Title: File Handling in Python

Lab Objective: The objective of this lab is to evaluate the fundamentals of file handling in.

Prerequisites: Basic knowledge of Python programming. Familiarity with basic file operations in Python (open, read, write).

Problem: File handling (Beginner level)

Reading and Displaying File Content. Write a Python program to open and read the contents of the provided text file. Display the content on the console.

Problem: File Analysis (Advanced)

Description: You are given a directory containing a large number of text files. Your task is to create a Python program that performs advanced file analysis on these text files and generates a report summarizing various statistics and insights.

Specifications:

1. The program should accept the following command-line arguments:
   - -d or --directory: The path to the directory containing the text files for analysis.
   - -o or --output: The path to the output report file.
2. Perform the following analyses on each text file in the directory:
   - Count the number of lines in each file.
   - Count the number of words in each file.
   - Identify the top N most common words (excluding common stop words like "the," "and," "in," etc.) in each file.
   - Determine the average word length in each file.
   - Calculate the ratio of vowels to consonants in each file.
3. Generate a comprehensive report that includes:
   - A summary of the total number of files analyzed.
   - For each file, list the file name, number of lines, number of words, top N words, average word length, and vowel-to-consonant ratio.
4. The report should be written to the output file in a structured format, such as CSV or JSON, for easy analysis.
5. Implement error handling to check for valid directory paths and handle exceptions accordingly.
6. Ensure that the program is well documented, with comments explaining the code's functionality.