2G1523
Programming Web Services
Home works

Course leader:

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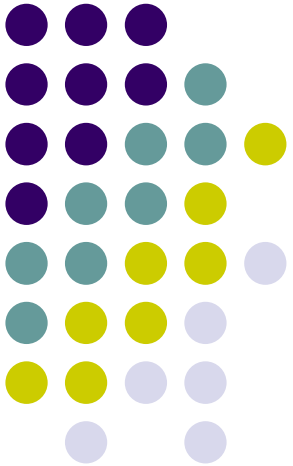
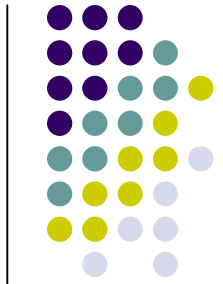
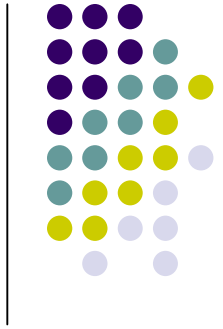


Homework #1 - Deadline



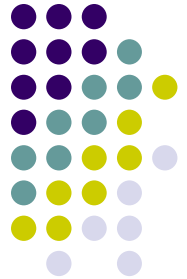
- Start date: 2008-01-25
- Due date: 2008-01-30
- Deliverable: Report (See course web)

Homework #1 - Aims



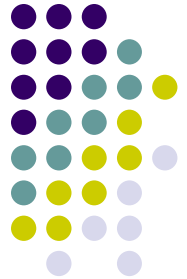
- Aims:
  - To understand the concepts of XML schema
  - To learn the XML processing method via JAXB

Homework #1 – J2EE



- Download J2EE from http://java.sun.com/j2ee/. Follow the instructions to install.
- Suggestions:
  - Read the QuickStart guide: "c:\sun\AppServer\QuickStart.html"
  - Try to Start, Stop and Verify the server
  - Try packaging and deploying applications
  - Try using admin console
  - Try using Deploytool utility
  - Try using command-line tools

Homework #1 - JWSDP

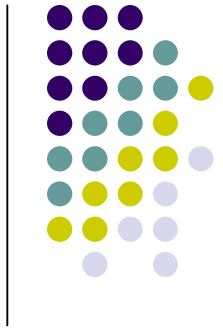


- Download Java Web Service Developer Pack (JWSDP) from: http://java.sun.com/webservices/jwsdp/index.jsp. The current version is 2.0.

- Follow the instructions to install.

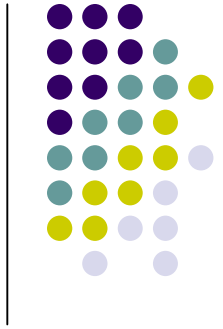
- Read documents in: “c:\sun\jwsdp-2.0\jaxb\docs\index.html”

Homework #1 - JWSDP



- JWSDP includes:
  - Sun Java Streaming XML Parser Version 1.0 EA
  - XML Digital Signature Version 1.0 EA2
  - XML and Web Services Security Version 1.0
  - WS-I Attachments Sample Application Version 1.0 EA3
  - JAXB Version 1.0.4 (Java Architecture for XML Binding)
  - JAXP Version 1.2.6_01 (Java API for XML Processing)
  - JAXR Version 1.0.7 (Java API for XML Registries)
  - JAX-RPC Version 1.1.2_01 (Java API for XML-based RPC)
  - SAAJ Version 1.2.1 (SOAP with Attachments API for Java)
  - JSTL Version 1.1.1_01 (JavaServer Pages Standard Tag Library)
  - Java WSDP Registry Server Version 1.0_08
  - Ant build tool

Homework #1 - JWSDP



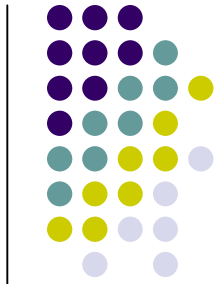
- JAXB:
  - Java Architecture for XML Binding
  - API and tools that automate the mapping between XML documents and Java objects

Homework #1 – Java IDE

- Get familiar with one of Java Development Environment, such as Eclipse, JBuilder, VisualCafe or Jakarta Ant.

