RESTful CRUD Web Services Assignment

# Assignment Objective

This assignment is designed to give you hands on experience writing

1. A REST Server that supports HATEOAS services, and
2. Client(s) that use HATOAS services

# Assignment Task

Consider the following application

A university instructor uses a distributed gradebook for storing grades for their class. The instructor for a course specifies the grading items (assignment, mid term, quiz, class labs, …) and specifies what the percentage point allocation for each group of items is. When the instructor assigns works to the class’ students they also create an entry for the assigned work task in the gradebook. When the work is graded, the instructor enters the grade for each of the students for that work item along with any feedback that they feel is appropriate. Student can retrieve the grade and feedback for any graded work item. If the item is not yet graded, student might still try to request the grade and comments but no data is available for retrieval. Students can appeal any grade. If the instructor agrees with some or all of the student’s appeal they will want to update the gradebook entry. In some situations, the instructor might decide to delete a grade to allow for a fresh re-submission.

For this assignment you are to

1. Design the URIs to support the HATOAS services
2. Design Resources that contain <link …> structures
3. Hide or disable functionality from the client UI that is not applicable i.e., was not indicated as a valid activity in the links port of the resource representation provided by the server
4. Creation of a custom media type
5. Design the request and response message formats. You can use XML, JSON or a combination of both – that is part of your design
6. Create a UI that allows the user to create, read ,update and delete gradebooks entries for a given student

Your program is to provide an interface that allows the instructor to create, read, update and delete gradebook entries for a work item for given students.

For this assignment you can assume that:

1. The instructor is only teaching one class,
2. The gradebook maintains information on only one class,
3. The instructor creates, reads, updates and deletes gradebook entries one at a time

## Some XML and JSON helpful sites

If you need some help is figuring out how to read in XML or JSON, you may find the following sites helpful

* XML - <http://www.mkyong.com/tutorials/java-xml-tutorials/>
* JSON - <http://www.mkyong.com/java/jackson-2-convert-java-object-to-from-json/>

If you need some help is figuring out how to convert a Java object to or from JSON using Jackson, you may find the following tutorial site helpful

* <http://www.mkyong.com/java/jackson-2-convert-java-object-to-from-json/>

If you need some help is figuring out how to convert a Java object to or from XML, you may find the following tutorial site helpful that describes using JaxB. My sample program also uses JaxB

* <http://www.mkyong.com/java/jaxb-hello-world-example/>

# Assignment Submission

1. Create a REST project with a name of the form

HATEOAS-GradeBook-<userid>

Where userid is the alphanumeric id that ASU gave you (not the numeric on id), and IDE is the name of the IDE you used e.g., Eclipse or Netbean

1. Create a ZIP file containing
   1. The completed project.
   2. The State diagram(s) showing
      1. The state
      2. The state transitions
      3. The HTTP response code per transition
   3. Complete and detailed build and run instructions in a file called ReadMe. **IMPORTANT** - If I cannot follow the instructions to build and run the submission then I cannot give you credit for the submission
2. Upload the ZIP file to Blackboard. **IMPORTANT** – Check the type compressed file you are submitting. Many of you have installed RAR or 7Zip which has changed your default file compressor. I will not accept these