

In [2]:

```
1 import numpy as np
2 import pandas as pd
3 import matplotlib.pyplot as plt
```

In [3]:

```
1 df2=pd.read_csv('F:/Ineuron datasets/amazon dataset/googleplaystore.csv')
2 df2.head()
```

Out[3]:

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
0	Photo Editor & Candy Camera & Grid & ScrapBook	ART_AND_DESIGN	4.1	159	19M	10,000+	Free	0	Everyone	Art & Design	January 7, 2018	1.0.0	4.0.3 and up
1	Coloring book moana	ART_AND_DESIGN	3.9	967	14M	500,000+	Free	0	Everyone	Art & Design;Pretend Play	January 15, 2018	2.0.0	4.0.3 and up
2	U Launcher Lite – FREE Live Cool Themes, Hide ...	ART_AND_DESIGN	4.7	87510	8.7M	5,000,000+	Free	0	Everyone	Art & Design	August 1, 2018	1.2.4	4.0.3 and up
3	Sketch - Draw & Paint	ART_AND_DESIGN	4.5	215644	25M	50,000,000+	Free	0	Teen	Art & Design	June 8, 2018	Varies with device	4.2 and up
4	Pixel Draw - Number Art Coloring Book	ART_AND_DESIGN	4.3	967	2.8M	100,000+	Free	0	Everyone	Art & Design;Creativity	June 20, 2018	1.1	4.4 and up

In [44]:

```
1 df2.tail()
```

Out[44]:

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
10836	Sya9a Maroc - FR	FAMILY	4.5	38	53M	5,000+	Free	0	Everyone	Education	July 25, 2017	1.48	4.1 and up
10837	Fr. Mike Schmitz Audio Teachings	FAMILY	5.0	4	3.6M	100+	Free	0	Everyone	Education	July 6, 2018	1	4.1 and up
10838	Parkinson Exercices FR	MEDICAL	NaN	3	9.5M	1,000+	Free	0	Everyone	Medical	January 20, 2017	1	2.2 and up
10839	The SCP Foundation DB fr nn5n	BOOKS_AND_REFERENCE	4.5	114	Varies with device	1,000+	Free	0	Mature 17+	Books & Reference	January 19, 2015	Varies with device	Varies with device
10840	iHoroscope - 2018 Daily Horoscope & Astrology	LIFESTYLE	4.5	398307	19M	10,000,000+	Free	0	Everyone	Lifestyle	July 25, 2018	Varies with device	Varies with device

In [47]:

```
1 df2.shape
```

Out[47]:

(10841, 13)

In [48]:

```
1 df2.describe()
```

Out[48]:

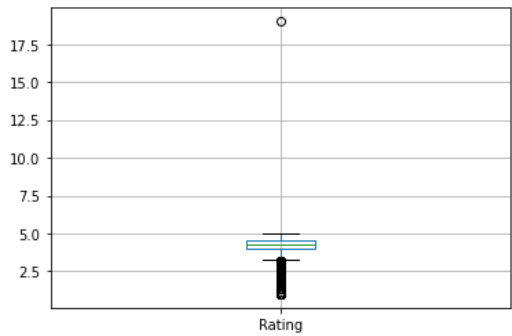
	Rating
count	9367.000000
mean	4.193338
std	0.537431
min	1.000000
25%	4.000000
50%	4.300000
75%	4.500000
max	19.000000

In [49]:

```
df2.boxplot()
```

Out[49]:

<AxesSubplot:>



In [50]:

```
df2.isnull().sum()
```

Out[50]:

```
App          0
Category     0
Rating      1474
Reviews      0
Size         0
Installs     0
Type         1
Price        0
Content Rating  1
Genres       0
Last Updated  0
Current Ver   8
Android Ver   3
dtype: int64
```

In [51]:

```
df2['Rating'].mean()
```

Out[51]:

4.193338315362448

In [53]:

```
df2['Rating'].fillna(4.19,inplace=True)
```

In [59]:

```
df2.isnull().sum()
```

Out[59]:

```
App          0
Category     0
Rating       0
Reviews      0
Size         0
Installs     0
Type         1
Price        0
Content Rating  1
Genres       0
Last Updated  0
Current Ver   8
Android Ver   3
dtype: int64
```

In [60]:

```
df2.head()
```

Out[60]:

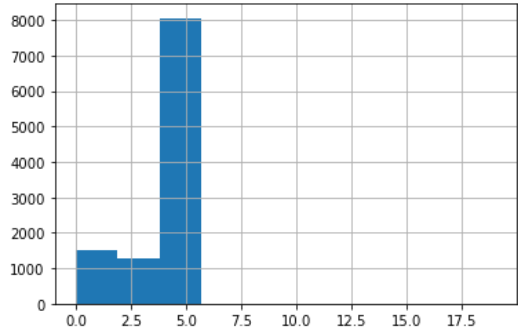
	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
0	Photo Editor & Candy Camera & Grid & ScrapBook	ART_AND_DESIGN	4.1	159	19M	10,000+	Free	0	Everyone	Art & Design	January 7, 2018	1.0.0	4.0.3 and up
1	Coloring book moana	ART_AND_DESIGN	3.9	967	14M	500,000+	Free	0	Everyone	Art & Design;Pretend Play	January 15, 2018	2.0.0	4.0.3 and up
2	U Launcher Lite – FREE Live Cool Themes, Hide ...	ART_AND_DESIGN	4.7	87510	8.7M	5,000,000+	Free	0	Everyone	Art & Design	August 1, 2018	1.2.4	4.0.3 and up
3	Sketch - Draw & Paint	ART_AND_DESIGN	4.5	215644	25M	50,000,000+	Free	0	Teen	Art & Design	June 8, 2018	Varies with device	4.2 and up
4	Pixel Draw - Number Art Coloring Book	ART_AND_DESIGN	4.3	967	2.8M	100,000+	Free	0	Everyone	Art & Design;Creativity	June 20, 2018	1.1	4.4 and up