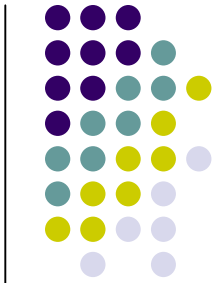
- The manual of Jakarta Ant can be found at: http://ant.apache.org/manual/index.html

Homework #1 – Jakarta Ant



- A Java-based build tool
- Make: shell-based, limited to the OS.
- Ant is extended using Java classes.
- XML-based configuration files

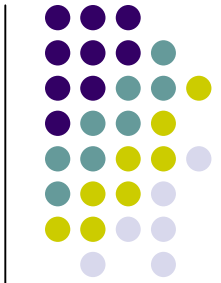
Homework #1 – Jakarta Ant



- **Example Build file**

```
<project name="MyProject" default="dist" basedir=".">
        <description>
                simple example build file
        </description>

        <!-- set global properties for this build -->
        <property name="src" location="src"/>
        <property name="build" location="build"/>
        <property name="dist" location="dist"/>

        <target name="init">
                <!-- Create the time stamp -->
                <tstamp/>
                <!-- Create the build directory structure used by compile -->
                <mkdir dir="${build}"/>
        </target>
```

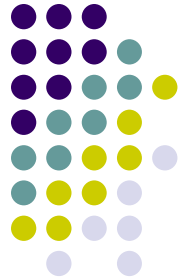
Homework #1 – Jakarta Ant



- **Example Build file**

```
<target name="compile" depends="init" description="compile the source
" >
        <!-- Compile the java code from ${src} into ${build} -->
        <javac srcdir="${src}" destdir="${build}"/>
</target>

<target name="dist" depends="compile" description="generate the
distribution" >
        <!-- Create the distribution directory -->
        <mkdir dir="${dist}/lib"/>
        <!-- Put everything in ${build} into the MyProject-${DSTAMP}.jar
        file -->
        <jar jarfile="${dist}/lib/MyProject-${DSTAMP}.jar"
        basedir="${build}"/>
</target>
```

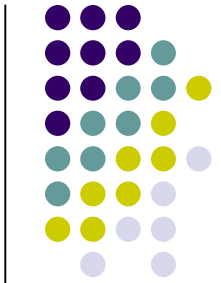
Homework #1 – Jakarta Ant



- **Example Build file**

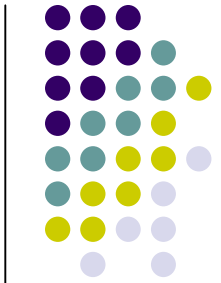
```
    <target name="clean" description="clean
    up" >
        <!-- Delete the ${build} and ${dist}
        directory trees -->
        <delete dir="${build}"/>
        <delete dir="${dist}"/>
    </target>
</project>
```

Homework #1 – Jakarta Ant



- How to run:
  - ant
    - Using “build.xml” file in the current directory
  - ant -buildfile test.xml
  - More option ...

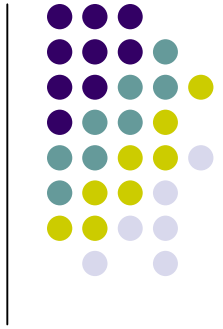
Homework #1 – Jakarta Ant



- Tasks:
  - Archive Tasks: Jar, Unjar, Zip, Unzip, War, Unwar ...
  - Compile Tasks: Javac, Rmic, …
  - Documentation Tasks: Javadoc, …
  - Execution Tasks: Java, Exec, Ant, …
  - File Tasks: Copy, Delete, Mkdir, Move, …
  - Mail Tasks: Mail, …

