

Microsoft Capita Team 2 / Bi-Weekly Report 10

Date: 24/03/2017

Team: Lambros Zannettos, Nathan Liu, Junwen He

Sprint 5

Overview

During the fifth sprint we made significant improvements to the blob storage system by upgrading the set engine to produce a more efficient set structure. We suffered a major data loss but managed to restore the data by creating a new database generation tool. We made further improvements to the chart engine improving scalability as well as making significant updates to the REST API including integration of the latest chart engine. We also made a lot of optimisations by testing a variety of methods and choosing the most efficient solutions. We have also explored additional approaches to the permanent storage of sets, and have made progress towards integration with Team 1.

Meeting summary

Tuesday, 14 March 2017

During this meeting we discussed the current problems facing our team that included solving the problem of sending ZIP files, further optimisations to the chart engine and ensuring Team 1 are not affected by the changes occurring on the backend. We agreed that Lambros would fix the ZIP end point, Junwen to work on a report syllabus and Nathan to work on optimising the chart engine.

Tuesday, 21 March 2017

We met with our TA to discuss completion of the project and remaining changes that needed to be made. We agreed that for the following week that Lambros would continue focusing on the REST API, Junwen on the website and Nathan on the remaining back end technologies.

Wednesday, 23 March 2017

Team Skype meeting to integrate the optimised chart engine into the REST API. During the meeting we also made improvements to our library that reads from the blob. We made further improvements to the website and discussed possibilities on improving read times from the blob.

Tasks Completed

- Optimisation of the chart engine including improving read times from the blob, implementing a scalable design pattern and adding support for pie charts and line graphs.
- We tested multiple approaches including multithreading, memory streams, JSON splitting and ran speed tests on different systems to choose the optimal methods for the chart engine to generate charts in the shortest amount of time.
- Integration of the chart engine with the REST API. This was accompanied with further optimisations to our library that we created to read from the blob.
- Upgrades to the set engine including creating more efficient set structures on the blob, creating 1-to-1 mappings to each set and 1-to-1 mappings to set sizes thereby improving speed and readability for developers reading from the blob.

- Recovery of the lost dataset that included the creation of a database generation tool which can be used indefinitely into the future for testing purposes.
- Further improvements to the REST API including the integration of the ZIP option.
- Started working on the final project website. Including completing drawings of the system architecture, graphs showing experiment results and drawing out our research findings.

Problems to be resolved

- Ensure the entire system is running as fast as possible and continue to search for new methods to improve the speed and scalability of our system.
- Ensuring all endpoints are running smoothly for Team 1 with as little downtime as possible. Help Team 1 run the REST service on their local machine during periods of downtime.

Plan for next two weeks

- Continue to introduce improvements to the system. Key areas of focus include the REST API where Team 1 will be heavily dependent on and the chart engine where there is still plenty of room for improvement.
- Further develop the project website. We hope to finish early mock ups of the website with most of the work we have done by around the end of March.

Individual reports

Lambros Zannettos:

I have been working on the REST API and producing the documentation. I have also explored additional options for saving and retrieving the sets, which I am now working towards integrating into the existing API.

Nathan Liu:

During the past two weeks I have helped to integrate the systems together by helping Lambros integrate the chart engine with the REST API and helping Junwen with the website. With the help of Lambros I made improvements to the chart engine by testing a variety of methods to retrieve and process data as fast as possible. After the data loss I developed a general purpose database generation tool that can be used by all team members which we used to recover lost data. I made further improvements to the set engine by making it create more efficient set structures, 1-to-1 mappings to each set. I also included mappings to the sizes of each set because before we were reading entire sets just to retrieve the set size and so this mapping saves a lot of computation time. I attempted to allow the set engine to support tables with multiple primary keys however the sets generated were not useful and so this feature was removed.

Junwen He:

I have been working on the project's website and adding new contents, since our previous website does not contain enough information, so I will need to add more contents and keep updating in it. By viewing the guideline and sample website, I am also thinking of create a new template for our website.