```
import pandas as pd


df = pd.read_csv('/content/ps5.csv')


# Display the first few rows of the dataset
print(df.head())
```

```
                                                 url  \
0  https://store.playstation.com/en-us/product/UP...
1  https://store.playstation.com/en-us/product/UP...
2  https://store.playstation.com/en-us/product/UP...
3  https://store.playstation.com/en-us/product/UP...
4  https://store.playstation.com/en-us/product/UP...

                                  id                       publisherName  \
0  UP0101-PPSA19225_00-0159266583099383  Konami Digital Entertainment, Inc.
1  UP2565-PPSA04379_00-0242096879154610         astragon Entertainment GmbH
2  UP4040-PPSA04721_00-HUNDREDHEROESDLX                             505 Games
3  UP4040-PPSA04721_00-EIYUDENHEROESPS5                             505 Games
4  UP9000-PPSA13196_00-STELLARBLADEDDE0      Sony Interactive Entertainment

             releaseDate                                              name  \
0  2024-03-28T04:00:00Z                                       Felix the Cat
1  2024-04-04T15:00:00Z              Construction Simulator - Gold Edition
2  2024-04-21T13:00:00Z  Eiyuden Chronicle: Hundred Heroes - Digital De...
3  2024-04-23T13:00:00Z                  Eiyuden Chronicle: Hundred Heroes
4  2024-04-26T04:00:00Z              Stellar Blade™ Digital Deluxe Edition

   isAgeRestricted                                activeCtaId  \
0            False  PREORDER:BUY_NOW:UP0101-PPSA19225_00-015926658...
1            False  PREORDER:BUY_NOW:UP2565-PPSA04379_00-024209687...
