2G1523
Programming Web Services
Homework 2

Course leader:
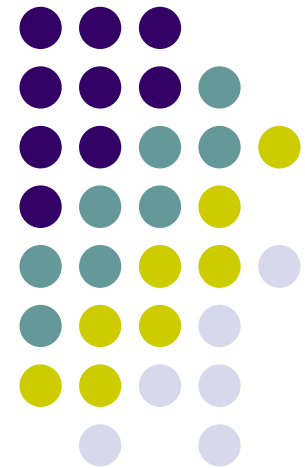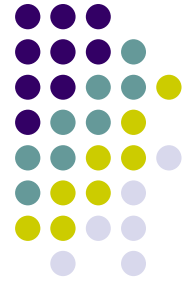**Professor Mihhail Matskin**
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KTH/ICT/ECS , VT07

Homework #2 - Deadline

- Start date: 2007-02-01

- Due date: 2007-02-11

- Deliverable: Report (See course web)

Homework #2 - Aims

- Aim: To learn the followings:

    - WSDL and SOAP

    - Tomcat and Axis

    - How to invoke a web service by SOAP message in Java

Homework #2 - Tomcat

- Tomcat
  - Apache Jakarta Tomcat **5.5**
  - Servlet container for Java Servlet and JavaServer Pages
  - You need J2SE 5 JRE. Set JAVA_HOME variable
  - http://jakarta.apache.org/tomcat/index.html
  - Download and install Tomcat 5.5.
  - Start: bin\tomcat5.exe
  - Do NOT close the console window!
  - Try http://127.0.0.1:8080/

Homework #2 - Tomcat

- Administration:
  - Status
  - Tomcat Administration:
    - Configuring Server, Resources and Users
  - Tomcat Manager:
    - Manageing application, deploy new applications
- Documentation:
  - Tomcat Documentation

Homework #2 - Axis

- Axis
  - An implementation of the SOAP submission to web services
  - Apache eXtensible Interaction System!
  - http://ws.apache.org/axis/
  - Download and install final version **1.4**
  - You need a web server up and running!
  - Copy webapps/axis to the webapps directory of your server.
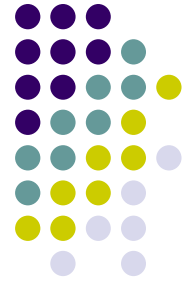 - You may need to copy more library files!

Homework #2 - Axis

- Start the web server
- Try to open http://127.0.0.1:8080/axis/
- You should see the welcome page!
- Try to validate the configuration.
- If any core or optional component is missing, try to fix it.
- Try to view the list of deployed web services
- Try to call a local endpoint

Homework #2 – New WS

- Calculator:
  - There is a calculator web service with four operations: addition, subtraction, multiplication and division.
  - There is a WSDL document for this Web service
  - Generate the service using **WSDL2Java**. You should use -s parameter to generate wsdd file for deploy
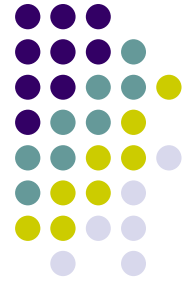
Homework #2 – New WS

- WSDL for calculator

```
.........
<wsdl:message name="multiplicationResponse">
<wsdl:part name="multiplicationReturn" type="xsd:int"/>
</wsdl:message>
<wsdl:message name="subtractionResponse">
<wsdl:part name="subtractionReturn" type="xsd:int"/>
</wsdl:message>
<wsdl:message name="addRequest">
<wsdl:part name="addend1" type="xsd:int"/>
<wsdl:part name="addend2" type="xsd:int"/>
</wsdl:message>

.........
```

Homework #2 – New WS

- Complete the code in Impl class
- Deploy it in axis
- Construct incoming and outgoing SOAP messages for invoking the "ADD" operation.
- Write a java program to invoke this web service. The functions of this Java program are as follows:
    - The user should be able to choose an operation for calculation.
    - The user is required to input the value of two input parameters.
    - The result is returned to the user after the invocation of the correct operation of the Web service.

Homework #2 – Report

- A short description of your activities for installation of the tools (what problems did you face)
- a protocol of compilation of the WSDL service to Java
- Completed code for the implementation of the service
- Protocol of deployment of the service in the axis.
- Texts of incoming and outgoing SOAP messages for invoking "add" operation
- Source code of Java program for invocation of the Calculator service according to required functionality in the Exercise

Homework #2 - Delivery

- Send your report by e-mail to both misha@imit.kth.se and hrmizani@imit.kth.se.

- Deadline: 2007-02-11

- See course web for more information.

GOOD LUCK!