Day 10:

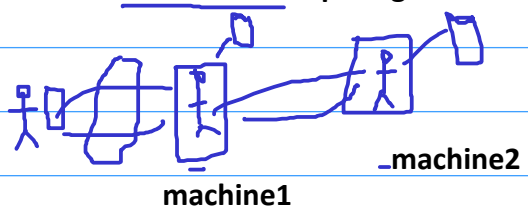
1. xml basics
   - introduction , well formed, valid xml
   - xml processing : dom , sax
   - JAXB
2. Introdution to SOA, distrbuted computing
   - basics of JAX-WS
   - apache axis2
   - examples and applications

basics of REST web service
jersy hello world, crud application

tools required:
axis2
soapui
postman
link provided..

what is xml?

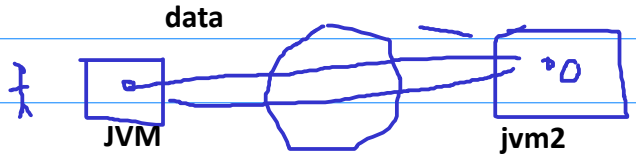
distributed computing?



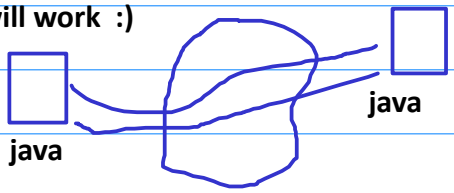
the process of BL bw two or more machines / server

=> RMI (remote method invocation)
=> EJB (enterprise java bean)
=> Web service
=> remoting

web application and web service



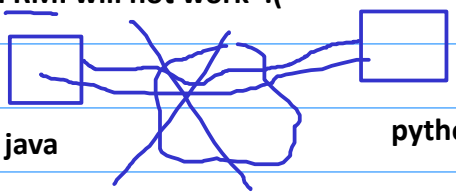
RMI will work :)



data need to be converted to object
serilized data => java tech
de-serilization some kind io process

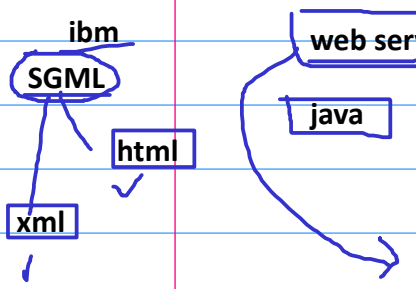
it works only if two parties are java based

When RMI will not work :(



RMI is not interoperatable

EJB is also based on RMI => same issue it is not "interoperatable"

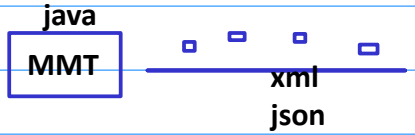


web service : interoperatable

it is based on xml based protocol

java
c++
python
.net

service available on web... can be used by interoperatable technologies



spicejet server python

html	xml
it is just for displaying the data	used to tranfer the data bw 2 or more machines
	extented markup language

xml can be used to store the

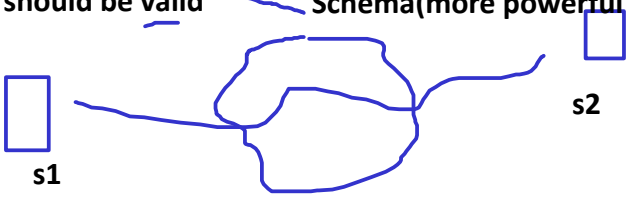
What next?
xml : how to write xml, validate the xml , well formness
how to process the xml
JAXB

12 BTech

parser? and check well formess of xml

1. well formness of xml
2. xml should be valid

DTD
Schema(more powerful then dtd)

