**main.py**

Python

"""

A simple text analysis tool that counts words, unique words,

and the frequency of each word in a given text file.

"""

def analyze\_text(file\_path):

"""

Analyzes a text file to count words and their frequencies.

Args:

file\_path (str): The path to the text file.

Returns:

tuple: A tuple containing:

- total\_words (int): The total number of words.

- unique\_words\_count (int): The number of unique words.

- word\_frequency (dict): A dictionary of word frequencies.

"""

word\_frequency = {}

total\_words = 0

try:

with open(file\_path, 'r', encoding='utf-8') as f:

text = f.read()

# Split text into words and convert to lowercase for consistent counting

words = text.lower().split()

total\_words = len(words)

for word in words:

# Remove punctuation from words before counting

word = word.strip('.,?!;:')

if word: # Ensure word is not an empty string

word\_frequency[word] = word\_frequency.get(word, 0) + 1

unique\_words\_count = len(word\_frequency)

return total\_words, unique\_words\_count, word\_frequency

except FileNotFoundError:

print(f"Error: The file at {file\_path} was not found.")

return 0, 0, {}

def main():

"""

Main function to run the text analysis tool.

"""

file\_name = "sample\_text.txt"

total\_words, unique\_words\_count, word\_frequency = analyze\_text(file\_name)

if total\_words > 0:

print("--- Text Analysis Report ---")

print(f"Total Words: {total\_words}")

print(f"Unique Words: {unique\_words\_count}")

print("\nTop 5 Most Frequent Words:")

# Sort the dictionary to find the most frequent words

sorted\_words = sorted(word\_frequency.items(), key=lambda item: item[1], reverse=True)

for word, count in sorted\_words[:5]:

print(f"- '{word}': {count} times")

if \_\_name\_\_ == "\_\_main\_\_":

main()