2            False  PREORDER:BUY_NOW:UP4040-PPSA04721_00-HUNDREDHE...
3            False  PREORDER:BUY_NOW:UP4040-PPSA04721_00-EIYUDENHE...
4            False  PREORDER:BUY_NOW:UP9000-PPSA13196_00-STELLARBL...

   starRating/averageRating  starRating/totalRatingsCount
0                      5.00                             1
1                      3.55                          1526
2                      4.79                            29
3                      4.79                            29
4                      0.00                             0
```

```
# Get summary statistics
print(df.describe())
```

```
       starRating/averageRating  starRating/totalRatingsCount
count                2001.000000                  2.001000e+03
mean                    3.934218                  1.364253e+04
std                     0.882803                  2.587326e+05
min                     0.000000                  0.000000e+00
25%                     3.640000                  1.700000e+01
50%                     4.160000                  7.300000e+01
75%                     4.500000                  5.010000e+02
max                     5.000000                  6.661979e+06
```

```
# Get information about the dataset
print(df.info())
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 2001 entries, 0 to 2000
Data columns (total 9 columns):
 #   Column                       Non-Null Count  Dtype  
---  ------                       --------------  -----  
 0   url                          2001 non-null   object 
 1   id                           2001 non-null   object 
 2   publisherName                2000 non-null   object 