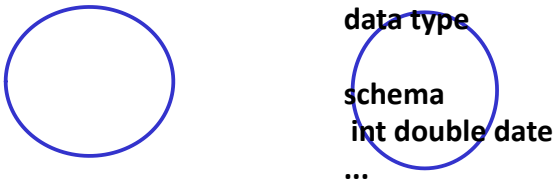


Schema: is a tech for validation of xml
it is more powreful then dtd

w3c org
maintain the draft of many tech

1. it support rich data type
2. it also support namespace concept

hello world of schema file




```
<?xml version="1.0" encoding="UTF-8"?>
<schema xmlns="http://www.w3.org/2001/XMLSchema"
    targetNamespace="http://www.ivy.com/employees"
    xmlns:tns="http://www.ivy.com/employees" elementFormDefault="qualified">

  <element name="employees" type="tns:employeesType"></element>

  <complexType name="employeesType">
    <sequence>
        <element name="companyName" type="string" maxOccurs="1"
            minOccurs="1">
        </element>
        <element name="employee" type="tns:employeeType" maxOccurs="unbounded" minOccurs="0"></element>
    </sequence>
  </complexType>

  <complexType name="employeeType">
    <sequence>
        <element name="id" type="int" ></element>
        <element name="name" type="string"></element>
        <element name="address" type="string"></element>
        <element name="dob" type="date"></element>
    </sequence>
  </complexType>
</schema>
```

XML processing:

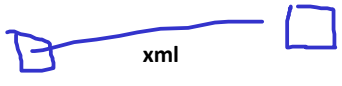
DOM: doc object model, curd operation
u must have all the data in memory..

continus stream of data

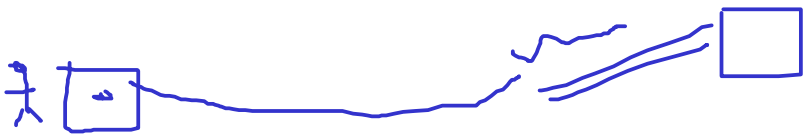
Event based model

SAX: Simple API for XML proceessing, this can be used only for reading purpose CRUD

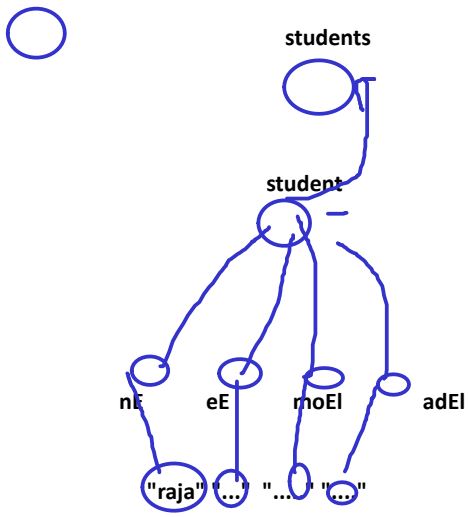
JAXB



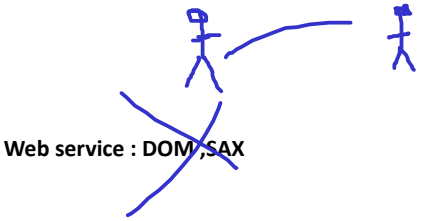
this server should process xml



```
//Creating elements
        Element rootEle=document.createElement("students");
        Element studentEle=document.createElement("student");
        Element nameEle=document.createElement("name");
        Element emailEle=document.createElement("email");
        Element mobileEle=document.createElement("mobile");
        Element addressEle=document.createElement("address");
        //Creating text infomration to store
        Text t1=document.createTextNode("raja");
        Text t2=document.createTextNode("raja@raja.com");
        Text t3=document.createTextNode("434343434");
        Text t4=document.createTextNode("noida");

        nameEle.appendChild(t1);
        emailEle.appendChild(t1);
        mobileEle.appendChild(t1);
        addressEle.appendChild(t1);

        studentEle.appendChild(nameEle);
        studentEle.appendChild(emailEle);
        studentEle.appendChild(mobileEle);
        studentEle.appendChild(addressEle);



        rootEle.appendChild(studentEle);
        document.appendChild(rootEle);
        Transformer t=TransformerFactory.newInstance().newTransformer();


        t.transform(new DOMSource(document), new StreamResult(new FileOutputStream("students.xml")));

        System.out.println("xml file generated...");
```



