

```
In [6]: # importing python Libraries
import pandas as pd
import numpy as np
import seaborn as sns
```

```
In [7]: # Reading csv file
df = pd.read_csv("phones_data.csv")
```

```
In [8]: # Calculating the total number of null values in each attribute column
df.isnull().sum()
```

```
Out[8]: Unnamed: 0      0
brand_name      0
model_name      0
os             197
popularity      0
best_price      0
lowest_price    260
highest_price   260
sellers_amount  0
screen_size      2
memory_size     112
battery_size     10
release_date      0
dtype: int64
```

```
*CLEANING THE DATA*
```

```
In [ ]: # Dropping all rows that contains null values
df1 = df.dropna()
```

```
In [10]: #Printing the cleaned data  
df1
```

```
Out[10]: Unnamed:  
          0  brand_name  model_name      os  popularity  best_price  lowest_price  highest_price  sellers_amount  screen_size  memory_size  battery_size  
0           0   ALCATEL  1 1/8GB  
                         Bluish Black  
                         (5033D-  
                         2JALUAA)  Android    422     1690.0     1529.0     1819.0        36       5.00       8.0    2000.C  
1           1   ALCATEL  1 5033D  
                         1/16GB  
                         Volcano Black  
                         (5033D-  
                         2LALUAF)  Android    323     1803.0     1659.0     2489.0        36       5.00      16.0    2000.C  
2           2   ALCATEL  1 5033D  
                         1/16GB  
                         Volcano Black  
                         (5033D-  
                         2LALUAF)  Android    299     1803.0     1659.0     2489.0        36       5.00      16.0    2000.C  
3           3   ALCATEL  1 5033D  
                         1/16GB  
                         Volcano Black  
                         (5033D-  
                         2LALUAF)  Android    287     1803.0     1659.0     2489.0        36       5.00      16.0    2000.C  
5           5    Honor  10 6/64GB  
                         Black  Android     71     10865.0     10631.0     11099.0        2       5.80      64.0    3400.C  
...         ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...    ...  
1218        1218   Apple  iPhone XS  
                         Max 512GB  
                         Space Gray  
                         (MT622)  iOS      842     27190.0     21150.0     30200.0        47       6.50      512.0    3174.C  
1219        1219   Apple  iPhone XS  
                         Max 64GB  
                         Gold  
                         (MT522)  iOS      1101     22685.0     16018.0     27900.0        61       6.50      64.0    3174.C  
1220        1220   Apple  iPhone XS  
                         Max Dual  
                         Sim 64GB  
                         Gold  
                         (MT732)  iOS      530     24600.0     21939.0     33720.0        28       6.50      64.0    3174.C  
1221        1221  HUAWEI  nova 5T  
                         6/128GB  
                         Black  
                         (51094MEU)  Android   1174     8804.0     7999.0     9999.0        18       6.26     128.0    3750.C  
1222        1222    ZTE   nubia Red  
                         Magic 5G  
                         8/128GB  
                         Black  Android    752     18755.0     18500.0     19010.0        2       6.65     128.0    4500.C
```

780 rows × 13 columns

```
In [11]: # Calculating the total number of null values in each attribute column  
df1.isnull().sum()
```

```
Out[11]: Unnamed: 0      0  
brand_name      0  
model_name      0  
os              0  
popularity      0  
best_price      0  
lowest_price     0  
highest_price     0  
sellers_amount    0  
screen_size      0  
memory_size      0  
battery_size      0  
release_date     0  
dtype: int64
```

```
In [12]: # Cleaned data is saved in a csv format  
df1.to_csv(r'C:\Users\Harsh\Desktop\DMDD Ass3\output.csv', index=False, header=True)
```

```
In [13]: # Reading csv file  
data = pd.read_csv("ndtv_data_final.csv")
```

```
In [14]: # Extracting first 5 rows from the dataframe  
data.head()
```

Out[14]:

		Id	Name	Brand	Model	Battery_capacity	Screen_size	Touchscreen	Resolution_x	Resolution_y	Processor	...	Rear_camera	Front_camera	Operating
0	1	Realme X2 Pro	Realme	X2 Pro		4000	6.50	Yes	1080	2400	8	...	64.0	16.0	
1	2	iPhone 11 Pro Max	Apple	iPhone 11 Pro Max		3969	6.50	Yes	1242	2688	6	...	12.0	12.0	
2	3	iPhone 11	Apple	iPhone 11		3110	6.10	Yes	828	1792	6	...	12.0	12.0	
3	4	LG G8X ThinQ	LG	G8X ThinQ		4000	6.40	Yes	1080	2340	8	...	12.0	32.0	
4	5	OnePlus 7T	OnePlus	7T		3800	6.55	Yes	1080	2400	8	...	48.0	16.0	

5 rows × 22 columns

```
In [15]: # Extracting last 5 rows from the dataframe  
data.tail()
```

Out[15]:

		Id	Name	Brand	Model	Battery_capacity	Screen_size	Touchscreen	Resolution_x	Resolution_y	Processor	...	Rear_camera	Front_camera	C
1353	1354	Intex Aqua A2	Intex	Aqua A2		1500	4.0	Yes	480	800	4	...	5.0	0.3	
1354	1355	Videcon Infinium Z51 Nova+	Videcon	Infinium Z51 Nova+		2000	5.0	Yes	480	854	4	...	8.0	5.0	
1355	1356	Intex Aqua Y4	Intex	Aqua Y4		1700	4.5	Yes	480	854	2	...	5.0	2.0	
1356	1357	iBall Andi4 B20	iBall	Andi4 B20		1250	4.0	Yes	480	800	1	...	2.0	0.3	
1357	1358	iBall Andi Avonte 5	iBall	Andi Avonte 5		2150	5.0	Yes	480	854	4	...	8.0	0.0	

5 rows × 22 columns

```
In [16]: data.describe()
```

Out[16]:

	Id	Battery_capacity	Screen_size	Resolution_x	Resolution_y	Processor	RAM	Internal_storage	Rear_camera	Front_camera	Num
count	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.000000	1358.0
mean	679.500000	2937.645066	5.290295	811.080265	1489.578056	5.549337	2481.773932	30.488925	12.043741	7.031370	1.8
std	392.165144	873.281081	0.670559	270.268687	556.228763	2.196365	1644.898180	36.453776	8.898299	6.293063	0.3
min	1.000000	1010.000000	2.400000	240.000000	320.000000	1.000000	64.000000	0.064000	0.000000	0.000000	1.0
25%	340.250000	2300.000000	5.000000	720.000000	1280.000000	4.000000	1000.000000	8.000000	8.000000	2.000000	2.0
50%	679.500000	3000.000000	5.200000	720.000000	1280.000000	4.000000	2000.000000	16.000000	12.200000	5.000000	2.0
75%	1018.750000	3500.000000	5.700000	1080.000000	1920.000000	8.000000	3000.000000	32.000000	13.000000	8.000000	2.0
max	1358.000000	6000.000000	7.300000	2160.000000	3840.000000	10.000000	12000.000000	512.000000	108.000000	48.000000	3.0

```
In [17]: #all unique values  
data.nunique()
```

```
Out[17]: Id           1358  
Name          1358  
Brand          76  
Model          1320  
Battery_capacity   165  
Screen_size      80  
Touchscreen       2  
Resolution_x      28  
Resolution_y      53  
Processor         6  
RAM             13  
Internal_storage    15  
Rear_camera        32  
Front_camera        30  
Operating_system     7  
Wi-Fi            2  
Bluetooth          2  
GPS              2  
Number of SIMs      3  
3G              2  
4G              2  
Price            626  
dtype: int64
```

```
In [18]: # Calculating the total number of null values in each attribute column  
data.isnull().sum()
```

```
Out[18]: Id           0  
Name          0  
Brand          0  
Model          0  
Battery_capacity   0  
Screen_size      0  
Touchscreen       0  
Resolution_x      0  
Resolution_y      0  
Processor         0  
RAM             0  
Internal_storage    0  
Rear_camera        0  
Front_camera        0  
Operating_system     0  
Wi-Fi            0  
Bluetooth          0  
GPS              0  
Number of SIMs      0  
3G              0  
4G              0  
Price            0  
dtype: int64
```

```
In [21]: # Mobile dataframe with Limited attributes  
mobile = data.drop(['Id','Resolution_x','Resolution_y','Front_camera','Rear_camera','Number of SIMs'],axis =1)
```

```
In [22]: # Extracting first 5 rows from the dataframe  
mobile.head()
```

