algorithmica

# Programming Language Learning Series
# Mastery of Python Language
## (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)
            setwordcounts[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])
```

**Task3:** Rewrite the above logic using object oriented style and Discuss whether the problems you have identified in Task2 are eliminated or not.

**Task4:** Rewrite the above logic using functional style.