

Programming Language Learning Series

Mastery of Python Language

(Interview Questions/Assignment-Styles of Programming)

Given a text file as input, we are interested to computing the following text analytics on that input:

- Compute the number of words in the given file
- Find the 10 most frequent words in the given file
- Find the number of times a given word appears in the file

Task1: The following program depicts a procedural style solution to compute the required text analytics. What are the problems do you observe with the code? Explain them in detail.

```
def read_words(filename):  
    """Return a dictionary mapping each word in filename to its frequency"""  
    words = open(filename).read().split()  
    wordcounts = {}  
    for w in words:  
        wordcounts.setdefault(w, 0)  
        wordcounts[w] += 1  
    return wordcounts  
  
def wordcount(wordcounts, word):  
    """Given a frequency dictionary, return the count of the given word"""  
    return wordcounts[word]  
  
def topk(wordcounts, k=10):  
    """Given a frequency dictionary, return the top k most frequent words, in order"""  
    scores_with_words = [(c,w) for (w,c) in wordcounts.items()]  
    scores_with_words.sort()  
    return scores_with_words[0:k]  
  
def totalwords(wordcounts):  
    """Return the total number of words in the file"""  
    return sum([s for (w,s) in wordcounts])
```

Task2: Rewrite the above logic using object oriented style and Discuss whether the problems you have identified in Task1 are eliminated or not.

Task3: Rewrite the above logic using functional style.