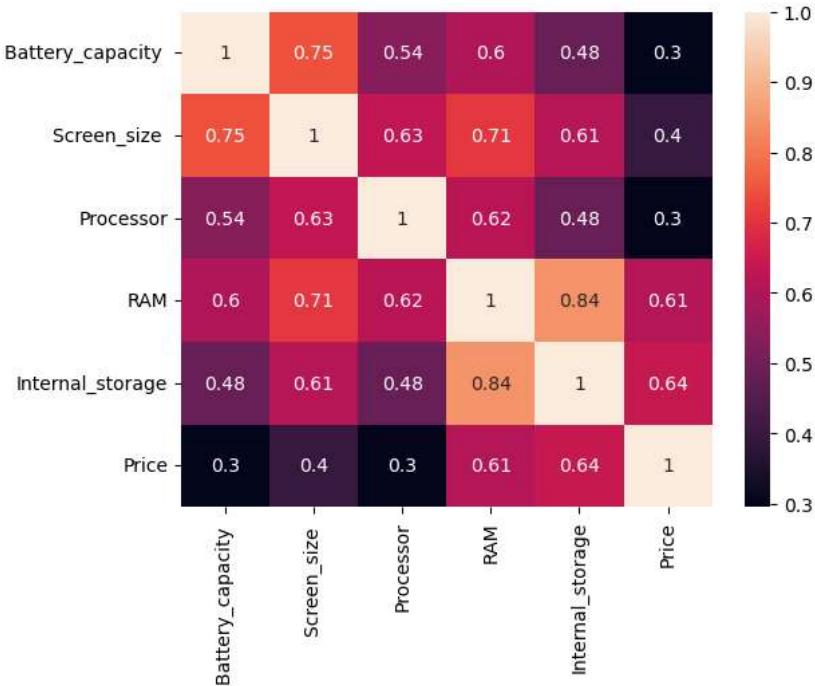
```
Out[22]:
```

	Name	Brand	Model	Battery_capacity	Screen_size	Touchscreen	Processor	RAM	Internal_storage	Operating_system	Wi-Fi	Bluetooth	GPS	3G	4G
0	Realme X2 Pro	Realme	X2 Pro	4000	6.50	Yes	8	6000	64.0	Android	Yes	Yes	Yes	Yes	Yes
1	iPhone 11 Pro Max	Apple	iPhone 11 Pro Max	3969	6.50	Yes	6	4000	64.0	iOS	Yes	Yes	Yes	Yes	Yes
2	iPhone 11	Apple	iPhone 11	3110	6.10	Yes	6	4000	64.0	iOS	Yes	Yes	Yes	Yes	Yes
3	LG G8X ThinQ	LG	G8X ThinQ	4000	6.40	Yes	8	6000	128.0	Android	Yes	Yes	Yes	No	No
4	OnePlus 7T	OnePlus	7T	3800	6.55	Yes	8	8000	128.0	Android	Yes	Yes	No	Yes	Yes

```
In [23]: #Analysing data  
corelation= mobile.corr()
```

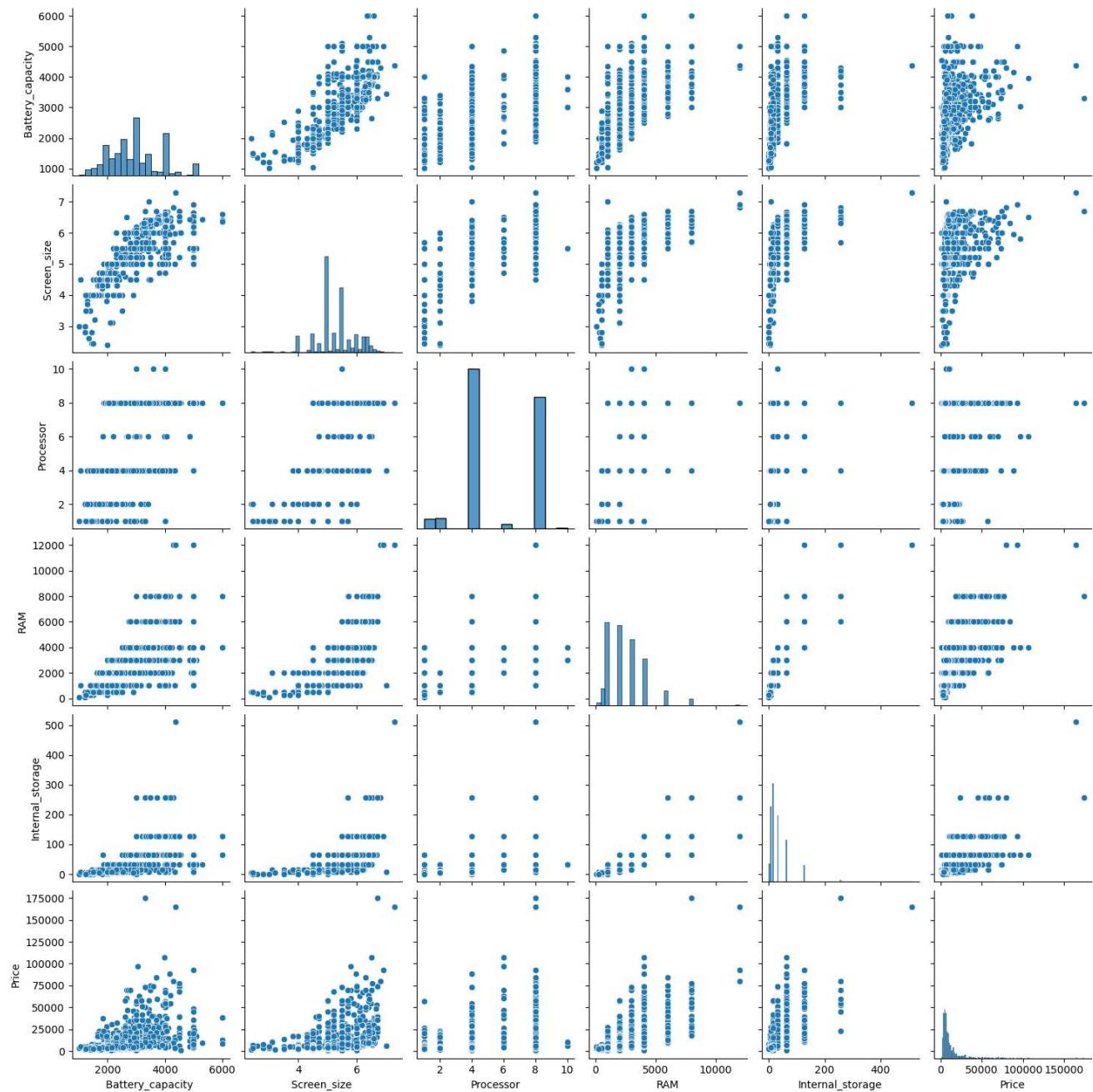
```
In [24]: #Producing heatmap of the specific attributes of mobile data  
sns.heatmap(corelation,xticklabels=corelation.columns, yticklabels=corelation.columns, annot=True)
```

