In [286]:
```
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
import numpy as np
import datetime
from datetime import datetime
```

In [287]:
```
# to set data to its max width in a dataframe
pd.options.display.max_rows
pd.set_option('display.max_colwidth', -1)
```

```
<ipython-input-287-c4d982623a58>:3: FutureWarning: Passing a negative integer is deprecat
ed in version 1.0 and will not be supported in future version. Instead, use None to not l
imit the column width.
  pd.set_option('display.max_colwidth', -1)
```

In [288]:
```
df = pd.read_csv('Data Analyst - Test Data - US.csv', parse_dates=['date'])
df.head()
```

Out[288]:

	Review	date	Location
0	I was very impressed with the resort.\n Great staff at the main resort pool bar! We had a blast with them.\n Clean, professional staff, great location and very reasonable!\n \n Read more\n Read less	20/08/2019	Sebastian
1	The rooms were nice the outside needs work also no free breakfast it would have been nice overall it was ok\n \n Read more\n Read less	20/08/2019	Los Angeles
2	Great location! I have stayed at this hotel on my last three trips to New York.\n \n Read more\n Read less	20/08/2019	Georgia
3	The hotel was adequate for my stay. The strips in the bathtub were useless as I fell while taking a shower. I asked the front desk staff several times to get a bath mat but they never did. Management was unresponsive to my request which was very poor; someone should have gone to a dollar store and gotten a bath mat. Breakfast was good but it would have been nice to have had yogurt and/or cottage cheese on the buffet.\n \n Read more\n Read less	20/08/2019	NaN
4	Great location, room was large and spacious. Parking was easy and we appreciated the friendly staff\n \n Read more\n Read less	19/08/2019	Palm Harbor

In [289]:
```
df.info()
```

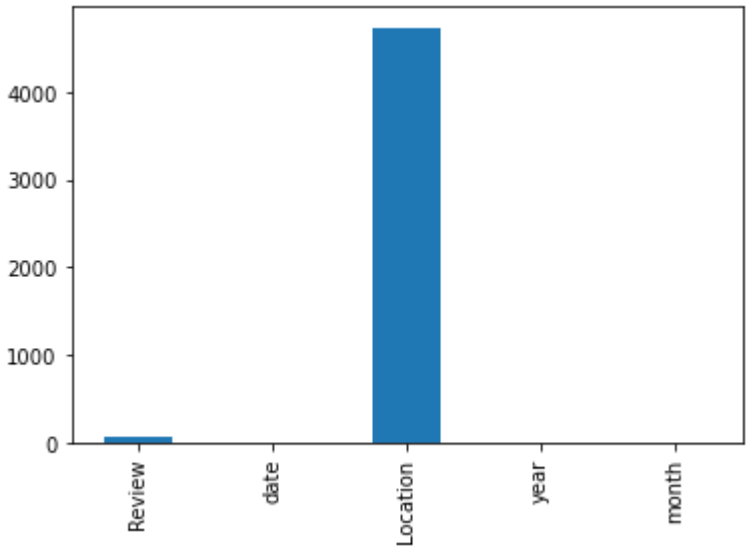
```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 6448 entries, 0 to 6447
Data columns (total 3 columns):
 #   Column    Non-Null Count  Dtype 
---  ------    --------------  ----- 
 0   Review    6393 non-null   object
 1   date      6448 non-null   object
 2   Location  1711 non-null   object
dtypes: object(3)
memory usage: 151.2+ KB
```

In [302]:
```
df.isnull().sum()
```

Out[302]:
```
Review      55
date         0
Location    4737
year         0
month        0
dtype: int64
```

In [303]:
```
df.isnull().sum().plot(kind='bar')
```

Out[303]: <AxesSubplot:>



In [291]:
```
df.duplicated().sum()
```

Out[291]: 4

In [292]:
```
df[df.duplicated()]
```

Out[292]:

	Review	date	Location
2366	NaN	22/02/2019	NaN
2663	NaN	28/01/2019	NaN
2670	NaN	28/01/2019	NaN
2671	NaN	28/01/2019	NaN

It appears there are actually 3 dates that are duplciated. In the absence of other fields, there is no much value we can bring from dates merely.

