CS5031 – Software Engineering Practice
Assignment 3: RESTful APIs and Testing

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Aims

The aim of this assignment is that you should learn to design a data model, business logic and RESTful API as well as a client for the API using a test-driven development approach.

Background

In this assignment, you are asked to develop a commenting system for the St Andrews Crowd Library that allows users to add comments to items in the library. The system should support threaded discussions where a user can add a comment to a previous comment. Further requirements are provided below. A simple client should demonstrate the functionality of the commenting system.

Requirements

1. A Comment is posted by a User and can either be a new comment on a library catalogue item or a reply to a previous comment.
2. Comments are timestamped.
3. For any given library catalogue item, it should be possible to obtain the comments posted. A paging feature should allow users to select 20, 50 or 100 comments at a time.
4. Users should be able to select a comment as a favourite and should be able to retrieve all the comments the have put on their list of favourites.
5. For any comments it should be possible to retrieve the replies to this comment including replies to replies and so on.
6. Users should be able to follow a bibliographic item's comments. Any new comments posted on a bibliographic item will show up in a list of notifications.
7. Once seen by a user, a comment should be removed from the list of notifications.
8. Each comment should display a count of how many users have put it on their lists of favourites.
9. A user should be able to remove a comment they posted from view. This means that its content should be replaced with an explanatory message saying that the post was removed by the user
10. A user in the admin role can remove comments from view. They are flagged in the system as being removed by a moderator and the content is no longer provided to clients. An explanatory note is provided instead of the original content.
11. For the purposes of this assignment, an in-memory representation is sufficient (but note the extensions section below).
12. Similarly, authentication can be through a simple static username/password list.
13. The RESTful API and client code must make use of Jersey, the reference implementation of the JAX-RS standard.
14. The API should follow the principles of RESTful design (cf. Bill Burke's RESTful Java with JAX-RS, Chapter 1).
15. Unit testing can be written either as plain JUnit tests or using the Spock framework. Unit tests should involve mock objects where appropriate.

You can find a Gradle build file and some example source code for the project in the repository at: `/cs/studres/CS5031/Assessment/cs5031-2015-assignment3`. The build file declares all the required dependencies as well as tasks for running unit tests, measuring code coverage using Cobertura as well as checking code style using CheckStyle.

Extensions

The achieve a distinction mark you need to implement at least one of the following extensions:

- Allow the system to support comments in a number of different formats: as plain text, as HTML fragments and as Markdown text. Markdown can be converted to HTML using the pegdown library (https://github.com/sirthias/pegdown).
- Implement persistence using either plain text files or an embedded SQL database such as H2 (http://www.h2database.com).
- Provide a set of tests that ensure that the JAX-RS annotations are correct. They should be written against the RESTful API using client-side JAX-RS.

Deliverables

You should submit your code in a zip file containing a Git repository that records the successive versions of your code. Submit this file to MMS by the deadline specified on MMS. A short report should document each of the resources addressable in the system, the operations supported and their semantics, the representations available for different resources as well as the use of links in the system.

Weighting and Marking

This assignment is worth 40**%** of your mark for CS5031. Marking will follow the standard mark descriptors in the School Student Handbook:
http://info.cs.st-andrews.ac.uk/student-handbook/learning-teaching/feedback.html

Lateness

The standard penalty for late submission applies (Scheme B: 1 mark per 8 hour period, or part thereof):
http://info.cs.st-andrews.ac.uk/student-handbook/learning-teaching/assessment.html

Good Academic Practice

The University policy on Good Academic Practice applies:
https://www.st-andrews.ac.uk/students/rules/academicpractice/