Out[24]: <AxesSubplot:>



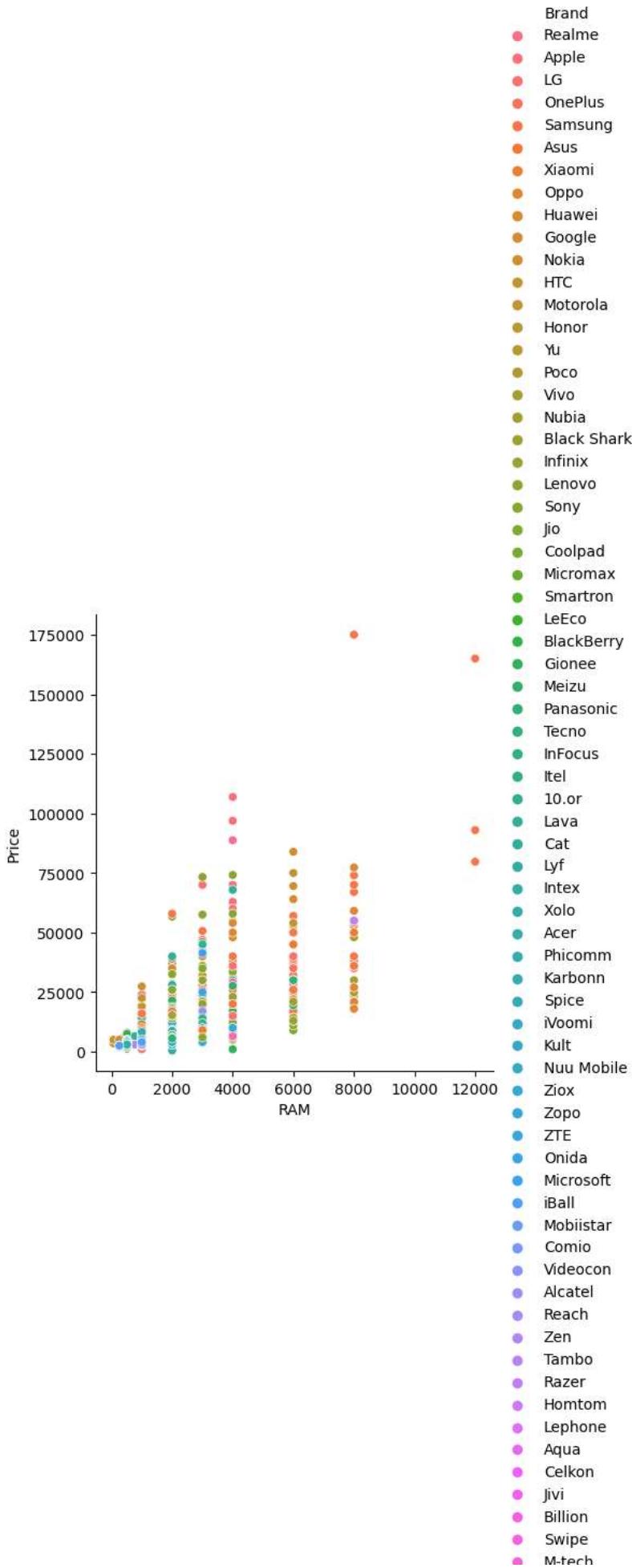
```
In [25]: #PairPlot of each attribute with another  
sns.pairplot(mobile)
```

```
Out[25]: <seaborn.axisgrid.PairGrid at 0x22e77def190>
```



```
In [31]: #Relational plot of RAM and Price sorted according to the Brand  
sns.relplot(x= 'RAM', y='Price',hue='Brand',data=mobile)
```

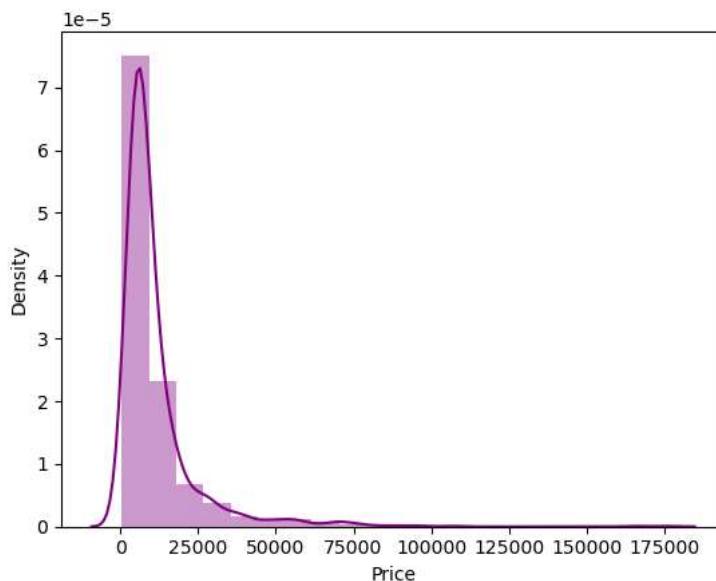
```
Out[31]: <seaborn.axisgrid.FacetGrid at 0x22e78c14dc0>
```

```
In [49]: #Display of Price vs Density  
sns.distplot(mobile['Price'], bins=20, color='purple')
```

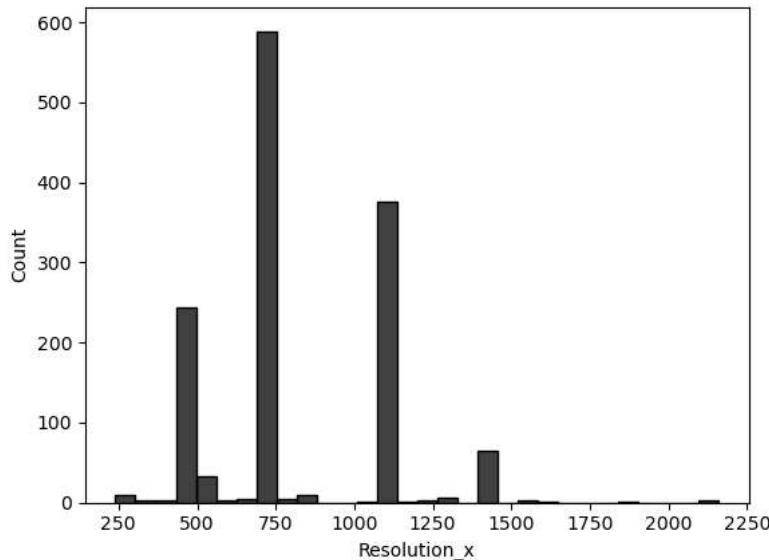
C:\Users\Harsh\anaconda3\lib\site-packages\seaborn\distributions.py:201: FutureWarning: `distplot` is a deprecated function and will be removed in a future version. Please adapt your code to use either `displot` (a figure-level function with similar flexibility) or `histplot` (an axes-level function for histograms).
warnings.warn(msg, FutureWarning)

```
Out[49]: <AxesSubplot:xlabel='Price', ylabel='Density'>
```