- More:
  Audit/Coverage Tasks, Deployment Tasks, EJB Tasks, Java2 Extensions, Tasks, Logging Tasks, Miscellaneous Tasks, .NET Tasks, Pre-process Tasks, Property Tasks, Remote Tasks, SCM Tasks, Testing Tasks, Visual Age for Java Tasks

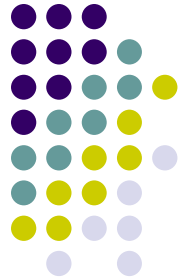
Homework #1 - XJC



- Edit AnnotatedSchema.xml (http://www.imit.kth.se/courses/2G1523/Homeworks/AnnotatedSchema.xml) that it will fit to your CV (You can delete non-relevant elements, add new elements or/and modify the description).

- Compile the edited XML schema into Java classes using xjc.

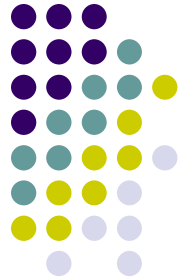
Homework #1 - AnnotatedSchema.xml



- Contact Info Definition:

```
<xs:element name="PersonName" type="PersonNameType"/>
        <xs:element name="GivenName" type="NameType"/>
        <xs:element name="MiddleName" type="NameType"
        minOccurs="0"/>
        <xs:element name="FamilyName" type="NameType"/>

<xs:element name="ContactMethod“ type="ContactMethodType"/>
        <xs:element name="Phone" type="PhoneNumberType"
        maxOccurs="3"/>
        <xs:element name="Fax" type="PhoneNumberType"
        minOccurs="0"/>
        <xs:element name="Pager" type="PhoneNumberType"
        minOccurs="0"/>
```

Homework #1 - AnnotatedSchema.xml



- Objective Definition:

  <xs:enumeration value="CRL-Business Transformation Solution"/>

  <xs:enumeration value="CRL-Supply Chain and Logistics Management Research"/>

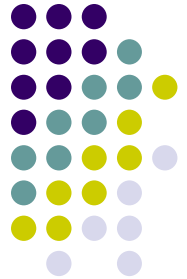
  <xs:enumeration value="CRL-Management Science and Operations Research"/>

  <xs:enumeration value="CRL-User Paradigm Research"/>

  <xs:enumeration value="CRL-Distributed Computing"/>

  <xs:enumeration value="CRL-Data Management"/>

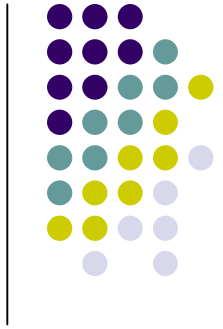
Homework #1 - AnnotatedSchema.xml



- Education History:

```
<xs:element name="SchoolName" type="NameType"/>

<xs:element name="Degree" type="DegreeType"/>
        <xs:enumeration value="Doctor"/>
        <xs:enumeration value="Master"/>
        <xs:enumeration value="Bachelor"/>

<xs:element name="Major" type="MajorType"/>
        <xs:enumeration value="Computer Science"/>
        <xs:enumeration value="Electronic Engineering"/>
        <xs:enumeration value="Math"/>
        <xs:enumeration value="Information"/>
        <xs:enumeration value="Physics"/>
```

Homework #1 - JAXB



- Construct your own resume data using JAXB. For doing this create a Java content tree from scratch and marshal it to XML data file, for example, Resume.xml. Please refer to create-marshal example for guidance.

- Print your generated Resume.xml file.

Homework #1 - create-marshal

```
public class Main {
   public static void main( String[] args ) {
      try {
         // create a JAXBContext
         JAXBContext jc = JAXBContext.newInstance( "primer.po" );
         // create an ObjectFactory instance.
         ObjectFactory objFactory = new ObjectFactory();
         // create an empty PurchaseOrder
         PurchaseOrder po = objFactory.createPurchaseOrder();
         // set the required orderDate attribute
         po.setOrderDate( Calendar.getInstance() );
         // create shipTo USAddress object
         USAddress shipTo = createUSAddress( objFactory,
                                    "Alice Smith",
                                    "123 Maple Street",
                                    "Cambridge",
                                    "MA",
                                    "12345" );
         // set the required shipTo address
         po.setShipTo( shipTo );
         // create billTo USAddress object
         USAddress billTo = createUSAddress( objFactory,
                                    "Robert Smith",
                                    "8 Oak Avenue",
                                    "Cambridge",
                                    "MA",
                                    "12345" );
         // set the requred billTo address
         po.setBillTo( billTo );
```

