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9.2—Literary Analysis

```
def read_words(infile):
    # Read text from file
    with open(infile, 'r') as f:
        # Skip header of file
        l = ""; lines = []
        while "START OF THIS PROJECT GUTENBERG EBOOK" not in l:
            l = f.readline()
        # Read untill the end of the book
        while True:
            lines.append(f.readline())
            if "END OF THIS PROJECT" in lines[-1]:
                break

    words = {}
    # Read in words
    for l in lines:
        for w in l.split():
            word = filter(str.isalpha, w.strip())
            if word:
                if word not in words.keys():
                    words[word] = 1
                else:
                    words[word] += 1

    return words

def print_by_occurance(words):
    words = [[words[k], k] for k in words.keys()]
    words.sort(key=lambda word: word[0])
    words.reverse()
    for word in words:
        print "%25s %5d" % (word[1], word[0])

def print_alphabetically(words):
    keys = [k for k in words.keys()]
    keys.sort()
    for key in keys:
        print "%25s %5d" % (key, words[key])

if __name__ == "__main__":
    print "Alice in Wonderland, words in decreasing number of occurances:"
    infile = "AliceInWonderland.txt"
    words = read_words(infile)
    print_by_occurance(words)
    print "The Prince, words in alphabetical order:"
    infile = "ThePrince.txt"
    words = read_words(infile)
    print_alphabetically(words)

'''
user$ python gutenberg.py
Alice in Wonderland, words in decreasing number of occurances:
                      the  1515
                      and   774
                       to   717
                        a   610
                      ...   ...
                aftertime     1
                    knelt     1
                    saves     1
                      Tut     1
The Prince, words in alphabetical order:
                        A    23
                  ABILITY     1
                 ACQUIRED     3
                      ...   ...
                    youth     8
                     zeal     1
                   zenith     1
'''
```

9.3—Math Quiz

```
from random import randint
import sys

def ask(question):
    try:
        answer = raw_input(question)
    # Abort on ctrl+d
    except EOFError:
        print ""; sys.exit()
    return answer

def play_quiz():
    N = int(ask("How many questions do you want? "))
    level = int(ask("What difficulty level do you want?"
          + "\n\t1. Beginner"
          + "\n\t2. Intermediate"
          + "\n\t3. Advanced"
          + "\nPick a number: "))
    question_type = int(ask("What type of questions do you want?"
            + "\n\t1. Addition"
            + "\n\t2. Subtraction"
            + "\n\t3. Multiplication"
            + "\n\t4. Mixed"
            + "\nPick a number: "))

    C = 0
    maxoperand = [1, 10, 25, 100][level]

    def add(x, y):
        return x + y, '+'
    def sub(x, y):
        return x - y, '-'
    def prod(x, y):
        return x * y, '*'
    def mix(x, y):
        return [add, sub, prod][randint(0,2)](x, y)

    operator = [0, add, sub, prod, mix][question_type]

    for i in range(N):
        n1 = randint(1, maxoperand)
        n2 = randint(1, maxoperand)

        result, op = operator(n1, n2)
        ans = int(ask("\nWhat's %d %s %d?\nAnswer: " % (n1, op, n2)))
        if ans == result:
            print "That's right -- well done."
            C = C + 1
        else:
            print "No, I'm afraid the answer is %d.\n" % result

    print "\n" + "*"*26 \
         +"\nI asked you %d questions. You got %d of them right." % (N, C)

    if C/float(N) > 2./3:
        print "Well done!"
    elif C/float(N) > 1./3:
        print "You need more practice"
    else:
        print "Please ask your math teacher for help!"

if __name__ == "__main__":
    play = "y"
    while play == "y":
        play_quiz()
        y = ask("\nWould you like to play again? (y/n)\nAnswer: ")
```

Example run is shown on the next page.

```
'''
user$ python math_quiz.py
How many questions do you want? 3
What difficulty level do you want?
    1. Beginner
    2. Intermediate
    3. Advanced
Pick a number: 2
What type of questions do you want?
    1. Addition
    2. Subtraction
    3. Multiplication
    4. Mixed
Pick a number: 4

What's 25 + 9?
Answer: 34
That's right -- well done.

What's 13 * 23?
Answer: 282
No, I'm afraid the answer is 299.


What's 3 - 10?
Answer: 7
No, I'm afraid the answer is -7.


**************************
I asked you 3 questions. You got 1 of them right.
Please ask your math teacher for help!

Would you like to play again? (y/n)
Answer: n
'''
```