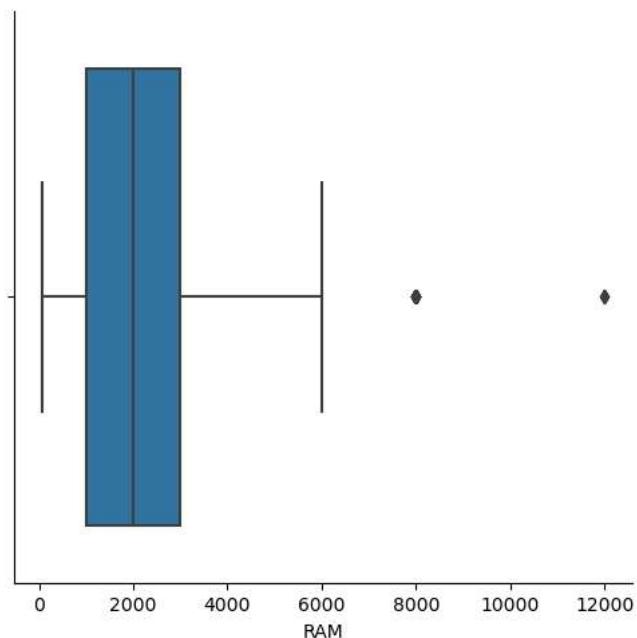
```
In [52]: #Histplot of Price vs Count  
sns.histplot(data['Resolution_x'], bins=30, color='black')
```

```
Out[52]: <AxesSubplot:xlabel='Resolution_x', ylabel='Count'>
```



```
In [61]: #Catplot of RAM attribute  
sns.catplot(x='RAM', kind= 'box', data=mobile)
```

```
Out[61]: <seaborn.axisgrid.FacetGrid at 0x22e0210e5e0>
```



```
In [ ]: import tweepy #Library required for Twitter API
import csv, re
import pandas as pd
import os
!pip install wget
import wget
import logging

Looking in indexes: https://pypi.org/simple, (https://pypi.org/simple,), https://us-python.pkg.dev/colab-wheels/public/simple/ (https://us-python.pkg.dev/colab-wheels/public/simple/)
Collecting wget
  Downloading wget-3.2.zip (10 kB)
Building wheels for collected packages: wget
  Building wheel for wget (setup.py) ... done
  Created wheel for wget: filename=wget-3.2-py3-none-any.whl size=9674 sha256=f8d09d4750948c080f4fcfbfdafbc67b8df960f8431ca7bf6c09c8f84ae3465a
  Stored in directory: /root/.cache/pip/wheels/a1/b6/7c/0e63e34eb06634181c63adacca38b79ff8f35c37e3c13e3c02
Successfully built wget
Installing collected packages: wget
Successfully installed wget-3.2
```

```
In [ ]: consumer_key = "f2WRt1WcKwL0NpAepM5Tnl1xQ"
consumer_secret = "IsyyVAerTgnzbkrIQ56vE3hR1DdzEMgDQa0VNMOafldHUCPuG3"
access_key = "1297785011270082560-7AIrUuIPRrhQ9LUFtVbybywpeJ0Xot"
access_secret = "fwLM8ZZ6Jx8sHxtYzh6JrudULION07wypI5G7I0IdlrLR"
```

```
In [ ]: tweets =pd.DataFrame(columns=["id","created_at","text","media_url","location"])
```

```
In [ ]: tweets.columns
```

```
Out[4]: Index(['id', 'created_at', 'text', 'media_url', 'location'], dtype='object')
```

```
In [ ]: import datetime, time
last_week = datetime.date.today() - datetime.timedelta(9)
since_tweets = datetime.datetime.strptime(time.strftime("%Y-%m-%d"), "%Y-%m-%d")
print (since_tweets)

2022-11-23 00:00:00
```

```
In [ ]: auth = tweepy.OAuthHandler(consumer_key, consumer_secret)
auth.set_access_token(access_key, access_secret)
api = tweepy.API(auth,wait_on_rate_limit=True)

try:
    api.verify_credentials()
    print("Authentication OK")
except:
    print("Error during authentication")

Authentication OK
```

```
In [ ]: timeline = api.home_timeline()
for tweet in timeline:
    print(f"{tweet.user.name} said {tweet.text}")
```

```
In [ ]: user = api.get_user(screen_name="jharsh010")
print("Most recent tweet: " + user.status.text)

Most recent tweet: Hello
```

```
In [ ]: print("User details:")
print(user.name)
print(user.description)
print(user.location)

print("Last 20 Followers:")
for follower in user.followers():
    print(follower.name)

User details:
Harsh

Last 20 Followers:
Vatsal Mehta
```

```
In [ ]: import datetime, time
now = datetime.date.today()
date_since = datetime.datetime.strptime(time.strftime("%Y-%m-%d"), "%Y-%m-%d")
print (date_since)
keywords=['smartphone']
print (' '.join(keywords))
num_tweets=400
print ("num_tweets ", num_tweets)

2022-11-23 00:00:00
smartphone
num_tweets 400

In [ ]: new_search = "smartphone"

In [ ]: # https://developer.twitter.com/en/docs/twitter-api/v1/tweets/search/api-reference/get-search-tweets
# https://docs.tweepy.org/en/stable/api.html#search-tweets
tweets = tweepy.Cursor(api.search,
    q=new_search,
    lang="en",
    until=date_since).items(num_tweets)

In [ ]: cnt=0
tweets_data = [] #initialize master list to hold our ready tweets
for tweet in tweets:
    print(cnt)
    print(tweet)
    cnt=cnt+1

0
Status(_api=<tweepy.api.API object at 0x7fc40cd9a810>, _json={'created_at': 'Tue Nov 22 23:59:02 +0000 2022', 'id': 1595205245671723008, 'id_str': '1595205245671723008', 'text': '#promoção #oferta [Marketplace] Smartphone Samsung Galaxy M12 - R$ 849,00 #Samsung #Galaxy #smartphone https://t.co/tYZ58SvBHK', ('https://t.co/tYZ58SvBHK'), 'truncated': False, 'entities': {'hashtags': [{'text': 'promoção', 'indices': [0, 9]}, {'text': 'oferta', 'indices': [10, 17]}], 'text': 'Samsung', 'indices': [105, 116]}, 'symbols': [], 'user_mentions': [], 'urls': [{'url': 'https://t.co/tYZ58SvBHK', 'expanded_url': 'https://www.promobit.com.br/oferta/smartphone-samsung-galaxy-m12-64gb-4g-4gb-ram-tela-65-1281892?utm_source=twitter&utm_medium=twitter&utm_campaign=twitter', 'display_url': 'promobit.com.br/oferta/smartph...', 'indices': [117, 140]}]}, 'metadata': {'iso_language_code': 'en', 'result_type': 'recent'}, 'source': '<a href="http://www.promobit.com.br" rel="nofollow">Promobit</a>', 'in_reply_to_status_id': None, 'in_reply_to_status_id_str': None, 'in_reply_to_user_id': None, 'in_reply_to_user_id_str': None, 'in_reply_to_screen_name': None, 'user': {'id': 2256456476, 'id_str': '2256456476', 'name': 'Promobit', 'screen_name': 'PromobitOficial', 'location': 'Brasil', 'description': 'A maior comunidade de ofertas do Brasil! Encontre as melhores promoções e cupons das principais lojas do Brasil. --- 📱 Comunidade 📱 Segurança 📱 Preço Baixo', 'url': 'https://t.co/fobgLZ4A8U', 'entities': {'url': {'urls': [{"url": 'https://t.co/fobgLZ4A8U', 'expanded_url': 'https://promobit.tt.carnd.co', 'display_url': 'promobit.tt.carnd.co', 'indices': [0, 23]}]}}, 'description': {'urls': []}, 'protected': False, 'followers_count': 26386, 'friends_count': 42, 'listed_count': 396, 'created_at': 'Sat Dec 21 13:10:59 +0000 2013', 'favourites_count': 3694, 'utc_offset': None, 'time_zone': None, 'geo_enabled': False, 'verified': False, 'statuses_count': 698175, 'lang': None, 'contributors_enabled': False, 'is_translator': False, 'is_translation_enabled': False, 'profile_background_color': 'C0DEED', 'profile_background_image_url': 'http://abs.twimg.com/images/themes/theme1/bg.png'}}

In [ ]: # https://developer.twitter.com/en/docs/twitter-api/v1/tweets/search/api-reference/get-search-tweets
# https://docs.tweepy.org/en/stable/api.html#search-tweets
tweets = tweepy.Cursor(api.search,
    q=new_search,
    lang="en",
    until=date_since).items(num_tweets)

In [ ]: tweets

Out[15]: <tweepy.cursor.ItemIterator at 0x7fc40ae1f610>
```

```
In [ ]: cnt=0
tweets_data = [] #initialize master List to hold our ready tweets
for tweet in tweets:
    print(cnt)
    tweets_data.append([tweet.id_str,tweet.user.name,tweet.user.screen_name,tweet.user.description,tweet.user.followers_count,twe
    cnt=cnt+1

0
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
^C

In [ ]: tweets_data
Out[17]: [[{'id': '1595205245671723008', 'name': 'Promobit', 'screen_name': 'PromobitOficial', 'description': 'A maior comunidade de ofertas do Brasil! Encontre as melhores promoções e cupons das principais lojas do Brasil. --- 📦 Comunidade 🚀 Segurança 🚀 Preço Baixo', 'followers_count': 26386, 'created_at': datetime.datetime(2022, 11, 22, 23, 59, 2), 'text': 'b'#promo\xc3\xa7\xc3\x93 #oferta [Marketplace] [Parcelado] Smartphone Samsung Galaxy M12 - R$ 849,00 #Samsung #Galaxy #smartphone https://t.co/tYZ58SvBHK', ('https://t.co/tYZ58SvBHK',), 'location': 'Brasil', 'protected': False}, {'id': '1595190487970742272', 'name': 'Linux Smart Phones', 'screen_name': 'SercanAkyuz20', 'description': 'a SaaS offering that uses custom hardware sensors. a well-known and trusted security brand in the ethical hacking industry.', 'followers_count': 9, 'created_at': datetime.datetime(2022, 11, 22, 23, 0, 24), 'text': 'b'Get it now! Kali Linux Nethunter OnePlus 7 Pro 256GB Unlocked Dual SIM selling at $1100.00\nby Mr Robot Kali Linux S\xe2\x80\x99', ('https://t.co/1DfZGJLjPQ',)}]]
```

```
In [ ]: tweets_df = pd.DataFrame(tweets_data,columns = ["ID","User Name","Screen Name","Description","Followers Count","Created_at","Text"])
tweets_df
```

