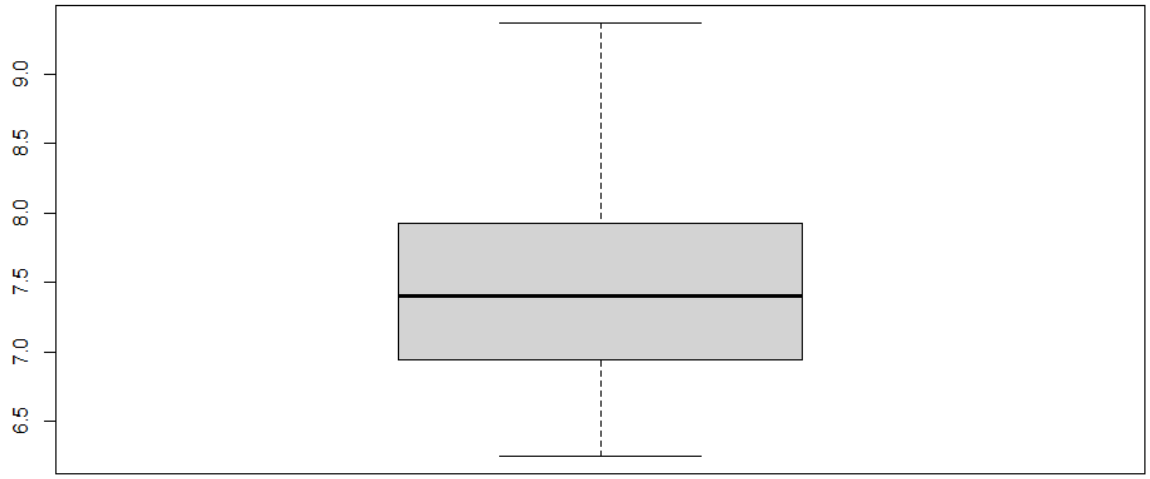

Bar Chart
Frequency
0.0
0.5
1.0
1.5
2.0
408
864
1181
1358
1970
3088
4146
6073
10227
15461
28339
42389
80679
140604
466254
Geography

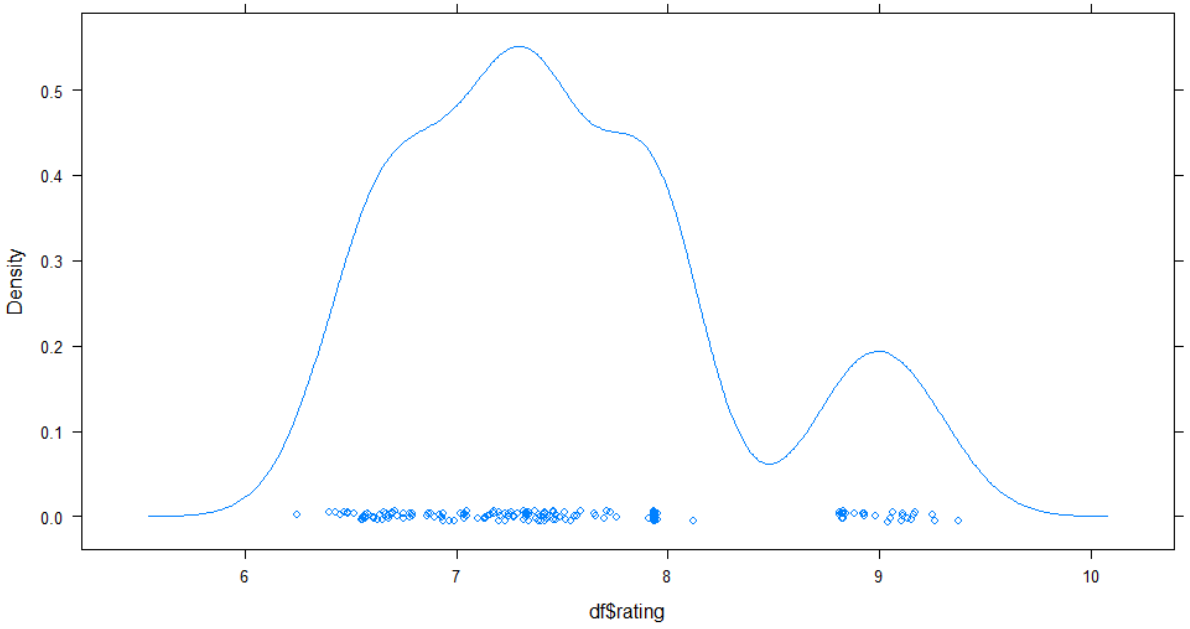

Histogram of df$members
Frequency
0
50
100
150
0e+00
2e+05
4e+05
6e+05
8e+05
df$members

