```
!pip install transformers
     Collecting transformers
       Downloading transformers-4.33.3-py3-none-any.whl (7.6 MB)
                                                   7.6/7.6 MB 40.5 MB/s eta 0:00:00
     Requirement already satisfied: filelock in /usr/local/lib/python3.10/dist-packages (from transformers) (3.12.2)
     Collecting huggingface-hub<1.0,>=0.15.1 (from transformers)
       Downloading huggingface_hub-0.17.3-py3-none-any.whl (295 kB)
                                                 - 295.0/295.0 kB 26.9 MB/s eta 0:00:00
     Requirement already satisfied: numpy>=1.17 in /usr/local/lib/python3.10/dist-packages (from transformers) (1.23.5)
     Requirement already satisfied: packaging>=20.0 in /usr/local/lib/python3.10/dist-packages (from transformers) (23.1)
     Requirement already satisfied: pyyaml>=5.1 in /usr/local/lib/python3.10/dist-packages (from transformers) (6.0.1)
     Requirement already satisfied: regex!=2019.12.17 in /usr/local/lib/python3.10/dist-packages (from transformers) (2023.6.3)
     Requirement already satisfied: requests in /usr/local/lib/python3.10/dist-packages (from transformers) (2.31.0)
     Collecting tokenizers!=0.11.3,<0.14,>=0.11.1 (from transformers)
       Downloading tokenizers-0.13.3-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (7.8 MB)
                                                    7.8/7.8 MB 61.5 MB/s eta 0:00:00
     Collecting safetensors>=0.3.1 (from transformers)
       Downloading safetensors-0.3.3-cp310-cp310-manylinux_2_17_x86_64.manylinux2014_x86_64.whl (1.3 MB)
                                                   - 1.3/1.3 MB 51.5 MB/s eta 0:00:00
     Requirement already satisfied: tqdm>=4.27 in /usr/local/lib/python3.10/dist-packages (from transformers) (4.66.1)
     Requirement already satisfied: fsspec in /usr/local/lib/python3.10/dist-packages (from huggingface-hub<1.0,>=0.15.1->transformers) (202
     Requirement already satisfied: typing-extensions>=3.7.4.3 in /usr/local/lib/python3.10/dist-packages (from huggingface-hub<1.0,>=0.15.1
     Requirement already satisfied: charset-normalizer<4,>=2 in /usr/local/lib/python3.10/dist-packages (from requests->transformers) (3.2.0
     Requirement already satisfied: idna<4,>=2.5 in /usr/local/lib/python3.10/dist-packages (from requests->transformers) (3.4)
     Requirement already satisfied: urllib3<3,>=1.21.1 in /usr/local/lib/python3.10/dist-packages (from requests->transformers) (2.0.4)
     Requirement already satisfied: certifi>=2017.4.17 in /usr/local/lib/python3.10/dist-packages (from requests->transformers) (2023.7.22)
     Installing collected packages: tokenizers, safetensors, huggingface-hub, transformers
     Successfully installed huggingface-hub-0.17.3 safetensors-0.3.3 tokenizers-0.13.3 transformers-4.33.3
from transformers import AutoTokenizer, AutoModelForSequenceClassification
import torch
import requests
from bs4 import BeautifulSoup
import re
import pandas as pd
import numpy as np
import matplotlib.pyplot as plt
import_bert_tokenizer = AutoTokenizer.from_pretrained('nlptown/bert-base-multilingual-uncased-sentiment')
     Downloading (...)okenizer_config.json: 100%
                                                                                 39.0/39.0 [00:00<00:00, 1.58kB/s]
     Downloading (...)lve/main/config.json: 100%
                                                                                 953/953 [00:00<00:00, 33.7kB/s]
     Downloading (...)solve/main/vocab.txt: 100%
                                                                                 872k/872k [00:00<00:00, 5.77MB/s]
     Downloading (...)cial_tokens_map.json: 100%
                                                                                  112/112 [00:00<00:00, 5.65kB/s]
bert_model = AutoModelForSequenceClassification.from_pretrained('nlptown/bert-base-multilingual-uncased-sentiment')
     Downloading pytorch_model.bin: 100%
                                                                            669M/669M [00:06<00:00, 126MB/s]
```

Collecting the reviews using Beautiful soup form yelp website of 14 pages reviews

```
len(reviews)
     13623233
soup = BeautifulSoup(reviews, 'html.parser')
regex = re.compile('.*comment.*')
results = soup.find_all('p', {'class':regex})
customer_reviews = [result.text for result in results]
customer_reviews[0]
     'It was ok. The coffee wasn't the best but it was fine. The relish on the breakfast roll was yum which did make it sing. So perhaps I ju
     my visit.'
