Coding Assignment for DotNet - English Version

DTS - Programme Management

Exported on 09/20/2019

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1 Introduction & Background

Thank you for showing interest in our .NET Engineer role within Developer Tools & Services at Credit Suisse! In order to be an engineer working on the Credit Suisse build, release & deployment platform, a strong understanding of .NET programming is essential to being a successful member of the team. We understand that asking candidates to complete this challenge prior to any interviews may be strange - we do this because the criticality of these technical skills is essential to our goal to build a team of strong engineers who can work to build, grow, and maintain the bank's strategic tool chain.

All coding challenge submissions are reviewed by senior technical engineers on our team, and give us a good idea of your coding style. We ask all candidates across the globe to complete this challenge as we feel it aids in ensuring that only highly skilled and competent .NET engineers move forward in our recruitment process.

The challenge below is a generic .NET programming task that should take no more than 1-2 hours to complete. If you find it begins to take you significantly longer than 2 hours, don't worry - simply submit what you have completed and provide a few bullets of what your next steps would be.

The challenge can be found directly below - please be sure to submit your final product to Github, along with instructions on how to run / test the program from the command line.

2 Requirements for this coding assignment:

- Language: CSharp
- Database: LiteDB
- Dependencies: Use of any open-source library sourced from nuget.org is allowed
- Your program must use MSBuild build system to resolve dependencies, build and test
- All third-party dependencies should be referenced as NuGet packages to ensure the solution is portable, and can be built from anywhere

3 Summary of task

Our custom-build server logs different events to a file named logfile.txt. Every event has **2** entries in the file - one entry when the event was started and another when the event was finished. The entries in the file have no specific order (a finish event could occur before a start event for a given id)

Every line in the file is a JSON object containing the following event data:

- **id** - the unique event identifier
- **state** - whether the event was started or finished (can have values "STARTED" or "FINISHED"
- **timestamp** - the timestamp of the event in milliseconds

Application Server logs also have the following additional attributes:

- **type** - type of log
- **host** - hostname

Example contents of logfile.txt:

```
{"id":"scsmbstgra", "state":"STARTED", "type":"APPLICATION_LOG", "host":"12345", "timestamp":1491377495212}
{"id":"scsmbstgrb", "state":"STARTED", "timestamp":1491377495213}
{"id":"scsmbstgrc", "state":"FINISHED", "timestamp":1491377495218}
{"id":"scsmbstgra", "state":"FINISHED", "type":"APPLICATION_LOG", "host":"12345", "timestamp":1491377495217
}
{"id":"scsmbstgrc", "state":"STARTED", "timestamp":1491377495210}
{"id":"scsmbstgrb", "state":"FINISHED", "timestamp":1491377495216}
...
```

In the example above, the event **scsmbstgrb** duration is 1491377495216 - 1491377495213 = 3ms

The longest event is **scsmbstgrc** (1491377495218 - 1491377495210 = 8ms)

The program should:

- Take the path to logfile.txt as an input argument
- Parse the contents of logfile.txt
- Flag any long events that take longer than 4ms
- Write the found event details to file-based LiteDB (https://www.litedb.org/)[1] in the working folder
    - The application should create a new table if necessary and store the following values:
        - Event id
        - Event duration
        - Type and Host if applicable
        - Alert (true if the event took longer than 4ms, otherwise false)

Additional points will be granted for:

- Proper use of info and debug logging
- Proper use of Object Oriented programming
- Unit test coverage
- Multi-threaded solution
- Program that can handle very large files (gigabytes)

1 http://hsqldb.org)

As stated above, submissions should be loaded onto Github.

4 Example MSBuild command

build.gradle

```
1  "C:\Program Files (x86)\MSBuild\14.0\Bin\MSBuild.exe" Clean Build
```