 3   releaseDate                  2001 non-null   object 
 4   name                         2001 non-null   object 
 5   isAgeRestricted              2001 non-null   bool   
 6   activeCtaId                  2001 non-null   object 
 7   starRating/averageRating     2001 non-null   float64
 8   starRating/totalRatingsCount  2001 non-null   int64  
dtypes: bool(1), float64(1), int64(1), object(6)
memory usage: 127.1+ KB
None
```

```
# Check for missing values
print(df.isnull().sum())
```

```
url                          0
id                           0
publisherName                1
releaseDate                  0
name                         0
isAgeRestricted              0
activeCtaId                  0
starRating/averageRating     0
```

```
starRating/totalRatingsCount    0
dtype: int64
```

```
# Drop or fill missing values
df = df.dropna()  # or use df.fillna(method='ffill') for forward filling
```

```
# Check for duplicates
df = df.drop_duplicates()
```

```
# Inspect the releaseDate column
print(df['releaseDate'].head())
print(df['releaseDate'].dtype)
```

```
0    2024-03-28T04:00:00Z
1    2024-04-04T15:00:00Z
2    2024-04-21T13:00:00Z
3    2024-04-23T13:00:00Z
4    2024-04-26T04:00:00Z
Name: releaseDate, dtype: object
object
```

```
# Convert releaseDate to datetime
df['releaseDate'] = pd.to_datetime(df['releaseDate'], errors='coerce')

# Check for any conversion issues
print(df['releaseDate'].isnull().sum())  # This will show how many entries could not be converted
```

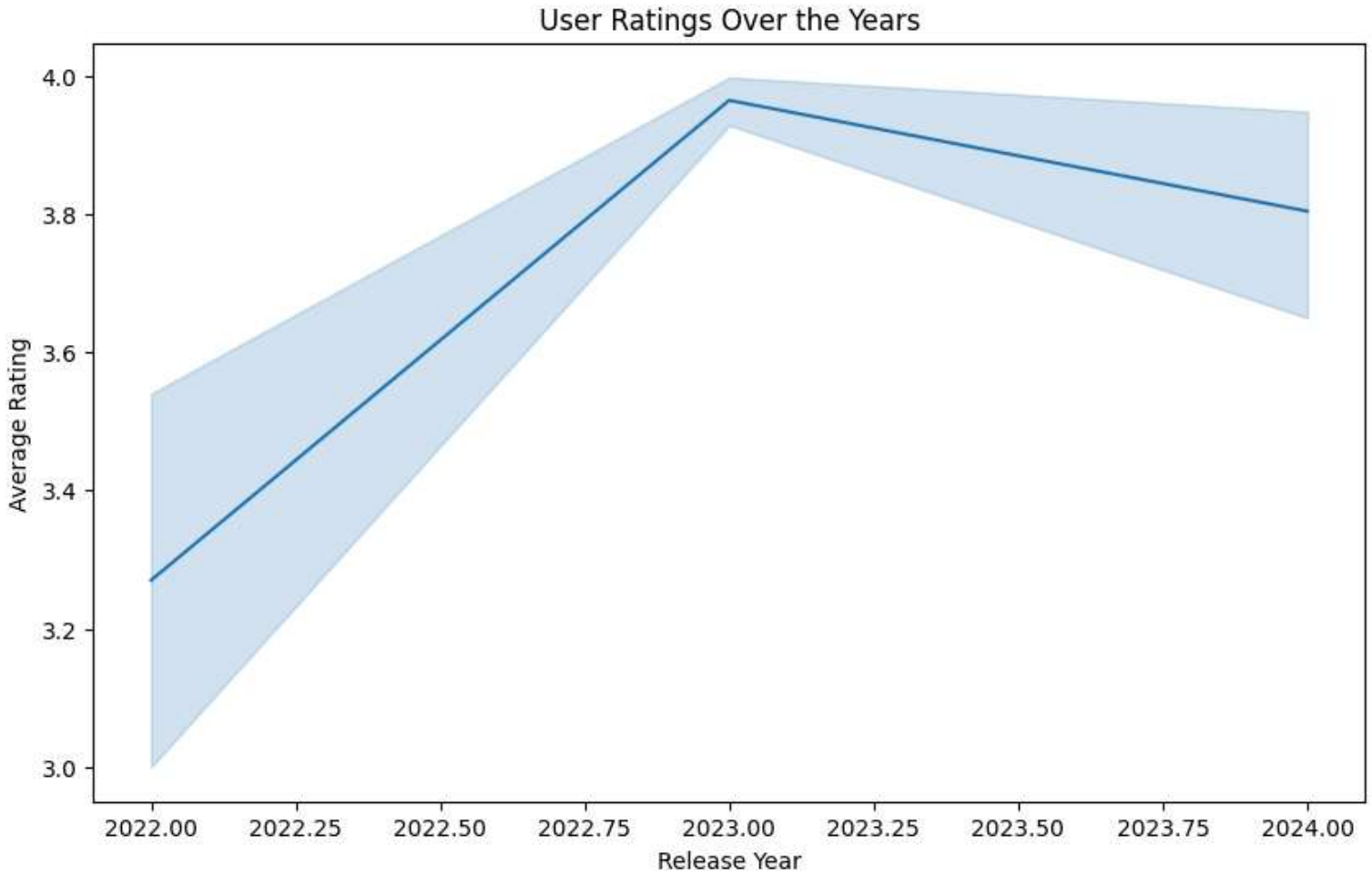
```
0
```

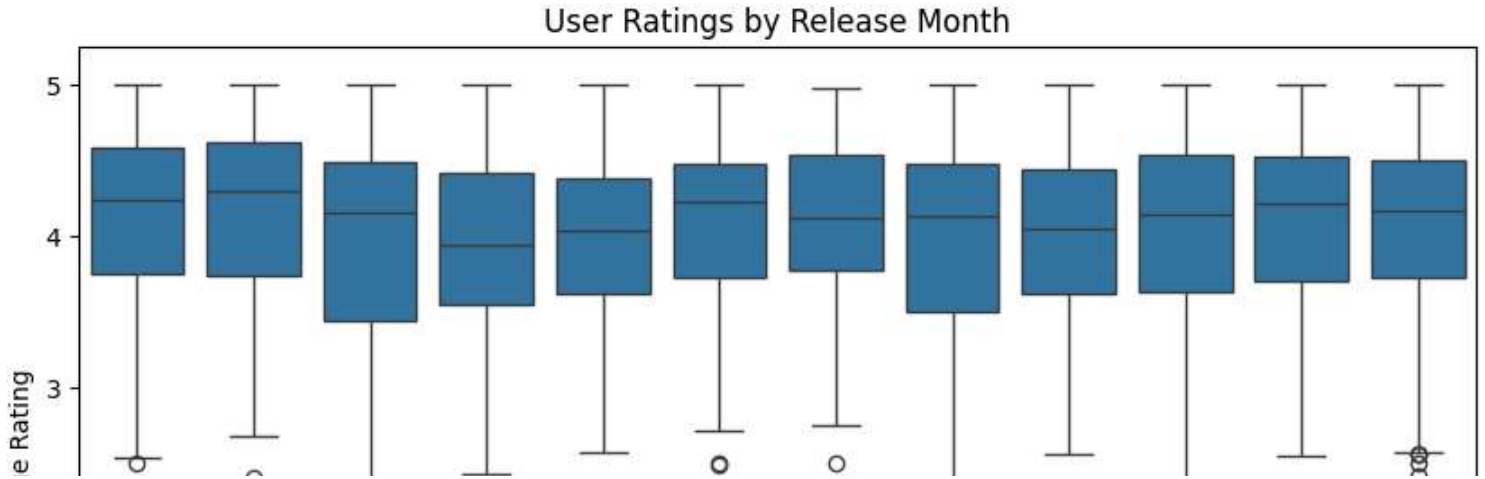