Out[18]:

	ID	User Name	Screen Name	Description	Followers Count	Created_at	Text	Location	Verified
0	1595205245671723008	Promobit	PromobitOfficial	A maior comunidade de ofertas do Brasil! Encon...	26386	2022-11-22 23:59:02	b'#promo\xc3\x9a7\xc3\x9a3o #oferta [Marketplac...	Brasil	False
1	1595190487970742272	Linux Smart Phones	SercanAkyuz20	a SaaS offering that uses custom hardware sens...	9	2022-11-22 23:00:24	b'Get it now! Kali Linux Nethunter OnePlus 7 P...		False
2	1595186149441822720	mina mina	minamin09071936		16	2022-11-22 22:43:09	b'List Price: 99.00 Details\nWith Deal : 79.20...		False
3	1595185446224646144	mina mina	minamin09071936		16	2022-11-22 22:40:22	b'List Price: 189.99 Details\nWith Deal : 164.9...		False
4	1595182414384570369	mina mina	minamin09071936		16	2022-11-22 22:28:19	b'List Price: 949.99 Details\nWith Deal : 749.9...		False
...
371	1592078057442975745	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151134	2022-11-14 08:52:42	b'Check out Samsung Galaxy A04s (A047) (Copper...	Malaysia	False
372	1592077944100642816	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151134	2022-11-14 08:52:15	b'Check out Samsung Galaxy A04 (A045) (Copper/...	Malaysia	False
373	1592077672221675522	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151134	2022-11-14 08:51:11	b'Check out Samsung Galaxy A23 LTE (A235) (Blu...	Malaysia	False
374	1592077218372792321	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151134	2022-11-14 08:49:22	b'Check out Samsung Galaxy A13 (A135) (Blue, B...	Malaysia	False
375	1592067053154111490	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151134	2022-11-14 08:08:59	b'Check out realme 9i Smartphone - Snapdragon ...	Malaysia	False

376 rows × 9 columns

```
In [ ]: tweets_df.head()
```

Out[19]:

	ID	User Name	Screen Name	Description	Followers Count	Created_at	Text	Location	Verified
0	1595205245671723008	Promobit	PromobitOfficial	A maior comunidade de ofertas do Brasil! Encon...	26386	2022-11-22 23:59:02	b'#promo\xc3\x9a7\xc3\x9a3o #oferta [Marketplac...	Brasil	False
1	1595190487970742272	Linux Smart Phones	SercanAkyuz20	a SaaS offering that uses custom hardware sens...	9	2022-11-22 23:00:24	b'Get it now! Kali Linux Nethunter OnePlus 7 P...		False
2	1595186149441822720	mina mina	minamin09071936		16	2022-11-22 22:43:09	b'List Price: 99.00 Details\nWith Deal : 79.20...		False
3	1595185446224646144	mina mina	minamin09071936		16	2022-11-22 22:40:22	b'List Price: 189.99 Details\nWith Deal : 164.9...		False
4	1595182414384570369	mina mina	minamin09071936		16	2022-11-22 22:28:19	b'List Price: 949.99 Details\nWith Deal : 749.9...		False

```
In [ ]: outfile=re.sub(r"\s+", '_', new_search)
outfile=outfile+'.csv'
print(outfile)
tweets_df.to_csv(outfile, sep=',', encoding='utf-8')
```

smartphone.csv

```
In [ ]: import tweepy #Library required for Twitter API
import csv
import pandas as pd
import os
!pip install wget
import wget
```

Looking in indexes: <https://pypi.org/simple>, (<https://pypi.org/simple/>) <https://us-python.pkg.dev/colab-wheels/public/simple/> (<https://us-python.pkg.dev/colab-wheels/public/simple/>)

Requirement already satisfied: wget in /usr/local/lib/python3.7/dist-packages (3.2)

```
In [ ]: !pip install pip

import pip
package ='tweepy' #Just replace the package name with any package to install it.
pip.main(['install',package])

Looking in indexes: https://pypi.org/simple, (https://pypi.org/simple,), https://us-python.pkg.dev/colab-wheels/public/simple/ (https://us-python.pkg.dev/colab-wheels/public/simple/)
Requirement already satisfied: pip in /usr/local/lib/python3.7/dist-packages (21.1.3)

WARNING: pip is being invoked by an old script wrapper. This will fail in a future version of pip.
Please see https://github.com/pypa/pip/issues/5599 (https://github.com/pypa/pip/issues/5599) for advice on fixing the underlying issue.
To avoid this problem you can invoke Python with '-m pip' instead of running pip directly.

Looking in indexes: https://pypi.org/simple, (https://pypi.org/simple,), https://us-python.pkg.dev/colab-wheels/public/simple/ (https://us-python.pkg.dev/colab-wheels/public/simple/)
Requirement already satisfied: tweepy in /usr/local/lib/python3.7/dist-packages (3.10.0)
Requirement already satisfied: requests-oauthlib>=0.7.0 in /usr/local/lib/python3.7/dist-packages (from tweepy) (1.3.1)
Requirement already satisfied: six>=1.10.0 in /usr/local/lib/python3.7/dist-packages (from tweepy) (1.15.0)
Requirement already satisfied: requests[socks]>=2.11.1 in /usr/local/lib/python3.7/dist-packages (from tweepy) (2.23.0)
Requirement already satisfied: oauthlib>=3.0.0 in /usr/local/lib/python3.7/dist-packages (from requests-oauthlib>=0.7.0->tweepy) (3.2.2)
Requirement already satisfied: chardet<4,>=3.0.2 in /usr/local/lib/python3.7/dist-packages (from requests[socks]>=2.11.1->tweepy) (3.0.4)
Requirement already satisfied: urllib3!=1.25.0,!>=1.25.1,<1.26,>=1.21.1 in /usr/local/lib/python3.7/dist-packages (from requests[socks]>=2.11.1->tweepy) (1.24.3)
Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.7/dist-packages (from requests[socks]>=2.11.1->tweepy) (2022.9.24)
Requirement already satisfied: idna<3,>=2.5 in /usr/local/lib/python3.7/dist-packages (from requests[socks]>=2.11.1->tweepy) (2.10)
Requirement already satisfied: PySocks!=1.5.7,>=1.5.6 in /usr/local/lib/python3.7/dist-packages (from requests[socks]>=2.11.1->tweepy) (1.7.1)
```

Out[22]: 0

```
In [ ]: import sqlite3
conn = sqlite3.connect('Smartphone')
```

```
In [ ]: !pip install -U -q PyDrive

from pydrive.auth import GoogleAuth
from pydrive.drive import GoogleDrive
from google.colab import auth
from oauth2client.client import GoogleCredentials

# Authenticate and create the PyDrive client.
auth.authenticate_user()
gauth = GoogleAuth()
gauth.credentials = GoogleCredentials.get_application_default()
drive = GoogleDrive(gauth)

Failure refreshing credentials: ("Failed to retrieve http://metadata.google.internal/computeMetadata/v1/instance/service-accounts/default/?recursive=true (http://metadata.google.internal/computeMetadata/v1/instance/service-accounts/default/?recursive=true) from the Google Compute Engine metadata service. Status: 404 Response:\nb'', <google.auth.transport.requests._Response object at 0x7fc4091f7950>)
Failure refreshing credentials: ("Failed to retrieve http://metadata.google.internal/computeMetadata/v1/instance/service-accounts/default/?recursive=true (http://metadata.google.internal/computeMetadata/v1/instance/service-accounts/default/?recursive=true) from the Google Compute Engine metadata service. Status: 404 Response:\nb'', <google.auth.transport.requests._Response object at 0x7fc409200e10>)
```

```
In [ ]: # Lnk is the file Link that was saved
link = 'https://drive.google.com/file/d/1crh82ox5KrdF6xxUMXqVhwTRKUEDHXfk/view?usp=sharing'
import pandas as pd
fileDownloaded = drive.CreateFile({'id':'1crh82ox5KrdF6xxUMXqVhwTRKUEDHXfk'})
fileDownloaded.GetContentFile('smartphone.csv')
df = pd.read_csv('smartphone.csv')
df.head()
df.drop(columns = df.columns[0], axis = 1, inplace= True)
df.head()
```

Out[25]:

	ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified
0	1.591560e+18	Auction Network	Auction_Network	Weekly Live Online Auctions of Coins & Currenc...	1190.0	11/12/2022 22:15	b'RCM 2015 Fine Pure Silver \$250. Coin - Loone...	Unionville, Ontario	False
1	1.591550e+18	Offerte del Giorno	offerted_oggi	Pubblichiamo le migliori offerte presenti sui ...	1971.0	11/12/2022 22:09	b'\xf0\x9f\x91\x80 Samsung Galaxy Buds2 Cuffie...	Italia	False
2	1.591550e+18	Super Offerte dal Web!	SuperOfferteXyz	Pubblichiamo le migliori offerte presenti sui ...	258.0	11/12/2022 22:09	b'\xf0\x9f\x91\x80 Samsung Galaxy Buds2 Cuffie...	Italia	False
3	1.591530e+18	Auction Network	Auction_Network	Weekly Live Online Auctions of Coins & Currenc...	1190.0	11/12/2022 20:15	b'18kt Yellow & White Gold Custom 3 Rows o...	Unionville, Ontario	False
4	1.591500e+18	Coupon Matrix	MatrixCoupon	couponMatrix - Offers And Promotional Discount...	18.0	11/12/2022 18:32	b'Samsung HW-Q990B Dolby Atmos Soundbar\nMSRP ...	London	False

```
In [ ]: df.to_sql('smartphone',con=conn,index=False, if_exists='replace')
```

```
In [ ]: def run_query(query):
    return pd.read_sql(query,conn)
```

DONE BY - HARSH JITENDRA JAIN (NUID- 002747565)

```
In [ ]: run_query('SELECT * FROM smartphone WHERE Location = "Brasil" OR Location = "India";')
```

Out[28]:

	ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified
0	1.591460e+18	Profertas	ProfertasOfc	As melhores promoções, ofertas e descontos!\n...	776.0	11/12/2022 15:55	b'(parceiro magalu) Tablet Samsung Galaxy A7 L...	Brasil	0
1	1.591370e+18	Lite Pocket Deals India	price_drop_IN	Follow us to be first to be notified of the de...	222.0	11/12/2022 10:07	b'https://t.co/7e7YF1W4Yc\n\nDURACELL Wall Cha...	India	0
2	1.591340e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/12/2022 8:12	b'AndroidInfotec: Samsung Galaxy A13 5G at \$19...	India	0
3	1.591340e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/12/2022 8:12	b'AndroidInfotec: Samsung Galaxy A20 at \$194.9...	India	0
4	1.591340e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/12/2022 8:12	b'AndroidInfotec: Samsung Galaxy A23 5G at \$24...	India	0
5	1.591340e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/12/2022 8:12	b'AndroidInfotec: Samsung Galaxy A32 5G at \$22...	India	0

```
In [ ]: run_query('SELECT * FROM smartphone WHERE Text like "%12GB%256GB%" ;')
```

Out[29]:

	ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified
0	1.591050e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:57	b'Check out Samsung Galaxy Z Fold4 5G (F936) (...	Malaysia	0
1	1.591050e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:55	b'Check out Samsung Galaxy Tab S8 Ultra WiFi (...	Malaysia	0
2	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 14:31	b'Check out OPPO Reno7 Pro 5G Smartphone 12G...	Malaysia	0
3	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 14:31	b'Check out OPPO Find X5 Pro 5G 12GB + 256GB...	Malaysia	0
4	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 14:31	b'Check out OPPO Reno8 Pro 5G Smartphone 12G...	Malaysia	0
5	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 1:17	b'Check out OPPO Find X5 Pro 5G 12GB + 256GB...	Malaysia	0
6	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 1:17	b'Check out OPPO Reno7 Pro 5G Smartphone 12G...	Malaysia	0
7	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 1:17	b'Check out OPPO Reno8 Pro 5G Smartphone 12G...	Malaysia	0
8	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 1:15	b'Check out OPPO Reno6 Pro 5G Smartphone 12G...	Malaysia	0
9	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 2:55	b'Check out OPPO Find X5 Pro 5G 12GB + 256GB...	Malaysia	0
10	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 2:55	b'Check out OPPO Reno7 Pro 5G Smartphone 12G...	Malaysia	0
11	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 2:53	b'Check out OPPO Reno8 Pro 5G Smartphone 12G...	Malaysia	0
12	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 2:53	b'Check out OPPO Reno6 Pro 5G Smartphone 12G...	Malaysia	0
13	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 2:53	b'Check out OPPO Find X3 Pro 5G Smartphone 1 B...	Malaysia	0
14	1.589600e+18	Eren Jäger	Red01Phoenix	None	3.0	11/7/2022 12:38	b'Great deal alert!xf0\xfx94\x a5: Xiaomi 12 ...	None	0
15	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:19	b'Check out vivo V25 Pro Smartphone 12GB+8GB R...	Malaysia	0
16	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 22:35	b'Check out vivo V25 Pro Smartphone 12GB+8GB R...	Malaysia	0
17	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/10/2022 3:17	b'Check out vivo V25 Pro Smartphone 12GB+8GB R...	Malaysia	0

```
In [ ]: run_query('select * from smartphone WHERE UserName like "A%" ; ')
```

Out[30]:	ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified
0	1.591560e+18	Auction Network	Auction_Network	Weekly Live Online Auctions of Coins & Currenc...	1190.0	11/12/2022 22:15	b'RCM 2015 Fine Pure Silver \$250. Coin - Loone...	Unionville, Ontario	0
1	1.591530e+18	Auction Network	Auction_Network	Weekly Live Online Auctions of Coins & Currenc...	1190.0	11/12/2022 20:15	b'18kt Yellow & White Gold Custom 3 Rows o...	Unionville, Ontario	0
2	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:32	b'Samsung Galaxy A13 5G at 194.99.(Save55.0...	Karaikkudi, India	0
3	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:28	b'Samsung Galaxy A20 at 194.99.(Save55.0) ...	Karaikkudi, India	0
4	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:24	b'Samsung Galaxy A23 5G at 244.99.(Save55.0...	Karaikkudi, India	0
5	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:19	b'Samsung Galaxy A32 5G at 224.99.(Save55.0...	Karaikkudi, India	0
6	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:16	b'Samsung Galaxy A13 at 134.99.(Save55.0) ...	Karaikkudi, India	0
7	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:12	b'Samsung Galaxy A12 at 124.99.(Save55.0) ...	Karaikkudi, India	0
8	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:06	b'Samsung Galaxy A03s at 104.99.(Save55.0)...	Karaikkudi, India	0
9	1.591320e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 6:54	b'Samsung Galaxy S22 Ultra at 599.99.(Save6...	Karaikkudi, India	0
10	1.591320e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 6:42	b'Samsung Galaxy Z Flip4 at 259.99.(Save800...	Karaikkudi, India	0
11	1.591320e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 6:39	b'Samsung Galaxy Z Fold4 at 619.99.(Save130...	Karaikkudi, India	0
12	1.591290e+18	Angel Kovachev	AngelKovachev2	None	1.0	11/12/2022 4:36	b"@elonmusk the time is 04.34 the pictures wer...	None	0
13	1.591110e+18	Auction Network	Auction_Network	Weekly Live Online Auctions of Coins & Currenc...	1190.0	11/11/2022 16:45	b'Samsung Galaxy Watch 46mm Bluetoothhttps://...	Unionville, Ontario	0
14	1.591080e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 14:41	b'Samsung Galaxy Watch5 Pro Golf Edition at \$2...	Karaikkudi, India	0
15	1.591080e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 14:35	b'Samsung Galaxy A23 5G at 244.99.(Save55.0...	Karaikkudi, India	0
16	1.591080e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 14:33	b'Samsung Galaxy S20 Ultra 5G at \$600.00 (Save...	Karaikkudi, India	0
17	1.591070e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 14:24	b'Samsung Galaxy S20+ 5G at 400.00.(Save489...	Karaikkudi, India	0
18	1.591070e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:51	b'Samsung Galaxy S21+ 5G at 575.00.(Save464...	Karaikkudi, India	0
19	1.591060e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:33	b'Samsung Galaxy S20 FE 5G at 330.00.(Save1...	Karaikkudi, India	0
20	1.591060e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:31	b'Samsung Galaxy S22 Ultra at 599.99.(Save6...	Karaikkudi, India	0
21	1.591060e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:29	b'Samsung Galaxy S22+ 6.6-inch Display at \$549...	Karaikkudi, India	0
22	1.591060e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:24	b'Samsung Galaxy S22 6.1-inch Display at \$449...	Karaikkudi, India	0
23	1.591060e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 13:12	b'Samsung Galaxy Z Fold4 at 619.99.(Save130...	Karaikkudi, India	0
24	1.589920e+18	Alex Vozor ~13k~	AlexVozor	None	12964.0	11/8/2022 9:45	b'Geekbuying WW, Save \$3,00 on Xiaomi JIMMY F6...	None	0
25	1.588500e+18	Andile ngema	Andilen57493753	None	29.0	11/4/2022 11:36	b'@Xiaomi_ZA Amazing giveaway!nAnswer Redmi No...	None	0

```
In [ ]: run_query('select DISTINCT UserName,FollowersCount,Location FROM smartphone;')
```