Event handling: ui app
swing , js form validation

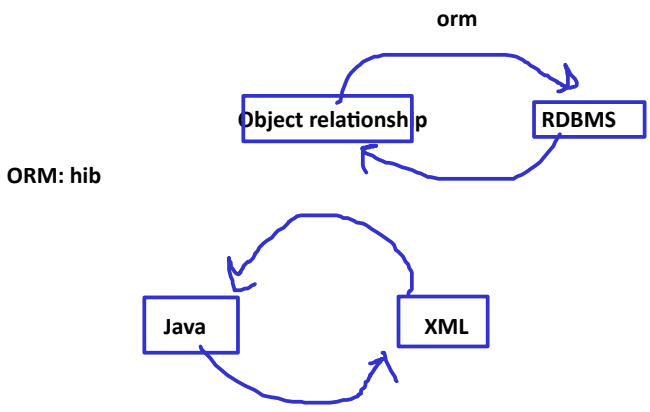


imp

JAXB (Java arch for xml binding)

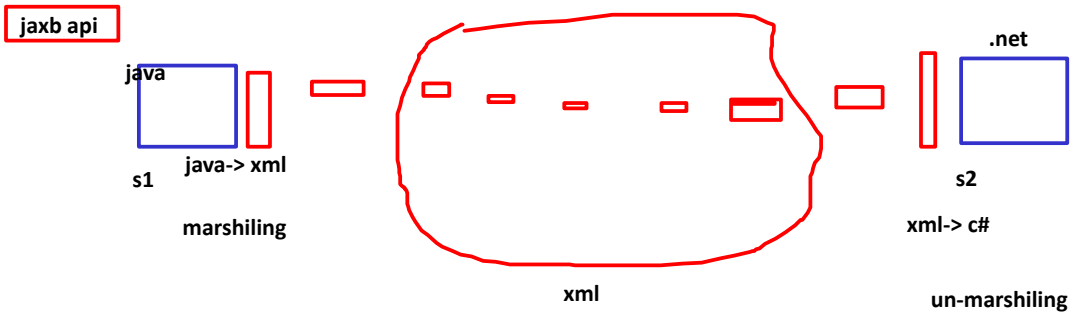
what it do?
is used to convert xml -> java

java --> xml



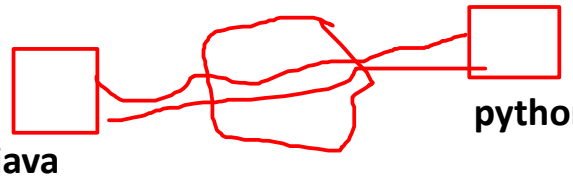
web service internally use it

it is a high level api and easy to use and work with annotation



interoperatability?

web service



java

python

DOM

crud op all data should be presrenet

SAX

Event based processing

DTD vs Schema

JAXB: very similer to ORM

XML <----------> Java

web service

ws is of 2 type

SOAP based ws

REST based ws

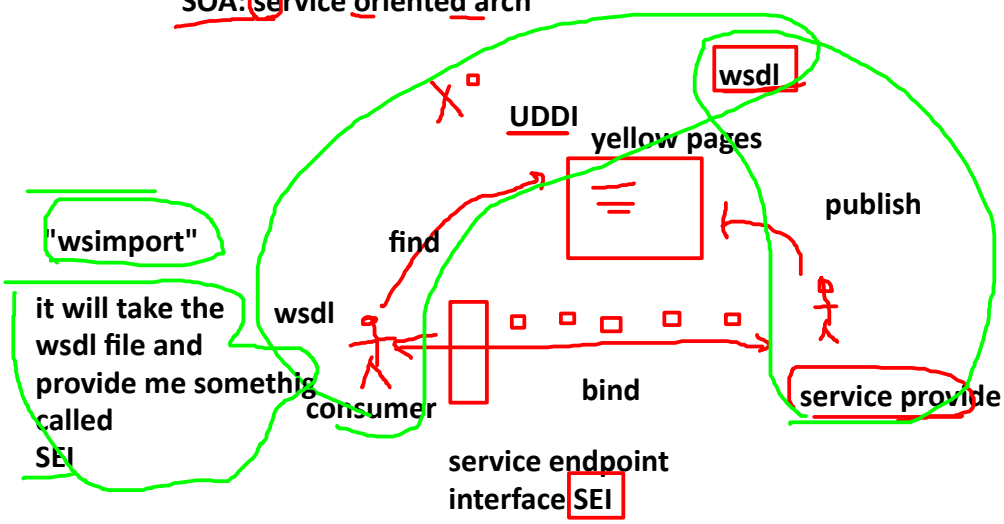
Web service : is a peice of code (logic) that run on remote machine and can be invoked using xml protocol