store_review = customer_reviews[1]
store_review_score = sentiment_analysis(reviews_data['reviews'].iloc[1])
print(f"{store_review} --> the sentiment score is --> {store_review_score}")
if store_review_score >= 4:
  print('POSITIVE REVIEW')
elif store_review_score == 3:
  print("NEUTRAL REVIEW")
else :
  print("NEGATIVE REVIEW")
     This place is a gem. The ambiance is to die for. The service is really nice. The coffee is a must. Ah I can still remember how that Ice
     POSITIVE REVIEW
reviews_data = pd.DataFrame(np.array(customer_reviews),columns=['reviews'])
reviews data.sample(5)
                                               reviews
      1
             This place is a gem. The ambiance is to die fo...
       6
             I'm so glad I found Social Brew! It was so won...
      71
             Great Ambiance, friendly service. Overall a wi...
      18
            What probably would have been a 4 star rating ...
      13 Sunday brunch was very busy! However the staff...
reviews_data.shape
     (133, 1)
def sentiment_analysis(review):
  tokens = import_bert_tokenizer.encode(review,return_tensors='pt')
  result = bert_model(tokens)
  return int(torch.argmax(result.logits)) + 1
reviews\_data['sentimental\_score'] = reviews\_data['reviews'].apply(lambda x : sentiment\_analysis(x[:512]))
reviews_data.head()
                                                                               \blacksquare
                                                reviews sentimental score
      0
               It was ok. The coffee wasn't the best but it w...
                                                                          3
                                                                               ıl.
              This place is a gem. The ambiance is to die fo...
                                                                          3
      1
      2
               I went here a little while ago- a beautiful mo...
      3 Ron & Jo are on the go down under and Wow! We...
                                                                          5
                5 stars all around for the staff and delicious...
```

```
def sentimental_string_score(reviews):
  if reviews >= 4:
    return 'POSITIVE REVIEW'
  elif reviews == 3:
   return 'NEUTRAL REVIEW'
  else :
    return 'NEGATIVE REVIEW'
reviews_data['sentimental_string_score'] = reviews_data['sentimental_score'].apply(sentimental_string_score)
reviews_data.sample(5)
                                              reviews sentimental_score sentimental_string_score
      53
           Wonderful settings, nice service. Came 3 times...
                                                                        5
                                                                                   POSITIVE REVIEW
                                                                                                        11.
      117
            Charming place with fantastic service, and ver...
                                                                        5
                                                                                   POSITIVE REVIEW
      74
            We're only visiting for a week on business, an...
                                                                        1
                                                                                   NEGATIVE REVIEW
      47
         Great atmosphere. Food perfect to rejuvenate a...
                                                                        5
                                                                                   POSITIVE REVIEW
                                                                                   POSITIVE REVIEW
            Wonderful food & super friendly gals working t...
                                                                        5
      116
reviews_data['sentimental_score'].value_counts()
     4
          30
     3
           9
     2
           5
     1
           5
     Name: sentimental_score, dtype: int64
reviews_data['sentimental_string_score'].value_counts()
     POSITIVE REVIEW
                         114
     NEGATIVE REVIEW
                         10
     NEUTRAL REVIEW
                           9
     Name: sentimental_string_score, dtype: int64
colors = ['pink', 'silver', 'steelblue']
explode = (0.07, 0.05, 0.08)
reviews\_data.groupby (['sentimental\_string\_score']).sum().plot(kind='pie', y='sentimental\_score', autopct='%1.0f\%', y='sentimental\_score').
                                 colors = colors, explode=explode,
                                 title='Reviews Given By The Customers')
     <ipython-input-167-05ce9b3a510e>:3: FutureWarning: The default value of numeric_only in DataFrameGroupBy.sum is deprecated. In a future
       reviews_data.groupby(['sentimental_string_score']).sum().plot(kind='pie', y='sentimental_score', autopct='%1.0f%%',
     <Axes: title={'center': 'Reviews Given By The Customers'}, ylabel='sentimental_score'>
                           Reviews Given By The Customers
                                                    NEGATIVE REVIEW
                                                    NEUTRAL REVIEW
                                                    POSITIVE REVIEW
                                                                     NEUTRAL REVIEW
                  nental_score
                                                         5%
                                                                      NEGATIVE REVIEW
                               93%
       POSITIVE REVEEW
```

Conclusion: Tha data is extracted form yelp website using beautiful soup, the sentimental score of the extracted reviews are done using pretrained bert model the majority i.e 93% reviews given by the customers are positive and only 3% of the customers gave bad reviews and 5% of the customers are just satisfied with the food and restaurant