

### **Problem 1: Word Frequency Counter**

Write a Python program to read a text file and calculate the frequency of each word. Use a dictionary to store the word frequencies and save the results to a new file.

#### **Steps:**

1. Read a file named input.txt.
2. Split its content into words and store word frequencies in a dictionary.
3. Write the dictionary content to a file named output.txt.

#### **Example:**

##### **Input (input.txt):**

hello world hello python

##### **Output (output.txt):**

hello: 2

world: 1

python: 1

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## Problem 2: Reverse Lines in a File

Write a Python program to read a file, reverse the content of each line, and save the reversed lines into a new file.

### Steps:

1. Read a file named input.txt.
2. Reverse the content of each line using string operations.
3. Write the reversed lines into a file named reversed.txt.

### Example:

#### Input (input.txt):

Python is fun

Learning is continuous

#### Output (reversed.txt):

nuf si nohtyP

suounitnoc si gninraeL

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### Problem 3: Merge Lists and Write Unique Items

Write a program to take two lists, merge them, remove duplicates, and write the sorted result to a file.

#### Steps:

1. Define two lists of numbers or strings.
2. Merge them, remove duplicates using a set, and sort them.
3. Write the sorted list into merged.txt.

#### Example:

##### Input:

```
list1 = [1, 2, 3, 4]
```

```
list2 = [3, 4, 5, 6]
```

##### Output (merged.txt):

1

2

3

4

5

6

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#### Problem 4: JSON Dictionary to File

Write a Python program to create a dictionary, convert it to a JSON format, and save it into a file. Then read the file back and print the dictionary.

##### Steps:

1. Create a dictionary with string keys and list values.
2. Save the dictionary as JSON into data.json.
3. Read back the JSON file and print the dictionary.

##### Example:

##### Dictionary:

```
{  
  "fruits": ["apple", "banana", "cherry"],  
  "vegetables": ["carrot", "spinach", "potato"]  
}
```

##### Output (when reading back the file):

```
{'fruits': ['apple', 'banana', 'cherry'], 'vegetables': ['carrot', 'spinach', 'potato']}
```

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### Problem 5: Find Palindromes in a File

Write a Python program to read a file, identify all palindromic words (words that read the same backward as forward), and store them in a list.

#### Steps:

1. Read a file named words.txt.
2. Identify all words that are palindromes (case-insensitive).
3. Write the palindromic words into a file named palindromes.txt.

#### Example:

##### Input (words.txt):

level madam racecar python world

##### Output (palindromes.txt):

text

level

madam

racecar