

Redgate Assessment – Software Internship

For this assessment, imagine that Redgate is writing a computer program to analyse large eBooks and that we'd like your help writing part of the program.

Redgate has defined an interface called `ICharacterReader` that returns a character from a stream. An `EndOfStreamException` exception is thrown if there are no more characters to read. `ICharacterReader` provides a `Dispose` method that must be called after use.

Redgate has provided an implementation called `SimpleCharacterReader` that returns characters from a string.

Please answer both of the questions below. You may write the code in C# or Java. Your answer must compile and run, and must be submitted as a Visual Studio or Eclipse project.

You will be assessed on the quality of the code as well as your approach to the problem. Therefore, please comment the code minimally to explain assumptions you have made, and the key decisions which led you to your solution.

- 1) Your task is to write a class that takes an `ICharacterReader` interface as an argument and returns a list of word frequencies ordered by word count and then alphabetically. Please also write a main method of a console application that exercises your class using a `SimpleCharacterReader`, and prints the output to the console. For example, if the stream returns "It was the best of times, it was the worst of times" then the output will be:

```
it - 2
of - 2
the - 2
times - 2
was - 2
best - 1
worst - 1
```

- 2) Now test your answer to part (1), for example by writing unit tests.

This assessment should take a total of between one and two hours.

To submit your assessment, please reply to this email and include the completed assessment as an attachment.

Good luck!