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## Internet Technologies II

LAB Assignment 2 (3<sup>rd</sup> & 4<sup>th</sup> task)

LAB: XML, Web Services, Semantics

Goal: Implement a semantic overlay network of Web Services.

1<sup>st</sup> Step (XML Processing):

Please produce a valid XML sample document from this [schema](#). Write a simple Java program, which performs the validation.

Please proceed in writing an XSL stylesheet to transform this XML document into HTML output. Extend your Java program to perform the XSL transformation.

Look at the JBOSS installation and get acquainted with the application server.

Optional homework extension: Use deploy your Java transform program as a Web Service (in: XML+XSL, out: HTML), write a Client Web application to use this service and display results.

2<sup>nd</sup> Step (Simplified Learning Object Service)

An IEEE LOM Learning Object is an XML structure, which includes *Meta data, content and relations* (between LOs). Such standardized Learning Objects are typically stored in online repositories, ready for download or exchange. The aim of the task will lie in the development of a distributed retrieval Web services in interconnected repositories.

Please implement at first a Webservice Client, which can search and download LOs from the online HyLOs repository

```
HOST = "http://hylos.cpt.haw-hamburg.de:9080"  
SERVICE_PATH = " /jboss-net/services/HylosObjectService"
```

and their relations as Beans.

The repository offers a Webservice complying the methods

- searchObjects, returning an array of internal paths for a search filter, and
- fetchObject, returning a Learning Object for a path:

```

<wsdl:message name="searchObjectsRequest">
  <wsdl:part name="filter" type="xsd:string"/>
</wsdl:message>
<wsdl:message name="searchObjectsResponse">
  <wsdl:part name="searchObjectsReturn" type="soapenc:Array"/>
</wsdl:message>
<wsdl:message name="fetchObjectResponse">
  <wsdl:part name="fetchObjectReturn" type="tns1:HylosObject"/>
</wsdl:message>.

```

The full WSDL service description can be retrieved from <http://hylos.cpt.haw-hamburg.de:9080/jboss-net/servlet/AxisServlet>.

The object codes for the [HylosObject \(Interface\)](#) and the [Relations \(Interface\)](#), which are derived from [RepositoryObject](#), you find here.

The search string syntax of the searchObjects method follows an LDAP approach (see RFC 2254):

```

filter      = "(" filtercomp ")"
filtercomp  = and / or / not / item
and         = "&" filterlist
or         = "|" filterlist
not        = "!" filter
filterlist  = 1*filter
item       = simple / present / substring / extensible
simple      = attr filtertype value
filtertype = equal / approx / greater / less
equal     = "="
approx    = "~="
greater   = ">="
less      = "<="
present   = attr "="
substring  = attr "=" [initial] any [final]
initial    = value
any       = "*" *(value "*")
final     = value
attr      = AttributeDescription
value     = AttributeValue

```

Example:

```

(cn=Babs Jensen)
(!(cn=Tim Howes))
(&(objectClass=Person)(|(sn=Jensen)(cn=Babs J*)))
(o=univ*of*mich*)

```