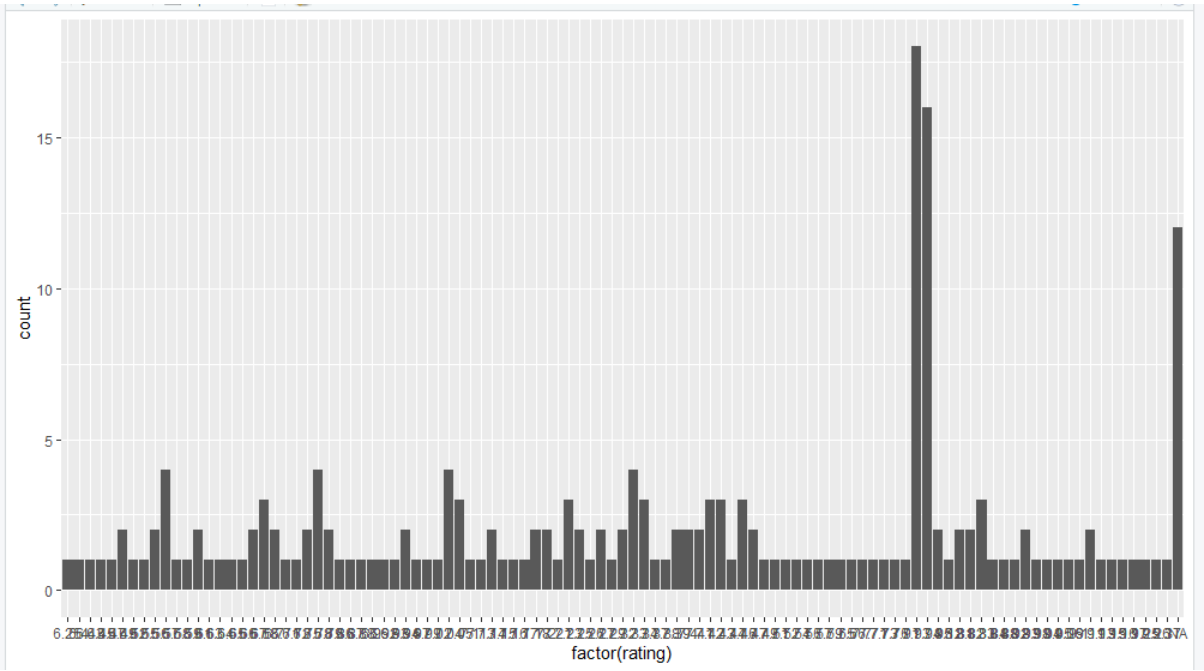

Histogram of df$rating
Frequency
0
10
20
30
40
50
60
6.0
6.5
7.0
7.5
8.0
8.5
9.0
9.5
df$rating