```
# Extract year and month from releaseDate
df['releaseYear'] = df['releaseDate'].dt.year
df['releaseMonth'] = df['releaseDate'].dt.month

# Verify the new columns
print(df[['releaseDate', 'releaseYear', 'releaseMonth']].head())
```

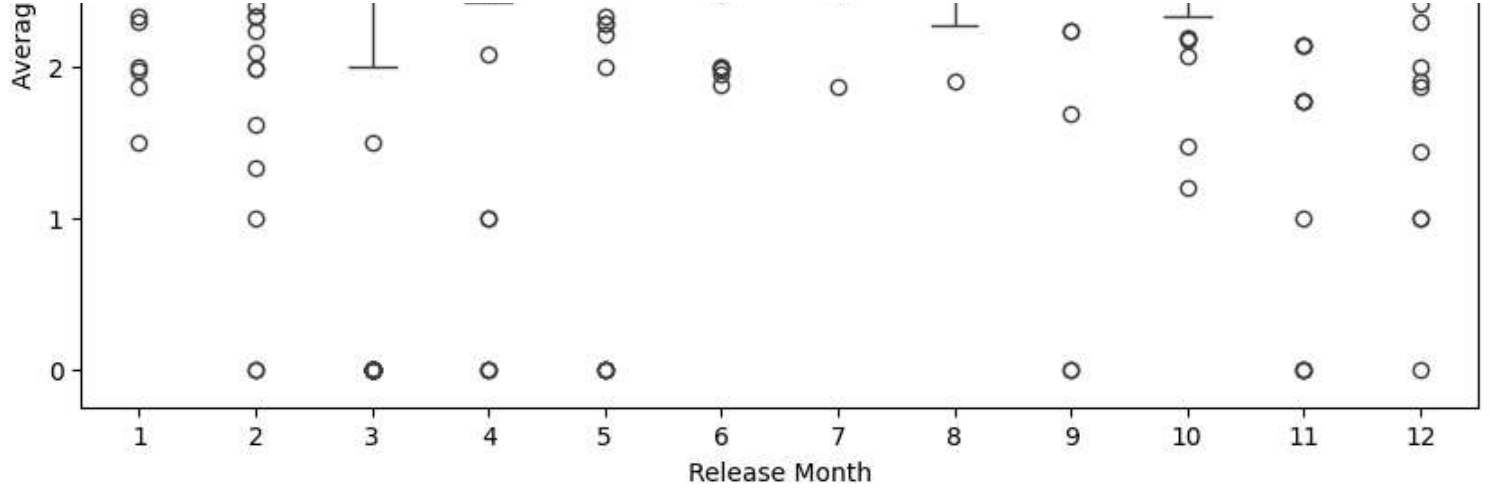
```
                releaseDate  releaseYear  releaseMonth
0 2024-03-28 04:00:00+00:00         2024             3
1 2024-04-04 15:00:00+00:00         2024             4
2 2024-04-21 13:00:00+00:00         2024             4
3 2024-04-23 13:00:00+00:00         2024             4
```

```
     4 2024-04-26 04:00:00+00:00         2024             4
```

```
import seaborn as sns
import matplotlib.pyplot as plt

# Plot user ratings over the years
plt.figure(figsize=(10, 6))
sns.lineplot(x='releaseYear', y='starRating/averageRating', data=df)
plt.title('User Ratings Over the Years')
plt.xlabel('Release Year')
plt.ylabel('Average Rating')
plt.show()

# Distribution of user ratings by release month
plt.figure(figsize=(10, 6))
sns.boxplot(x='releaseMonth', y='starRating/averageRating', data=df)
plt.title('User Ratings by Release Month')
plt.xlabel('Release Month')
plt.ylabel('Average Rating')
plt.show()
```

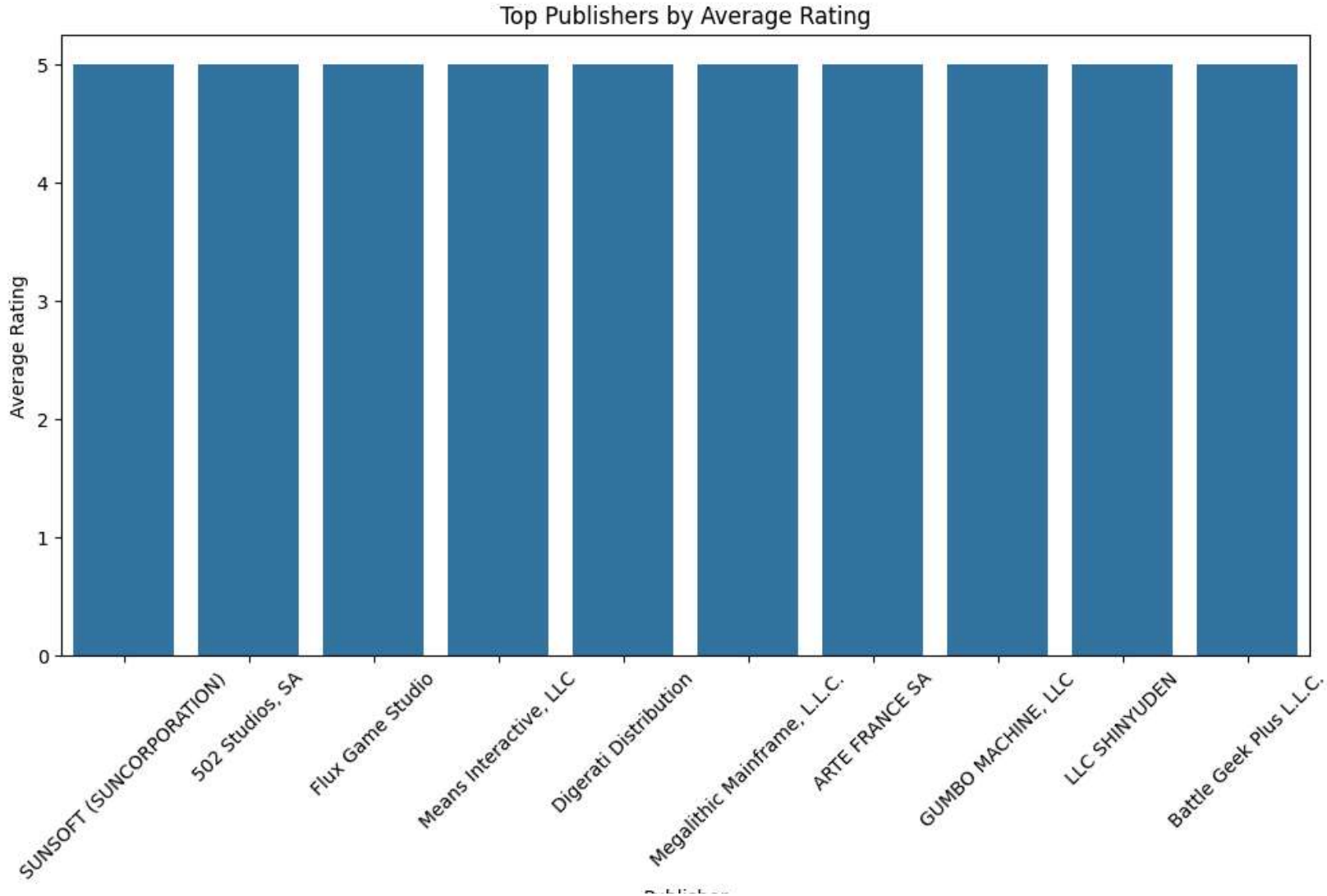

User Ratings Over the Years
Average Rating
4.0
3.8
3.6
3.4
3.2
3.0
2022.00
2022.25
2022.50
2022.75
2023.00
2023.25
2023.50
2023.75
2024.00
Release Year


User Ratings by Release Month
5
4
3



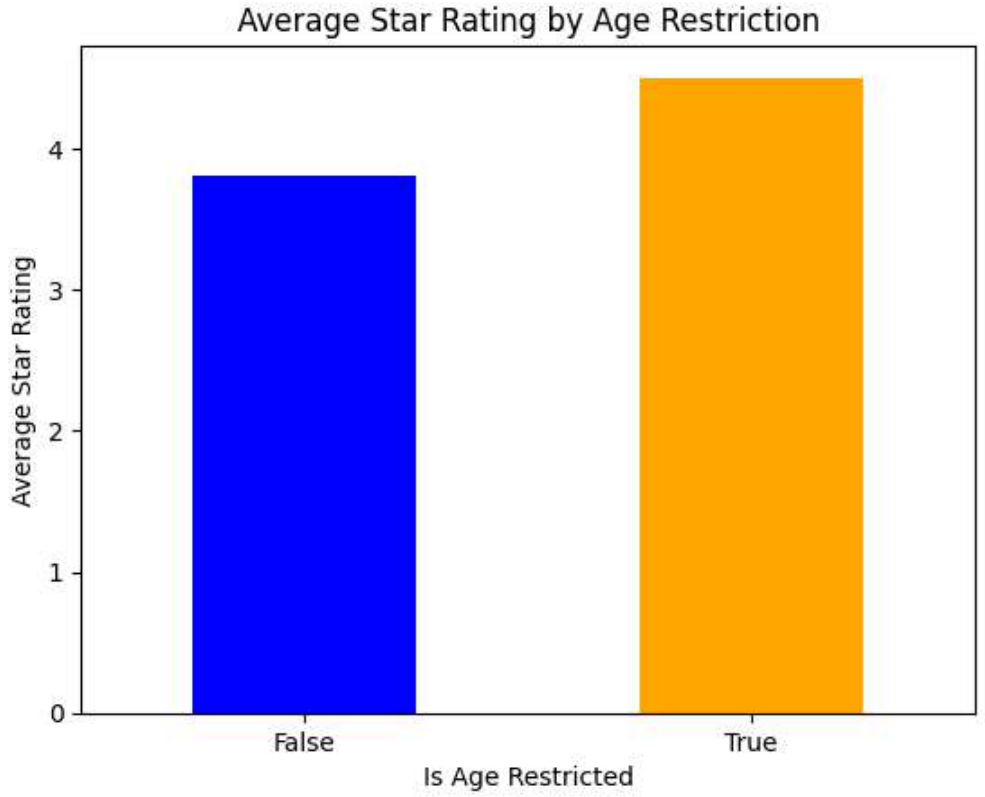

```
# Top publishers by average rating
top_publishers = df.groupby('publisherName')['starRating/averageRating'].mean().sort_values(ascending=False).head(10)
