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import requests
from bs4 import BeautifulSoup
import csv
import matplotlib.pyplot as plt
import seaborn as sns
import plotly.express as px

# URL of the Booking.com search results page
url = 'https://www.booking.com/searchresults.html?city=-2646014&order=price'

# Send a GET request to the website and get the HTML content
response = requests.get(url)
html_content = response.content

# Parse the HTML content using BeautifulSoup
soup = BeautifulSoup(html_content, 'html.parser')

# Extract hotel information from the search results
hotel_data = []

hotel_elements = soup.find_all('div', class_='sr_item')
if hotel_elements:
    for hotel in hotel_elements:
        hotel_name = hotel.find('h3', class_='sr-hotel__name').text.strip()
        hotel_address = hotel.find('p', class_='sr-hotel__address').text.strip()
        hotel_rating = hotel.find('span', class_='rating_star rating_star_small').text.strip()
        hotel_price = hotel.find('span', class_='price_per_night_part').text.strip()
        hotel_reviews = hotel.find('span', class_='sr-hotel__review-count').text.strip()
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        hotel_info = {
            'name': hotel_name,
            'address': hotel_address,
            'rating': hotel_rating,
            'price': hotel_price,
            'reviews': hotel_reviews
        }
        hotel_data.append(hotel_info)
else:
    print("No hotel elements found in the search results.")

# Write the hotel data to a CSV file
with open('hotels.csv', 'w', newline='') as file:
    writer = csv.DictWriter(file, fieldnames=hotel_data[0].keys())
    writer.writeheader()
    writer.writerows(hotel_data)

# Read the hotel data from the CSV file
with open('hotels.csv', 'r') as file:
    reader = csv.DictReader(file)
    hotel_data = list(reader)

# Create a bar chart to compare the ratings of hotels
if hotel_data:
    ratings = [hotel['rating'] for hotel in hotel_data]
    plt.bar(range(len(ratings)), ratings)
    plt.xlabel('Hotels')
    plt.ylabel('Rating')
    plt.title('Comparison of Hotel Ratings')
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    plt.xticks(range(len(ratings)), [hotel['name'] for hotel in hotel_data], rotation=45)
    plt.show()
else:
    print("No hotel data available for creating the bar chart.")

# Create a pie chart to show the distribution of hotel types
if hotel_data:
    types = [hotel['type'] for hotel in hotel_data]
    types_count = {type: types.count(type) for type in set(types)}
    plt.pie(types_count.values(), labels=types_count.keys(), autopct='%1.1f%%')
    plt.title('Distribution of Hotel Types')
    plt.show()
else:
    print("No hotel data available for creating the pie chart.")

# Create a line graph to show the trend of hotel prices over different locations
if hotel_data:
    locations = [hotel['location'] for hotel in hotel_data]
    prices = [float(hotel['price'].replace('$', '')) for hotel in hotel_data]
    plt.plot(locations, prices)
    plt.xlabel('Locations')
    plt.ylabel('Price')
    plt.title('Trend of Hotel Prices over Different Locations')
    plt.xticks(range(len(locations)), locations, rotation=45)
    plt.show()
else:
    print("No hotel data available for creating the line graph.")
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