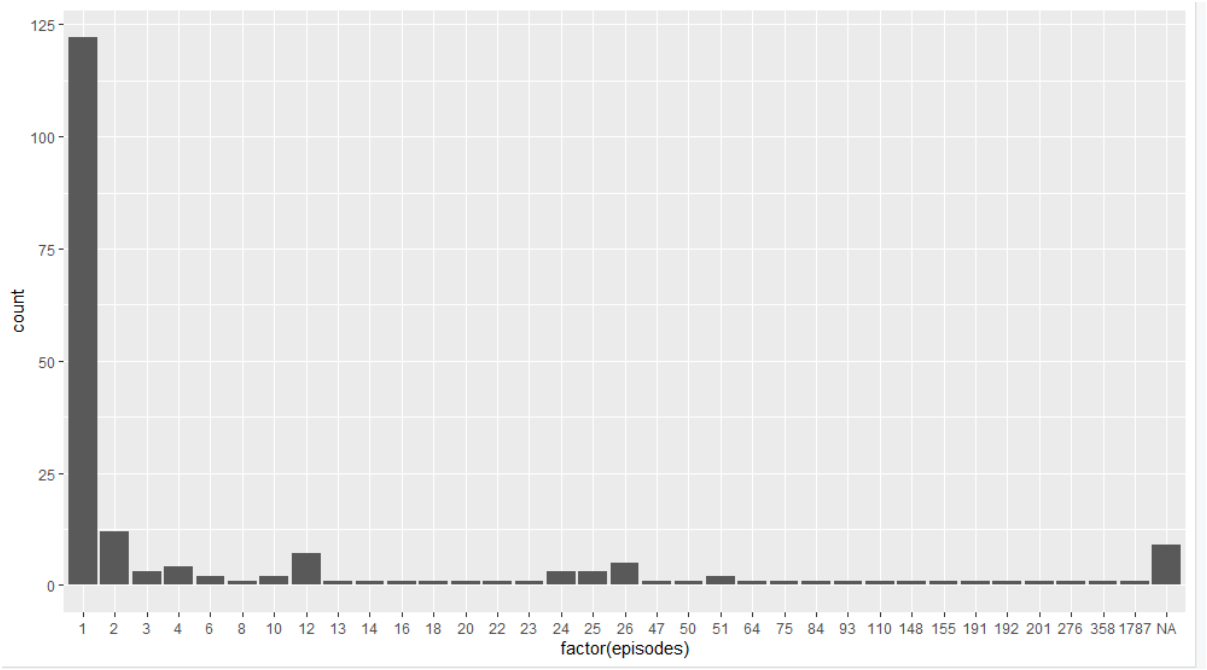


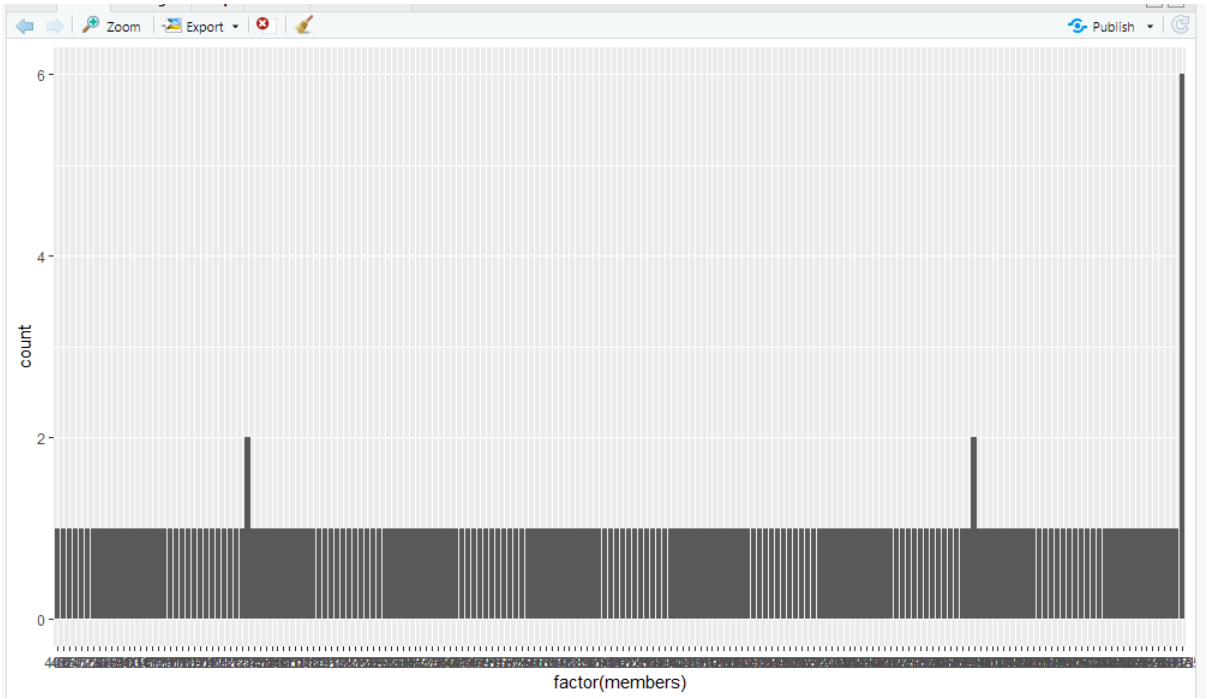
for rating box plot




Density
0.0
0.1
0.2
0.3
0.4
0.5
6
7
8
9
10
df$rating


count
0
5
10
15
factor(rating)


125
100
75
50
25
0
count
1 2 3 4 6 8 10 12 13 14 16 18 20 22 23 24 25 26 47 50 51 64 75 84 93 110 148 155 191 192 201 276 358 1787 NA
factor(episodes)


Zoom
Export
Publish
6
4
2
0
count
factor(members)