print(top_publishers)

# Plot average ratings for top publishers
plt.figure(figsize=(12, 6))
sns.barplot(x=top_publishers.index, y=top_publishers.values)
plt.title('Top Publishers by Average Rating')
plt.xlabel('Publisher')
plt.ylabel('Average Rating')
plt.xticks(rotation=45)
plt.show()
```

```
publisherName
SUNSOFT (SUNCORPORATION)        5.0
502 Studios, SA                 5.0
Flux Game Studio                5.0
Means Interactive, LLC          5.0
Digerati Distribution           5.0
Megalithic Mainframe, L.L.C.    5.0
ARTE FRANCE SA                  5.0
GUMBO MACHINE, LLC              5.0
LLC SHINYUDEN                   5.0
Battle Geek Plus L.L.C.         5.0
Name: starRating/averageRating, dtype: float64
```



```
import pandas as pd

# Example DataFrame
data = {
    'url': ['http://example.com', 'http://example2.com'],
    'id': ['1', '2'],
    'publisherName': ['Publisher1', 'Unknown'],
    'releaseDate': ['2022-01-01', '2022-02-01'],
    'name': ['Item1', 'Item2'],
    'isAgeRestricted': [True, False],
    'activeCtaId': ['cta1', 'cta2'],
    'starRating/averageRating': [4.5, 3.8],
    'starRating/totalRatingsCount': [100, 50]
}

df = pd.DataFrame(data)

# Average rating by age restriction
age_restrictions = df.groupby('isAgeRestricted')['starRating/averageRating'].mean()
print(age_restrictions)

# Optionally, if you want to visualize the result:
import matplotlib.pyplot as plt

age_restrictions.plot(kind='bar', color=['blue', 'orange'])
plt.xlabel('Is Age Restricted')
plt.ylabel('Average Star Rating')
plt.title('Average Star Rating by Age Restriction')
