Tutorial 7
Unit Test and
Web service deployment
junit, Axis

Last lecture...
On Software Reuse

• The concepts of software reuse:
to use the __________ more than once
• Classical software reuse techniques
• Component-based software reuse
  – How __________ help with component-based software reuse
• Quality-based software reuse
  – How __________ helps with quality-based reuse
• Don’t reinvent the wheel

Today…
This tutorial will cover skills you can apply to your project immediately:
• Unit test
• Deployment of Web services

Note. We shall do the two tutorials on these subjects, but we have to save some time for you to express yourselves during the next lecture time. Thus we compress the two tutorials into one.

1. What is Unit Test?
• Unit Test: …
• Integration Test: …
• System Test: …
• Acceptance Test: …

The earlier a bug is found, the ________!
Test can be done once a unit is ready!
Replace other units with _________!
What can be tested in units?

- A __________ requirement: Given input that satisfies the precondition, whether the output satisfies the post-condition
- A unit can be a __________________________
  __________________________
- ________ is the key! Replace user interaction with the scripts, if possible; replace some with stubs …
- A unit tested can still have bugs, but most trivial bugs should have been found

What cannot be tested?

- Generally, test can not replace the __________ or __________
  __________
- Specifically for unit test, ______________
  __________________________
  __________________________ are not possible when the system is not ready yet

Test-driven development

- Extreme Programming
  – Also called “Paired programming”
  – How test helps? __________________
- Refactoring
  – How test helps? __________________

OpenOME and JUnit
2. Web Service Deployment in the course

- We have 11 teams, codenames are: mindz, photons, team2, xteam, lumiere solutions, mugqq, overnight enterprise, team7, websilon, team9, canadiantired
- The URL of the tomcat server is http://128.100.36.17:8080
- The deployed web service should be placed under c:\program files\apache software foundation\tomcat 5.5\webapps\axis\WEB-INF\classes\<codename>

2.1 Develop Web service in AXIS

deploy.wsdd, undeploy.wsdd can be generated from WSDL:
- java -cp $AXISCLASSPATH org.apache.axis.wsdl.WSDL2Java -s -d Session -Nurn:AddressFetcher2=samples.addr samples/addr/AddressBook.wsdl
Start a simple Axis server
Deploy the web service
- java -cp $AXISCLASSPATH org.apache.axis.client.AdminClient -p 9012 samples/addr/deploy.wsdd
Call the web service from the client program
- java -cp : $AXISCLASSPATH samples.addr.Main -p 9012 $*

2.2 Test Web Service using JUnit

Test Cases (e.g. AddressBookTestCase.java) can be generated by:
- java -cp $AXISCLASSPATH org.apache.axis.wsdl.WSDL2Java -s -d Session -Nurn:AddressFetcher2=samples.addr --testCase samples/addr/AddressBook.wsdl
Modify the generated AddressBookTestCase.java:
public void doTest() throws Exception {
    String[] args = new String[] {"-p", "9012"};
    Main.main(args);
}
Run the following command:
- java -cp : $AXISCLASSPATH junit.textui.TestRunner -noloading samples.addr.AddressBookTestCase

Feedback from the client

Using proxy without session maintenance:
(queries without session should say: "ADDRESS NOT FOUND")
>> Storing address for 'Purdue Boilermaker'
>> Querying address for 'Purdue Boilermaker'
>> Response is: [ADDRESS NOT FOUND]
Using proxy with session maintenance.
>> Storing address for 'Purdue Boilermaker'
>> Querying address for 'Purdue Boilermaker'
>> Response is:
    1 University Drive
    West Lafayette, IN 47907
    Phone: (765) 494-4900
>> Querying address for 'Purdue Boilermaker' again
>> Response is:
    1 University Drive
    West Lafayette, IN 47907
    Phone: (765) 494-4900
Feedback from the Unit Test

- Testing address book sample.
- Using proxy without session maintenance.
- (queries without session should say: "ADDRESS NOT FOUND")
- >> Storing address for 'Purdue Boilermaker'
- >> Querying address for 'Purdue Boilermaker'
- >> Response is: 
  - [ADDRESS NOT FOUND]
- >> Querying address for 'Purdue Boilermaker' again
- >> Response is: 
  - [ADDRESS NOT FOUND]
- Using proxy with session maintenance.
- >> Storing address for 'Purdue Boilermaker'
- >> Querying address for 'Purdue Boilermaker'
- >> Response is:
  - 1 University Drive
  - West Lafayette, IN 47907
  - Phone: (765) 494-4900
- >> Querying address for 'Purdue Boilermaker' again
- >> Response is:
  - 1 University Drive
  - West Lafayette, IN 47907
  - Phone: (765) 494-4900
- - Test complete.
- Time: 1.51
- OK (1 test)

3. The Show time

- On March 9 (next Wednesday), Will be monitored and given an impression mark, 2% for presence, 8% for excellence in Phase B!
- Who will be the OMEGraphEditor Idol?
- 11 teams in two rounds
  - mindz, photons, team2, xteam, lumiere solutions
  - muggq, overnight enterprise, team7, websilon, team9, canadiantired
- We do Q&A session after the presentations of each round
- 5 minutes per team for presentation, 5 minutes for question/answers
- Which team will be the star? A small prize will be endowed to the best teams.