MINISTRY OF EDUCATION AND SCIENTIFIC RESEARCH

TECHNICAL UNIVERSITY
OF CLUJ-NAPOCA

FACULTY OF AUTOMATION AND COMPUTER SCIENCE
COMPUTER SCIENCE DEPARTMENT

DISTRIBUTED SYSTEMS

Assignment 4

Service Oriented Distributed Systems

SOA web services

Ioan Salomie
Marcel Antal
Teodor Petrican

Tudor Cioara
Claudia Daniela Pop

Ionut Anghel
Dorin Moldovan
Ciprian Stan

2018

Contents

1. Requirements

Design, implement and test a distributed system that uses web services to expose the server functionalities to its clients.

1.1. Functional requirements:

Consider a distributed application called "Online Tracking System" that has a GUI which exposes the following functionalities to its users:

- The application has two types of users: administrators and clients.
- After the login, the user is redirected to its corresponding page.
- If the user does not have an account, it can register and become a simple user (client)
- The Administrator can:
  - Add/remove package. The package has the following characteristics:
    - Sender – Client
    - Receiver – Client
    - Name
    - Description
    - Sender City
    - Destination City
    - Tracking – Boolean – initially false
  - Register package for tracking
    - The package becomes tracked, and a route is associated to it. This route represents the path of the package to the destination, as pairs of (City, Time).
  - Package status updating
    - A new entry (City, Time) is introduced to the route
- The Client can:
  - List all its packages
  - Search packages
  - Package status checking

These functionalities will be exposed as 2 web services:

- WS1 – SOAP Web Service: Client Login and Register and Simple Client Operations
- WS2 – SOAP Web Service: Administrator Operations

1.2. Implementation technologies:

- Use one of the following technologies:
  - Develop one SOAP Web Service in .NET and the other one in JAVA
  - The GUI can be either WEB or Desktop and can be developed in .NET or JAVA

2. Deliverables

- A solution description document (about 4 pages, Times New Roman, 10pt, Single Spacing) containing:
  a) Conceptual architecture of the distributed system.
  b) UML Deployment diagram.
  c) Database diagram
  d) Readme file containing build and execution considerations.
- Source files. The source files will be uploaded on the personal ***bitbucket*** account created at the ***Lab resources*** laboratory work, following the steps:
  - Create a repository on *bitbucket* with the exact name: *DS2018_Group_FirstName_LastName_Assignment_4*
  - Push the source code and the documentation (push the code not an archive with the code or war files)
  - Share the repository with the user *utcn_dsrl*
- The source files will be uploaded on the personal ***bitbucket*** account created at the ***Lab resources*** laboratory work

3. Evaluation

3.1. Assignment Related Basic Questions:

During project evaluation and grading you will be asked details about the following topics:

- SOA architecture and components: WSDL, UDDI, SOAP
- SOAP protocol
- WSDL components
- UDDI components
- How platform independence is assured for Web Services

3.2. Grading

The assignment will be graded as follows:

Points	Requirements
5 p	• Simple GUI • One SOAP Web Service • Database • Documentation
2 p	Save and Display routes for each package in a DB table containing the pairs (City, Time)
2 p	Complete Functionality implemented as two Web Services
1 p	Answers of Questions from sections 3.1.

4. Bibliography

1. http://www.coned.utcluj.ro/~salomie/DS_Lic/

2. **Java and .NET SOAP Web Services:**
   - Lab Book: I. Salomie, T. Cioara, I. Anghel, T.Salomie, *Distributed Computing and Systems: A practical approach*, Albastra, Publish House, 2008, ISBN 978-973-650-234-7
   - http://coned.utcluj.ro/DCSbook/
3. **Java SOAP Web Services:**
   - https://docs.oracle.com/javaee/6/tutorial/doc/bnayl.html
4. **.NET SOAP Web Services**
   - https://msdn.microsoft.com/en-us/library/t745kdsh%28v=vs.90%29.aspx