
3RD EXERCISE ON “ENTERPRISE APPLICATION INTEGRATION”

in summer term 2013
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Due: 28.06.2013, 23⁵⁹

14.06.2013

Web Services

(50 points)

Scenario

The pharmacies of JAVA and C.SHARPE perform a merger of equals. They will jointly lead the new company, to be called UNITED PHARMACY. Out of political and economical reasons, the system landscape at what now are subsidiaries of UNITED PHARMACY will remain the same, i. e. based on Java respectively on .NET technology. Unless otherwise noted, no major changes should happen to existing functionality at subsidiaries.

At the new head office, inventory levels will be subject to analysis. Queries need to combine data from both subsidiaries and present an aggregated view.

JAVA and C.SHARPE are primarily interested in average inventory levels on a per month base to identify cost saving potential. In addition, they want to investigate deviations regarding delivery of replenishment orders by their wholesaler to assess his adherence to delivery dates.

To save time when entering new drugs into their subsidiary systems, they want to use a third party Web service that happens to serve drug names and short descriptions accessible by their respective PZN.

Use Cases

You are commissioned to extend the existing subsidiary systems and implement the new head office system with a web interface and connect it to the subsidiaries. The following use cases need to be covered:

- Initialise drug names and short descriptions from third party Web service when PZN is entered for unknown drugs. Add a new button in the create forms that populates the name and short description text boxes.
- Head office statistics
 - Average inventory level per available drug (average of inventory level at beginning and end of 30 day period)
 - Overall average inventory level
 - Delivery forecast deviation (expected vs. actual delivery date) per *finished* replenishment order
 - Average delivery forecast deviation

Organisational Issues

Use Web services to connect the head office to the subsidiaries. Limit the number of Web service calls and the amount of data transferred when retrieving statistics as much as possible, without caching any order details or statistics at the head office. For example, when rendering the individual drug page, two calls, one to JAVA and one to C.SHARPE, should be sufficient. The figures can be calculated at the subsidiaries.

You may assume that the Web services are accessible at all times and thus ignore scenarios regarding connection failures. You may further assume that the Web service can only be accessed by the allowed participants; there is no need to secure the connections between the service providers.

The third party Web service is available at <http://wi-eai.uni-muenster.de:8080/drug/> and serves its information as JSON objects. Individual drugs are identified by their PZN, i.e. <http://wi-eai.uni-muenster.de:8080/drug/1715965>.

Please use Java EE for the head office system in order to be prepared for the fourth exercise. The new head office application will be deployed on the same JBoss server as the JAVA system, but should operate isolated from this except for Web service operations. Please adhere to the guidelines outlined in the first assignment: your group number needs to be part of your projects' names and the head office database should again use a specific data source; for the head office system, please replace every occurrence of XX with 'HO'+your group number). If possible, do not change the data model of either subsidiary (if you nevertheless do so, please provide instructions for upgrading).

For examples of web services using complex types in addition to primitive types have a look at the [Library example for Java](#) (BookWebService) and at the [Adder Web Service in .NET](#). The WSDL address of a web service deployed on JBoss can be inferred from the server log: look out for the address of the web service and append ?wsdl to it. Further information is available in the web service tutorials for [Java](#) and [.NET](#).

To submit your solution, please provide a checksum of your git repository containing, respectively pointing to all three individual parts (Java and .NET subsidiary systems as well as head office system).