We 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.

We have provided an implementation called SimpleCharacterReader that returns characters from a string. The SlowCharacterReader returns characters with random delays. You can find these implementations in the zip file you have been given.

Please answer both questions. You may write the code in C++, C#, VB.NET or Java. Your answer must compile and run. It will be judged on the assumptions you have made and the quality of your code.

Please comment your code minimally, listing any assumptions and non-obvious design and implementation decisions that you make.

To avoid rework, you are advised to read both questions before starting.

1) Write an application that takes an ICharacterReader interface and outputs a list of word frequencies ordered by word count and then alphabetically. You should use the SimpleCharacterReader class as a test input, and send 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) Write an application that takes an array of ICharacterReader interfaces, accesses them in parallel, and produces a console output of combined word counts, split by word as in the first step, every 10 seconds. Test this using the SlowCharacterReader class.

Good luck!