In [61]:

```
df.hist()
```

Out[61]:

<AxesSubplot:>



In [63]:

```
df2[df2.Rating>5]
```

Out[63]:

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
10472	Life Made Wi-Fi Touchscreen Photo Frame		1.9	19.0	3.0M	1,000+	Free	0	Everyone	NaN	February 11, 2018	1.0.19	4.0 and up

In [64]:

```
df2.drop([10472],inplace=True)
```

In [65]:

```
df2[df2.Rating>5]
```

Out[65]:

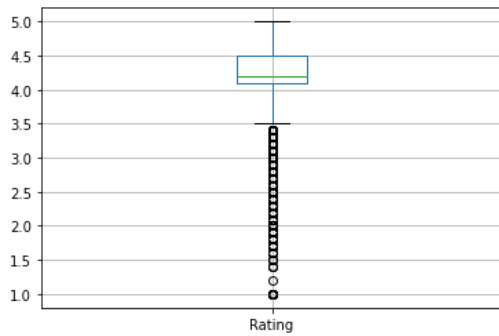
App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
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In [66]:

```
df2.boxplot()
```

Out[66]:

&lt;AxesSubplot:&gt;



In [67]:

```
df2[df2.Rating<0]
```

Out[67]:

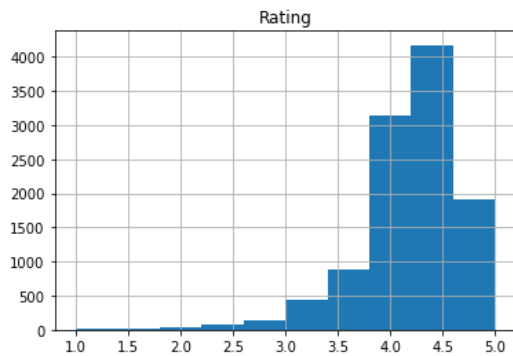
App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
-----	----------	--------	---------	------	----------	------	-------	----------------	--------	--------------	-------------	-------------

In [68]:

```
df2.hist()
```

Out[68]:

array([[&lt;AxesSubplot:title={'center':'Rating'}&gt;]], dtype=object)



In [69]:

```
print(df2['Type'].mode())
```

```
0    Free
Name: Type, dtype: object
```

In [70]:

```
print(df2['Current Ver'].mode())
```

```
0    Varies with device
Name: Current Ver, dtype: object
```

In [71]:

```
print([df2['Android Ver'].mode()])
```

```
[0    4.1 and up
Name: Android Ver, dtype: object]
```

In [72]:

```
df2['Type'].fillna(str(df2['Type'].mode().values[0]),inplace=True)
df2['Current Ver'].fillna(str(df2['Current Ver'].mode().values[0]),inplace=True)
df2['Android Ver'].fillna(str(df2['Android Ver'].mode().values[0]),inplace=True)
```

In [74]:

```
df2.isnull().sum()
```

Out[74]:

```
App          0
Category     0
Rating       0
Reviews      0
Size         0
Installs     0
Type         0
Price        0
Content Rating 0
Genres       0
Last Updated 0
Current Ver  0
Android Ver  0
dtype: int64
```

In [83]:

```
df2['Price']=df2['Price'].apply((lambda x:str(x).replace('$','')if '$' in str(x) else str(x)))
df2['Price']=df2['Price'].apply(lambda x:float(x))
df2['Reviews']=pd.to_numeric(df2['Reviews'],errors='coerce')
```

In [85]:

```
df2['Installs']=df2['Installs'].apply(lambda x:str(x).replace('+','') if '+' in str(x) else str(x))
df2['Installs']=df2['Installs'].apply(lambda x:str(x).replace(',','') if ',' in str(x) else str(x))
df2['Installs']=df2['Installs'].apply(lambda x:float(x))
```

In [8]:

```
df2.head()
```

Out[8]:

	App	Category	Rating	Reviews	Size	Installs	Type	Price	Content Rating	Genres	Last Updated	Current Ver	Android Ver
0	Photo Editor & Candy Camera & Grid & ScrapBook	ART_AND_DESIGN	4.1	159	19M	10,000+	Free	0	Everyone	Art & Design	January 7, 2018	1.0.0	4.0.3 and up
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4	Pixel Draw - Number Art Coloring Book	ART_AND_DESIGN	4.3	967	2.8M	100,000+	Free	0	Everyone	Art & Design;Creativity	June 20, 2018	1.1	4.4 and up

In [87]:

```
df2.describe()
```

Out[87]:

	Rating	Reviews	Installs	Price
count	10840.000000	1.084000e+04	1.084000e+04	10840.000000
mean	4.191518	4.441529e+05	1.546434e+07	1.027368
std	0.478907	2.927761e+06	8.502936e+07	15.949703
min	1.000000	0.000000e+00	0.000000e+00	0.000000
25%	4.100000	3.800000e+01	1.000000e+03	0.000000
50%	4.200000	2.094000e+03	1.000000e+05	0.000000
75%	4.500000	5.477550e+04	5.000000e+06	0.000000
max	5.000000	7.815831e+07	1.000000e+09	400.000000

In [91]:

```
df2.to_csv('Google_Play_Store1.csv',index=None,index_label=None)
```

