Question 1

Write Python scripts for basic file operations and data processing?

1. Create a File and Write to It

```
def write_to_file(filename, content):
    with open(filename, 'w') as file:
        file.write(content)
    print(f"Content written to {filename}")

## Example usage
write_to_file("sample.txt", "Hello, this is a test file.\nLine 2 content.")
```

2. Read from a File

```
def read_file(filename):
    try:
        with open(filename, 'r') as file:
            content = file.read()
        print("File content:")
        print(content)
    except FileNotFoundError:
        print("File not found.")

## Example usage
read_file("sample.txt")
```

3. Append Text to an Existing File

```
def append_to_file(filename, text):
    with open(filename, 'a') as file:
        file.write("\n" + text)
    print("Text appended successfully.")

## Example usage
append_to_file("sample.txt", "This line is appended.")
```

4. Write Data to a CSV File

```
import csv

def write_csv_file(filepath, data):
    with open(filepath, mode='w', newline='') as file:
        fieldnames = ['name', 'age']
        writer = csv.DictWriter(file, fieldnames=fieldnames)
        writer.writeheader()
        writer.writerows(data)
    print("CSV file written successfully.")

# Example usage
data = [
    {'name': 'Alice', 'age': 30},
    {'name': 'Bob', 'age': 25},
]
write_csv_file("data.csv", data)
```

5. Read a CSV File and Process Data

```
import csv

def read_csv_file(filepath):
    with open(filepath, mode='r') as file:
        reader = csv.DictReader(file)
        for row in reader:
            print(row)

# Example usage
# CSV file must have headers like: name, age
read_csv_file("data.csv")
```

6. Count Words in a Text File –-

```
def count_words(filename):
    with open(filename, 'r') as file:
        content = file.read()
    words = content.split()
    print(f"Total words: {len(words)}")

# Example usage
count_words("sample.txt")
```

Question 2

Develop a simple web scraper to extract data from a website?

simple_scraper.py

```
import requests
from bs4 import BeautifulSoup

def scrape_article_title(url):
    try:
        response = requests.get(url)
        response.raise_for_status()
        soup = BeautifulSoup(response.text, 'html.parser')

        # Extract the main article title
        title = soup.find('h1')
        if title:
            print("Article Title:\n")
            print(title.get_text(strip=True))
        else:
            print("No <h1> title found on the page.")
    except Exception as e:
        print("Error occurred:", e)

# Try the function
scrape_article_title("https://analyticsindiamag.com/global-tech/ai-models-from-google-openai-anthropic-solve-0-of-hard-coding-proble
```