Assessment

1. There are 55 missing values in review
2. There are 4737 missing values in Location
3. Date is in string format. The data type is to be converted into Datetime type

In [293]:
```
# 3. There are certain values in 'MM-YYYY'  foramt and that needs to be parsedd and
```

```
# Date is in string format. The data type is to be converted into Datetime type
from dateutil.parser import parse
import pandas as pd

for i in range(len(df['date'])):
    df['date'][i] = parse(df['date'][i])
df['date'] = pd.to_datetime(df['date']).dt.strftime("%d-%m-%Y")
```

In [294]:
```
df['date'] = pd.to_datetime(df['date'])
```

In [295]:
```
type(df['date'][0])
```

Out[295]:
```
pandas._libs.tslibs.timestamps.Timestamp
```

Cleaning:

1. There are 55 missing values in review column

Assumption: I am not going to drop since i am not going to use review column in my analysis

1. There are 4737 missing values in Location

In [296]:
```
miss_percent = df['Location'].isna().sum()/df.shape[0]
print ('Percentage of Missing Values in Location is : {}'.format(miss_percent*100))
```

```
Percentage of Missing Values in Location is : 73.46464019851116
```

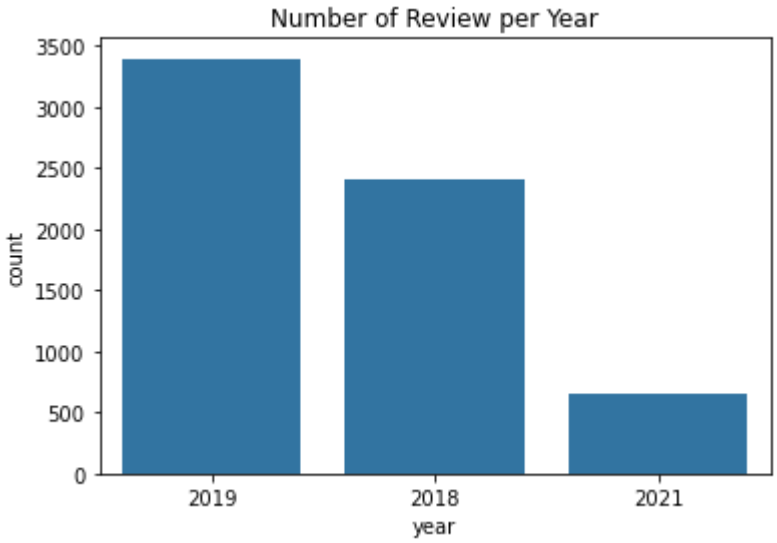
This is huge number. this will impact the analysis while performing location wise. So, we would need to correct this from source

Analysis:

In [297]:
```
# analysing the reviews per year

df['year'] = pd.DatetimeIndex(df['date']).year
sns.countplot(data=df, x='year', color = base_color, order = gen_order_year)
plt.title('Number of Review per Year')
```

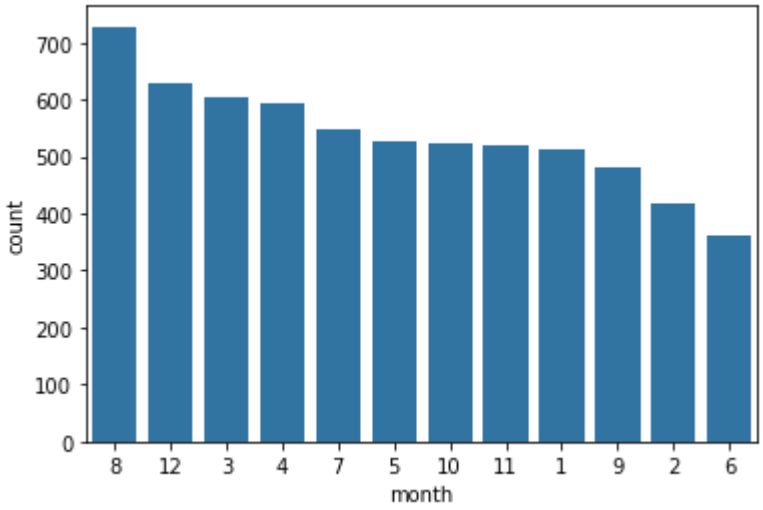
Out[297]:
```
Text(0.5, 1.0, 'Number of Review per Year')
```



In [298]:
```
base_color = sns.color_palette()[0]
gen_order_year = df['year'].value_counts().index
```

per above figure, its understood that 2019 has got more visits to the hotel

In [299]:
```
# analysing the reviews per month
df['month'] = pd.DatetimeIndex(df['date']).month
sns.countplot(data = df, x='month', color = base_color, order = gen_order_month)
gen_order_month = df['month'].value_counts().index
```



In [300]:
```
#### Per the above figure, its determined that the more visits happened in August
```

Time period of review considered

In [301]:
```
max_time = df['date'].max()
min_time = df['date'].min()
time_period = (max_time - min_time)
print (time_period)
```

```
1235 days 00:00:00
```

In [ ]: