Movie Data Analysis Project

This project involves analyzing movie ratings, genres, and runtime data using R. Below is a summary of the steps involved in the project.

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## 1. Installing Necessary Libraries

```r  
install.packages('readr')  
install.packages('dplyr')  
install.packages('ggplot2')  
install.packages('tidyr')  
install.packages('plotly')  
```

## 2. Loading the Necessary Libraries

```r  
library(readr)  
library(dplyr)  
library(ggplot2)  
library(tidyr)  
library(plotly)  
```

## 3. Reading the Data

```r  
ratings <- read\_tsv('raw\_data/title.ratings.tsv')  
basics <- read\_tsv('raw\_data/title.basics.tsv')  
```

## 4. Joining Datasets

```r  
joined\_data <- full\_join(basics, ratings)  
View(joined\_data)  
```

## 5. Exploring the Data

```r  
test <- joined\_data  
```

## 6. Data Cleaning

### 6.1 Counting Missing Values

```r  
sum(is.na(test))  
na\_counts <- lapply(test, function(test) sum(is.na(test)))  
```

### 6.2 Identifying Outliers

```r  
boxplot(test, col = 'lightblue', main = 'Distribution by Column', xlab = 'Variables', ylab = 'Values')  
```

### 6.3 Removing NA Values

```r  
test <- na.omit(test)  
```

### 6.4 Removing Duplicates

```r  
total\_duplicates <- sum(duplicated(test))  
duplicates <- test %>%  
 group\_by(across(everything())) %>%  
 filter(n() > 1) %>%  
 ungroup()  
test <- test[!duplicated(test),]  
sum(duplicated(test))  
```

### 6.5 Cleaning Columns

```r  
cleaned\_v2 <- cleaned\_v1 %>%  
 select(-tconst, -originalTitle, -isAdult, -endYear)  
View(cleaned\_v2)  
```

## 7. Frequency Distribution Analysis

### 7.1 Frequency Table of `titleType`

```r  
View(fdtQl(cleaned\_v2$titleType))  
```

### 7.2 Selecting Movies Only

```r  
only\_movies = filter(cleaned\_v2, titleType == 'movie' | titleType == 'short' | titleType == 'tvMovie')  
```

## 8. Movie Ratings Analysis

### 8.1 Top 100 Movies

```r  
sorted\_by\_num\_votes <- only\_movies %>% arrange(desc(numVotes))  
top\_100\_best\_rated\_movies <- sorted\_by\_num\_votes[1:100, ]  
top\_100\_best\_rated\_movies\_according\_to\_rating <- top\_100\_best\_rated\_movies %>% arrange(desc(averageRating))  
```

### 8.2 Average Rating by Genre

```r  
ggplot(average\_rating\_of\_movies, aes(x=genres, y=avg\_rating, fill=avg\_rating)) + geom\_bar(stat = 'identity') +  
 scale\_fill\_gradient(low = 'blue', high = 'red')  
```

### 8.3 Genre Analysis

```r  
ggplot(genre\_analysis, aes(x = genres, y = avg\_rating, fill = genres)) +  
 geom\_bar(stat = 'identity', show.legend = FALSE)  
```

### 8.4 Average Rating by Genre Over the Years

```r  
plot <- average\_ratings\_by\_genre\_year %>%  
 ggplot(aes(startYear, avg\_rating, color = genres)) +  
 geom\_line() +  
 facet\_wrap(~genres) +  
 theme(legend.position = 'none')  
ggplotly(plot) %>% layout(hovermode = 'x unified')  
```

### 8.5 Correlation of Average Rating and Length Over the Years

```r  
ggplot(genre\_data\_scaled, aes(x = startYear, y = ScaledValue, color = Factor, linetype = Factor)) +  
 geom\_line(aes(group = Factor, genres), size = 1.2) +  
 facet\_wrap(~genres)  
```

### 8.6 Number of Movies Released Per Year

```r  
ggplot(number\_of\_movies\_per\_year, aes(x=startYear, y=count)) +  
 geom\_line() +  
 facet\_wrap(~)  
```

### 8.7 Number of Movies by Genre

```r  
ggplot(number\_of\_movies\_each\_year, aes(x=startYear, y=count)) +  
 geom\_line(aes(group = genres, color = genres), size=0.5) +  
 facet\_wrap(~genres, scales='free\_y')  
```

## 9. Bayesian Rating Analysis

```r  
C <- mean(horror\_movies$rating, na.rm = TRUE)  
m <- 100  
horror\_movies <- horror\_movies %>%  
 mutate(adjusted\_rating = (C \* m + horror\_movies$averageRating \* horror\_movies$numVotes) / (horror\_movies$numVotes + m))  
```

## 10. Genre and Average Rating Correlation

```r  
grouped\_by\_genre$runtimeMinutes <- as.numeric(as.character(grouped\_by\_genre$runtimeMinutes))  
```