Out[31]:

	UserName	FollowersCount	Location
0	Auction Network	1190.0	Unionville, Ontario
1	Offerte del Giorno	1971.0	Italia
2	Super Offerte dal Web!	258.0	Italia
3	Coupon Matrix	18.0	London
4	Eren Jäger	3.0	None
...
70	@motaungsiph0	2146.0	Johannesburg, South Africa
71	Zweli	64.0	Vosloorus Ext 8 Ngwenya Rd
72	bob johnson	176.0	Toronto CA
73	Philemon Setshehi	97.0	None
74	Mimi 🎉🔥 Estate #CEOsoPIN 🌟🌈🌟	2069.0	None

75 rows × 3 columns

```
In [ ]: run_query('select UserName,ScreenName,FollowersCount,Text FROM smartphone WHERE Text like "%$$%" ;')
```

Out[32]:

	UserName	ScreenName	FollowersCount	Text
0	Auction Network	Auction_Network	1190.0	b'RCM 2015 Fine Pure Silver \$250. Coin - Loone...
1	Auction Network	Auction_Network	1190.0	b'18kt Yellow & White Gold Custom 3 Rows o...
2	Coupon Matrix	MatrixCoupon	18.0	b'Samsung HW-Q990B Dolby Atmos Soundbar\nMSRP ...
3	PromOferta Web Promoção Cupom	PromOfertaWeb	40.0	b"30% DE CASHBACK\nSmartphone Samsung Galaxy M...
4	Profertas	ProfertasOfc	776.0	b'(parceiro magalu) Tablet Samsung Galaxy A7 L...
...
67	Laxmikant Khadke	elkay_mdb	69.0	b'Save \$3,00 on Xiaomi JIMMY F6 Hair Dryer 220...
68	Top Ofertas Brasil	TopOfertasBR	6.0	b'Smartphone Xiaomi Redmi 9i Sport Metallic Bl...
69	Alex Vozor ~13k~	AlexVozor	12964.0	b'Geekbuying WW, Save \$3,00 on Xiaomi JIMMY F6...
70	DEREVO	DEREVO10711	3.0	b'New Xiaomi Mi Car. You can Buy this vehicle ...
71	bob johnson	bobjohn83869058	176.0	b'@statsfundwill \$xair killed yesterday after ...

72 rows × 4 columns

DONE BY - VIDIP VIMAL KAMDAR (NUID- 002701593)

```
In [ ]: run_query('select DISTINCT Created_at, ID FROM smartphone;')
```

Out[33]:

	Created_at	ID
0	11/12/2022 22:15	1.591560e+18
1	11/12/2022 22:09	1.591550e+18
2	11/12/2022 20:15	1.591530e+18
3	11/12/2022 18:32	1.591500e+18
4	11/12/2022 17:26	1.591480e+18
...
174	11/10/2022 4:03	1.590000e+18
175	11/10/2022 3:17	1.590000e+18
176	11/10/2022 3:16	1.590000e+18
177	11/10/2022 3:15	1.590000e+18
178	11/10/2022 3:14	1.590000e+18

179 rows × 2 columns

```
In [ ]: run_query('SELECT UserName, Text FROM smartphone WHERE Text like "%5000mAh%"')
```

Out[34]:

	UserName	Text
0	Eren Jäger	b'Deal alert: Samsung Galaxy A73 5G Smartphone...
1	DealShop99.com	b'\xf0\x9f\x93\xb1 Samsung Galaxy M13 5G (4GB,...
2	Malaysia Daily	b'Check out OPPO A77 5G Smartphone 6GB RAM +...
3	Malaysia Daily	b'Check out [New Launch] OPPO A17k Smartphone ...
4	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 128GB ...
5	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 64GB ...
6	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 64GB ...
7	Malaysia Daily	b'Check out OPPO A96 Smartphone 8GB+ 256GB ...
8	Malaysia Daily	b'Check out OPPO A76 Smartphone 6GB+128GB ...
9	Malaysia Daily	b'Check out OPPO A16 Smartphone (4GB RAM/64GB ...
10	Malaysia Daily	b'Check out OPPO A77 5G Smartphone 6GB RAM +...
11	Malaysia Daily	b'Check out [New Launch] OPPO A17k Smartphone ...
12	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 128GB ...
13	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 64GB ...
14	Malaysia Daily	b'Check out OPPO A96 Smartphone 8GB+ 256GB ...
15	Malaysia Daily	b'Check out OPPO A76 Smartphone 6GB+128GB ...
16	Malaysia Daily	b'Check out OPPO A16 Smartphone (4GB RAM/64GB ...
17	Malaysia Daily	b'Check out OPPO A77 5G Smartphone 6GB RAM +...
18	Malaysia Daily	b'Check out [New Launch] OPPO A17k Smartphone ...
19	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 128GB ...
20	Malaysia Daily	b'Check out OPPO A57 Smartphone 4GB + 64GB ...
21	Malaysia Daily	b'Check out OPPO A96 Smartphone 8GB+ 256GB ...
22	Malaysia Daily	b'Check out OPPO A76 Smartphone 6GB+128GB ...
23	Malaysia Daily	b'Check out vivo Y02s 3+32 Smartphone (3GB RAM...
24	Malaysia Daily	b'Check out vivo Y55+ 5G Smartphone 6GB + 2GB ...
25	Malaysia Daily	b'Check out vivo Y77 5G Smartphone 8+4GB RAM/2...
26	Malaysia Daily	b'Check out vivo Y15s Smartphone (3GB+32GB/500...
27	Malaysia Daily	b'Check out vivo Y33s Smartphone (8 + 4GB RAM/...
28	Malaysia Daily	b'Check out vivo Y15A Smartphone (4+1GB Extend...
29	Malaysia Daily	b'Check out vivo Y35 Smartphone 8+8GB RAM 25...
30	Malaysia Daily	b'Check out vivo Y16 Smartphone 2.5D Trendy De...
31	Malaysia Daily	b'Check out vivo Y02s 3+64 Smartphone (3GB RAM...
32	Malaysia Daily	b'Check out vivo Y01 Smartphone (2GB RAM +32GB...
33	Malaysia Daily	b'Check out vivo T1x (4 + 1GB Extended RAM + 6...
34	Malaysia Daily	b'Check out vivo Y77 5G Smartphone 8+4GB RAM/2...
35	Malaysia Daily	b'Check out vivo Y15s Smartphone (3GB+32GB/500...
36	Malaysia Daily	b'Check out vivo Y33s Smartphone (8 + 4GB RAM/...
37	Malaysia Daily	b'Check out vivo Y35 Smartphone 8+8GB RAM 25...
38	Malaysia Daily	b'Check out vivo Y15A Smartphone (4+1GB Extend...
39	Malaysia Daily	b'Check out vivo Y02s 3+64 Smartphone (3GB RAM...
40	Malaysia Daily	b'Check out vivo Y16 Smartphone 2.5D Trendy De...
41	Malaysia Daily	b'Check out vivo Y01 Smartphone (2GB RAM +32GB...
42	Malaysia Daily	b'Check out vivo T1x (4 + 1GB Extended RAM + 6...
43	Malaysia Daily	b'Check out vivo T1x (4 + 1GB Extended RAM + 6...
44	Malaysia Daily	b'Check out vivo Y02s 3+32 Smartphone (3GB RAM...
45	Malaysia Daily	b'Check out vivo Y55+ 5G Smartphone 6GB + 2GB ...
46	Malaysia Daily	b'Check out vivo Y33T Smartphone (8+4GB Extend...
47	Malaysia Daily	b'Check out vivo Y77 5G Smartphone 8+4GB RAM/2...
48	Malaysia Daily	b'Check out vivo Y15s Smartphone (3GB+32GB/500...
49	Malaysia Daily	b'Check out vivo Y33s Smartphone (8 + 4GB RAM/...
50	Malaysia Daily	b'Check out vivo Y15A Smartphone (4+1GB Extend...
51	Malaysia Daily	b'Check out vivo Y35 Smartphone 8+8GB RAM 25...
52	Malaysia Daily	b'Check out vivo Y02s 3+64 Smartphone (3GB RAM...
53	Malaysia Daily	b'Check out vivo Y16 Smartphone 2.5D Trendy De...
54	Malaysia Daily	b'Check out vivo Y01 Smartphone (2GB RAM +32GB...

