Google Play Store Output:

**Display all columns and rows.**

**1️⃣ Dataset Overview**

* **Total Rows:** **10,841** (Each row represents an app on the Play Store)
* **Total Columns:** **13** (Each column represents different attributes of the apps)

**Column Breakdown:**

| **Column Name** | **Description** |
| --- | --- |
| **App** | Name of the application |
| **Category** | The app's category (e.g., GAME, BUSINESS, TOOLS) |
| **Rating** | Average user rating (out of 5) |
| **Reviews** | Total number of reviews received |
| **Size** | Size of the app (in MB, KB, or "Varies with device") |
| **Installs** | Total number of downloads |
| **Type** | Free or Paid |
| **Price** | Price of the app (if paid) |
| **Content Rating** | Suitable audience (Everyone, Teen, Mature, etc.) |
| **Genres** | App subcategories |
| **Last Updated** | Date when the app was last updated |
| **Current Ver** | Latest version number |
| **Android Ver** | Minimum Android version required |

**2️⃣ Missing Values Analysis**

* **9367 non-null values in the "Rating" column** → **Some apps do not have ratings.**
* **10840 non-null values in "Type" & "Content Rating"** → **1 missing value each.**
* **10833 non-null values in "Current Ver"** → **8 missing values.**
* **10838 non-null values in "Android Ver"** → **3 missing values.**

These missing values could be due to incomplete data or removed apps.

**3️⃣ Top 10 Categories by Number of Apps**

This section lists the **most common app categories**:

| **Rank** | **Category** | **Number of Apps** |
| --- | --- | --- |
| 1️ | **FAMILY** | **1,943** |
| 2️ | **GAME** | **1,121** |
| 3️ | **TOOLS** | **843** |
| 4️ | **BUSINESS** | **427** |
| 5️ | **MEDICAL** | **408** |
| 6️ | **PRODUCTIVITY** | **407** |
| 7️ | **PERSONALIZATION** | **388** |
| 8️⃣ | **LIFESTYLE** | **373** |
| 9️ | **COMMUNICATION** | **366** |
| 10 | **FINANCE** | **360** |

**Insights:**

* **"FAMILY"** apps dominate the Play Store, likely including educational & entertainment apps for kids.
* **"GAME"** apps are the second most common, showing gaming’s popularity.
* **"TOOLS"** (e.g., file managers, calculators) are also highly available.

**Top 10 Categories by Total Installs**

This section shows **which categories have the highest total downloads**:

| **Rank** | **Category** | **Total Installs** |
| --- | --- | --- |
| 1️ | **GAME** | **31.5 billion** |
| 2️ | **COMMUNICATION** | **24.1 billion** |
| 3️ | **SOCIAL** | **12.5 billion** |
| 4️ | **PRODUCTIVITY** | **12.4 billion** |
| 5️ | **TOOLS** | **11.4 billion** |
| 6️ | **FAMILY** | **10.0 billion** |
| 7️ | **PHOTOGRAPHY** | **9.7 billion** |
| 8️ | **TRAVEL\_AND\_LOCAL** | **6.3 billion** |
| 9️ | **VIDEO\_PLAYERS** | **6.2 billion** |
| 10 | **NEWS\_AND\_MAGAZINES** | **5.3 billion** |

**Insights:**

* **Gaming dominates downloads** (Most likely due to big games like PUBG, Candy Crush, etc.).
* **Communication apps** (WhatsApp, Messenger, Telegram) have massive installs.
* **Social apps** (Facebook, Instagram) also rank high.
* **Utility apps** (TOOLS, PRODUCTIVITY) have high installs due to essential functionalities.

**Top 10 Categories by Total Reviews**

This section shows **which categories have the most user engagement** based on **total reviews received**:

| **Rank** | **Category** | **Total Reviews** |
| --- | --- | --- |
| 1️ | **GAME** | **1.41 billion** |
| 2️ | **COMMUNICATION** | **601 million** |
| 3️ | **SOCIAL** | **533 million** |
| 4️ | **FAMILY** | **396 million** |
| 5️ | **TOOLS** | **273 million** |
| 6️ | **PHOTOGRAPHY** | **204 million** |
| 7️ | **VIDEO\_PLAYERS** | **110 million** |
| 8️ | **PRODUCTIVITY** | **102 million** |
| 9️ | **SHOPPING** | **94 million** |
| 10 | **PERSONALIZATION** | **75 million** |

**Insights:**

* **Games have the highest engagement** (reviews often indicate active player communities).
* **Communication & Social apps** (WhatsApp, Facebook) also receive huge engagement.
* **Shopping apps** are in the top 10, suggesting users leave many reviews (e.g., Amazon, Flipkart).

**Overall Summary**

1. **FAMILY & GAME apps are the most common.**
2. **GAME apps have the highest installs & reviews.**
3. **COMMUNICATION & SOCIAL apps also dominate in engagement.**
4. **Productivity & Tools apps are widely used.**

Name: Reviews, dtype: int64

Category

EDUCATION 4.374552

EVENTS 4.363178

ART\_AND\_DESIGN 4.350389

BOOKS\_AND\_REFERENCE 4.311579

PERSONALIZATION 4.305302

PARENTING 4.281960

GAME 4.277531

BEAUTY 4.260553

HEALTH\_AND\_FITNESS 4.251429

SOCIAL 4.246797

Name: Rating, dtype: float64