Distributed Programming II

A.Y. 2015/16

Assignment n. 4 – part a)

All the material needed for this assignment is included in the *.zip* archive where you have found this file. Please extract the archive to an empty directory (that will be called `[root]`) where you will work.

This assignment is about the design of web service(s) for the Workflow Management system considered in the previous assignments. The web service(s) have to be designed according to the following specifications.

- The web service(s) to be designed must allow clients to:
    1. Read all the information available about workflows and processes.
    2. Create new processes
    3. Take over an action in one of the active processes
    4. Complete an action that was taken over in the past in one of the active processes
- For point 1, the information to be provided is the same that was used for Assignments 1 and 2.
- For point 2, assume the new processes are initially created with only the automatically instantiated actions. New actions may be created later on by means of the operations at points 3 and 4.
- For points 3 and 4, the client must also specify the actor (name and role) on behalf of whom the operation is performed; of course, the service must execute the operation only if the information provided by the client is consistent with what is specified in the workflow description and with the current status of the process. Note that an action can be taken over by one actor only, and only the actor who took over an action can complete it.
- For point 4, please remind that when a simple action is completed it is necessary for the client to specify which future actions have to be instantiated (among those that are admitted according to the workflow description). The service, when executing the operation that completes a simple action, has to instantiate the future actions specified by the client. Similarly, when a process action is completed, the service must create a new process.
- Consider that there may be two classes of clients: clients that have access to all operations, and clients that have access to operations 1, 3, 4 only.

The web service(s) to be designed must be standard (SOAP) web services and must be specified inside a WSDL document named `Workflow.wsdl`. This document must be saved in directory `[root]/wsdl/`. The main WSDL file can reference other WSDL files stored in the same directory, and type definitions can be saved separately in a schema file stored in the same directory.

The web services must be designed so as to be robust and so as to make the completion of the specified operations both efficient and easy to be used by clients.

The WSDL documents must include comments (`documentation` elements) that explain the semantics of the operations (so that users have all the information that is necessary for using them) and that briefly explain the main design choices and assumptions made. The WSDL must also include the concrete part. The choices about this part are free.

When designing the system, consider that it should be able to manage hundreds of workflows, with a total of many thousands of processes. When designing read access to all the information available,

consider that this information may include data related to the past, and it can be related to a long time period (even several years).

Correctness verification

In order to be acceptable for examination, the produced WSDL documents must be valid. This can be checked by means of the Eclipse WSDL validator.

Submission format

The produced WSDL documents will be submitted along with Part b) of Assignment 4, for which instructions will be given later on.