plt.xticks(ticks=[0, 1], labels=['False', 'True'], rotation=0)
plt.show()
```

```
isAgeRestricted
False    3.8
True     4.5
Name: starRating/averageRating, dtype: float64
```




```
print(df.columns)
```

```
Index(['url', 'id', 'publisherName', 'releaseDate', 'name', 'isAgeRestricted',
       'activeCtaId', 'starRating/averageRating',
       'starRating/totalRatingsCount'],
      dtype='object')
```

```
# Check for string values in features
print(df.select_dtypes(include=['object']).columns)
```

```
Index(['url', 'id', 'publisherName', 'releaseDate', 'name', 'activeCtaId'], dtype='object')
```

```
# Check for string values in target variable
```

```
print(df['starRating/averageRating'].dtype)
```

```
float64
```

```
import joblib
import pandas as pd

# Load the pre-trained model
model = joblib.load('ps5_game_rating_predictor.pkl')

# Example new data with sample values
new_data = {
    'url': ['https://store.playstation.com/en-us/product/UP0101-PPSA19225_00-0159266583099383'],
    'id': ['1'],
    'publisherName': ['Konami Digital Entertainment, Inc.'],  # Sample publisher
    'releaseDate': ['2024-07-20'],  # Sample release date
    'name': ['Sample Game'],  # Sample game name
    'isAgeRestricted': [False],  # Sample age restriction
    'activeCtaId': ['cta1'],  # Sample activeCtaId
    'starRating/totalRatingsCount': [50]  # Sample total ratings count
}

# Convert new data to DataFrame
new_df = pd.DataFrame(new_data)

# Drop non-numeric columns that were not used in training
non_numeric_cols = ['url', 'id', 'publisherName', 'name', 'releaseDate', 'activeCtaId']
```