UserName		Text							
55	Malaysia Daily	b'Check out vivo T1x (4 + 1GB Extended RAM + 6...							
In []: run_query('SELECT * FROM smartphone WHERE Text like "%2%free%samsung%watches%" ; ')									
Out[35]:									
ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified	
0	1.591110e+18	Evelle DeLite	EvelleDelite	None	0.0	11/11/2022 17:00	b"that we qualify for 2 free samsung watches I...	None	0
In []: run_query('SELECT * FROM smartphone WHERE Text like "%\$244.99%" ; ')									
Out[36]:									
ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified	
0	1.591340e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/12/2022 8:12	b'AndroidInfotec: Samsung Galaxy A23 5G at \$24...	India	0
1	1.591330e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/12/2022 7:24	b'Samsung Galaxy A23 5G at 244.99(Save55.0...	Karaikudi, India	0
2	1.591090e+18	selvaganesh	selva_gnsh	Founder and Chief Editor At https://t.co/rTdLF...	38.0	11/11/2022 15:12	b'AndroidInfotec: Samsung Galaxy A23 5G at \$24...	India	0
3	1.591080e+18	Android Infotech	AndroidInfotec	Android Tips, Tutorials, Guide, Phones	284.0	11/11/2022 14:35	b'Samsung Galaxy A23 5G at 244.99(Save55.0...	Karaikudi, India	0
In []: run_query('SELECT * FROM smartphone WHERE FollowersCount<100; ')									
Out[37]:									
ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified	
0	1.591500e+18	Coupon Matrix	MatrixCoupon	couponMatrix - Offers And Promotional Discount...	18.0	11/12/2022 18:32	b'Samsung HW-Q990B Dolby Atmos Soundbar\nMSRP ...	London	0
1	1.591480e+18	Eren Jäger	Red01Phoenix	None	3.0	11/12/2022 17:26	b'Deal alert: Samsung Galaxy A73 5G Smartphone...	None	0
2	1.591460e+18	PromOferta Web Promoção Cupom	PromOfertaWeb	Melhores Links, com promoções imperdíveis.\nO...	40.0	11/12/2022 15:59	b"30% DE CASHBACK\nSmartphone Samsung Galaxy M...	None	0
3	1.591370e+18	Rose	Rose96860188	Hello \nI'm Rose and I love /You've Got Mail. ...	0.0	11/12/2022 10:00	b'H\nSmartwatch\nFitbit Versa 3, \$157.00, 32%...	None	0
4	1.591360e+18	Daniele Camorani	ilcamo1682	ciao a tutti quanti e benvenuto! mi piace il mo...	6.0	11/12/2022 9:20	b'Samsung Galaxy Buds Live Auricolari True Wir...	Emilia Romagna, Italia forli	0
...
64	1.588710e+18	YourDeal.India	InYourdeal	None	62.0	11/5/2022 1:30	b'Check out this product \xf0\x9f\x98\x8d TDG ...	INDIA	0
65	1.588500e+18	Andile ngema	Andilen57493753	None	29.0	11/4/2022 11:36	b'@Xiaomi_ZA Amazing giveaway\nAnswer Redmi No...	None	0
66	1.590000e+18	mafeke vuyo	Vuyo_Smartie150	A very respectful quiet but talkative young ma...	32.0	11/10/2022 20:39	b'RT @Zwelinzima1: Fundile Ludidi was hijacked...	Johannesburg, South Africa	0
67	1.590000e+18	Zweli	ZweliGtz	Xcited about how @mbewuorg wil empower,change,...	64.0	11/10/2022 19:01	b'RT @Zwelinzima1: Fundile Ludidi was hijacked...	Vosloorus Ext 8 Ngwenya Rd	0
68	1.590000e+18	Philemon Setschedi	PhilemonSetshed	Evangelist and IT and Media Specialist	97.0	11/10/2022 14:35	b'RT @Zwelinzima1: Fundile Ludidi was hijacked...	None	0

69 rows × 9 columns

DONE BY - VATSAL MAYUR MEHTA (NUID- 002912412)

```
In [ ]: run_query('select DISTINCT Created_at,Text FROM smartphone WHERE Text like "%Water%Resistant%"')
```

	Created_at	Text
0	11/11/2022 14:26	b'Check out OPPO Enco Buds I 24Hr Battery Life...
1	11/11/2022 14:25	b'Check out OPPO Enco Air 24 Hr Battery Lif...
2	11/11/2022 1:12	b'Check out OPPO Enco Buds I 24Hr Battery Life...
3	11/11/2022 1:09	b'Check out OPPO Enco Air 24 Hr Battery Lif...
4	11/11/2022 12:19	b'Check out vivo Wireless Sport Earphone HP205...
5	11/10/2022 22:35	b'Check out vivo Wireless Sport Earphone HP205...
6	11/10/2022 4:03	b'Check out vivo Wireless Sport Earphone HP205...

```
In [ ]: run_query('select avg(FollowersCount) FROM smartphone;')
```

	avg(FollowersCount)
0	83262.816384

```
In [ ]: run_query("select * FROM smartphone where Created_at BETWEEN '11/11/2022' AND '11/12/2022';")
```

	ID	UserName	ScreenName	Description	FollowersCount	Created_at	Text	Location	Verified
0	1.591210e+18	Profertas	ProfertasOfc	As melhores promoções, ofertas e descontos!\\n\\...	776.0	11/11/2022 23:37	b'(carrefour) Notebook Samsung Book NP550XDA-K...	Brasil	0
1	1.591210e+18	Promobit	PromobitOficial	A maior comunidade de ofertas do Brasil! Encon...	26206.0	11/11/2022 23:20	b'#promo\\xc3\\xa7\\xc3\\xa3o #oferta [ame por 13...	Brasil	0
2	1.591180e+18	YourDeal.India	InYourdeal	None	62.0	11/11/2022 21:30	b'\\xe2\\x81\\x89\\xfxb8\\x8fCAN YOU BELIEVE IT\\x...	INDIA	0
3	1.591160e+18	MAGAL CELL 🎁	magalcell	Assistência Técnica - MagalCell Aceitamos cart...	458.0	11/11/2022 20:17	b'Samsung A71 \\n128GB\\n6G de RAM \\nR\$ 750.00 h...	Rua Dos buzios 118	0
4	1.591160e+18	Promobit	PromobitOficial	A maior comunidade de ofertas do Brasil! Encon...	26206.0	11/11/2022 20:12	b'#topOferta Smart TV Samsung 65" QLED 4K 20...	Brasil	0
...
154	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:11	b'Check out vivo Y76 5G (8GB+4GB Extended RAM ...	Malaysia	0
155	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:11	b'Check out vivo T1 5G Snapdragon 778G 5G Proc...	Malaysia	0
156	1.590000e+18	Malaysia Daily	malaysiandaily	Wanna share some news, information and thought...	151252.0	11/11/2022 12:11	b'Check out vivo T1x (4 + 1GB Extended RAM + 6...	Malaysia	0
157	1.590000e+18	SS King	MketoSinakho	Taurus	187.0	11/11/2022 6:46	b'RT @Zwelinzima1: Fundile Ludidi was hijacked...	Johannesburg, South Africa	0
158	1.590000e+18	SAMMY	SAMMY50277422	None	2206.0	11/11/2022 3:33	b'RT @Zwelinzima1: Fundile Ludidi was hijacked...	None	0

159 rows × 9 columns

```
In [ ]:
```