

# Collections Assignment

Marks: 20

The best way to become familiar with collections is to use them. You are expected to use Collections for all of these problems and you are expected to make intelligent choices with regards of which Implementations to use.

1. There are a number of historical pieces of writing where the author is not known with 100% certainty. One way to try to prove a particular author did or did not write a particular piece is to analyze the frequency that each word is used. Write a program that takes a filename as an argument and displays a list of all of the words used in the file and the percentage of the file that each word represents. This list must be sorted in descending percentages. (4 marks)
2. Write a program that is designed to be run with arguments. Your program will check each argument and say if it is spelt right wrong. To assist with this I've placed a file called dictionary.txt in the class folder where I typed up all of the words that I know. (3 marks)
3. For the last day of school the principal has decided that we are going to have a massive movie day as a school. The English department convinced her that seeing these classic movies would enhance students' literary knowledge and bring the school together as a whole. Miss Dagg carefully went through the list of students at the school and picked which movie she felt was best for each student to see. She placed this in a file called "picks.txt" Your task is to take this list of picks and generate a file that has each movie and a list of students that will be watching the movie. The list of students must be sorted by last name. (5 marks)
4. Because of the constant problem of parents ignoring the no stopping signs out front of the school the Windsor Police Department has requested that the school keep a record of all vehicles stopping both before and after school so that they can be issued fines. The plan is to give the teachers on duty PDAs so they can log all of the violators. The administration has requested that our class write a Java program to run on the PDAs. The police need to keep track of when each vehicle is spotted and which teacher spotted it in case there is any disagreement. The data file is to be read at the beginning of the program and updated at the end of the program. It is called cars.txt and has the following format:  
<number of cars> (8 marks)  
for each car:  
    <licence plate>  
    <number of offences>  
    for each offence:  
        <date and time>  
        <initials of teacher>  
When program is running there are three options  
    1. Show all offences that belong to one plate.  
    2. Add an offence.  
    3. Exit

You MUST use a HashMap for this question to map plates onto lists of offences.