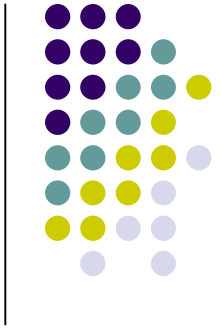
Homework #1 - create-marshal

```
// create an empty Items object
        Items items = objFactory.createItems();
        // get a reference to the ItemType list
        List itemList = items.getItem();
        // start adding ItemType objects into it
        itemList.add( createItemType( objFactory,
                                "Nosferatu - Special Edition (1929)",  new BigInteger( "5" ),   new BigDecimal( "19.99" ),  null,  null,
      "242-NO" ) );
        itemList.add( createItemType( objFactory,
                                "The Mummy (1959)",  new BigInteger( "3" ),  new BigDecimal( "19.98" ),  null,  null,  "242-MU" ) );
        itemList.add( createItemType( objFactory,
                                "Godzilla and Mothra: Battle for Earth/Godzilla vs. King Ghidora",
                                new BigInteger( "3" ),   new BigDecimal( "27.95" ),   null,   null,  "242-GZ" ) );
        // set the required Items list
        po.setItems( items );
        // create a Marshaller and marshal to System.out
        Marshaller m = jc.createMarshaller();
        m.setProperty( Marshaller.JAXB_FORMATTED_OUTPUT, Boolean.TRUE );
        m.marshal( po, System.out );

      } catch( JAXBException je ) {
        je.printStackTrace();
      }
  }
```

Homework #1 - create-marshal

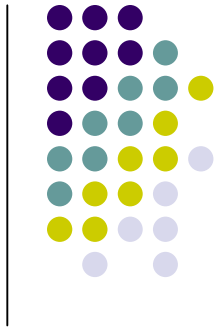
```
public static USAddress createUSAddress( ObjectFactory objFactory,
            String name, String street, String city, String state, String zip )
    throws JAXBException {

    USAddress address = objFactory.createUSAddress();

    address.setName( name );
    address.setStreet( street );
    address.setCity( city );
    address.setState( state );
    address.setZip( new BigDecimal( zip ) );

    return address;
}
```

Homework #1 - create-marshal



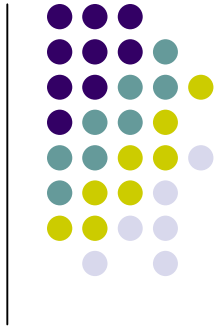
```
public static Items.ItemType createItemType( ObjectFactory objFactory,
                                    String productName,  BigInteger quantity, BigDecimal price,
                                    String comment, Calendar shipDate, String partNum )
        throws JAXBException {

        Items.ItemType itemType = objFactory.createItemsItemType();

        itemType.setProductName( productName );
        itemType.setQuantity( quantity );
        itemType.setUSPrice( price );
        itemType.setComment( comment );
        itemType.setShipDate( shipDate );
        itemType.setPartNum( partNum );

        return itemType;
    }
}
```

Homework #1 - Report



- Report:
  - A short description of your activities for installation of the above-mentioned tools (what problems did you face)
  - Edited XML Schema for your resume (with comments on what was modified compare to initial schema)
  - The tree of Java classes generated after compiling your XML Schema
  - Source code of Java programs that creates Java content tree for your resume and marshals it to the Resume.xml file.
  - Printout of your generated Resume.xml file

Homework #1 - Delivery



- Delivery:
  Send your report by e-mail to
misha@imit.kth.se,ahaseeb@kth.se,nimad@kth.se

- Deadline: 2008-01-30

- See course web for more information.