WSDL: Web service desciption language (similer to java interface : contract bw 2 parties)

UDDI: Unversal description descovery and integration (registry)

SOAP: simple object access protocol

SOA: service oriented arch



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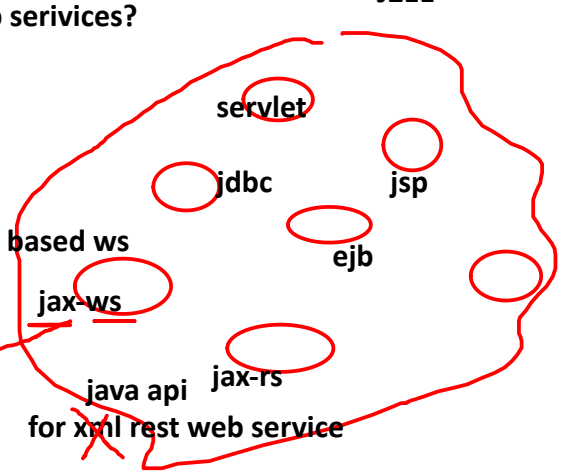
how to write web serivices?

J2EE



java api for xml based ws

java 8
is bundled with jdk

for xml rest web service

json

jax-ws

-apache cfx

-apache axis2

jklj

hello world of soap web service
step?

what is good prg practice

contact --> code

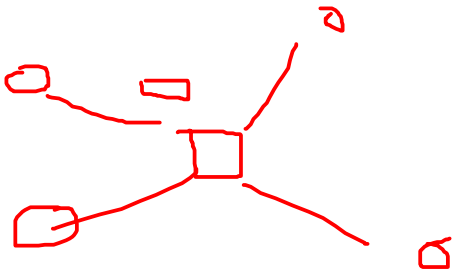
dao-> daoImpl

first u write the wsdl
and then show to ur higher
manamgement
once is is ok
then u are allowed to
change it no matter what...

code-> contract

code first approach (easy)
not very good :)

if u change ur code => ur wsdl
is going to change
then client will cry :(



even if code is changing u should not change ur code

:(how to write wsdl file with hand

ie way people use mixed approached

u first get basics wsdl by running hello world and then u customised using anntation

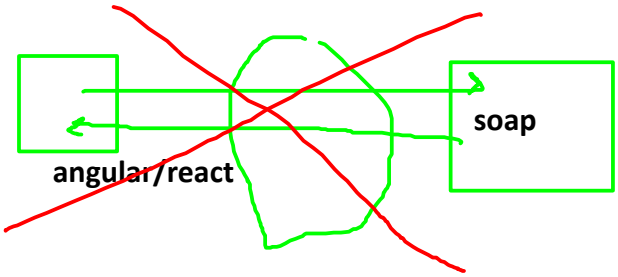
```
<soapenv:Envelope xmlns:soapenv="http://schemas.xmlsoap.org/soap/envelope/" xmlns:com="http://com/">
  <soapenv:Header/>
  <soapenv:Body>
    <com:sum>
      <arg0>?</arg0>
      <arg1>?</arg1>
    </com:sum>
  </soapenv:Body>
</soapenv:Envelope>
```

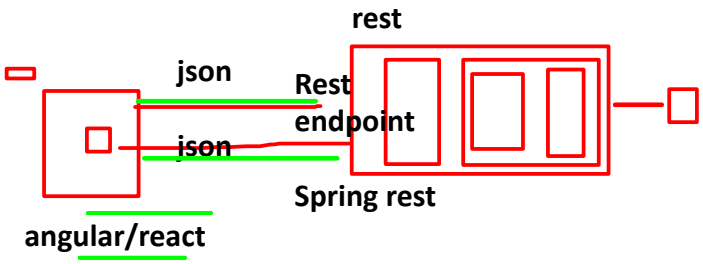
```
<S:Envelope xmlns:S="http://schemas.xmlsoap.org/soap/envelope/">
  <S:Body>
    <ns2:sumResponse xmlns:ns2="http://com/">
      <return>3</return>
    </ns2:sumResponse>
  </S:Body>
</S:Envelope>
```

SOAP is based on xml

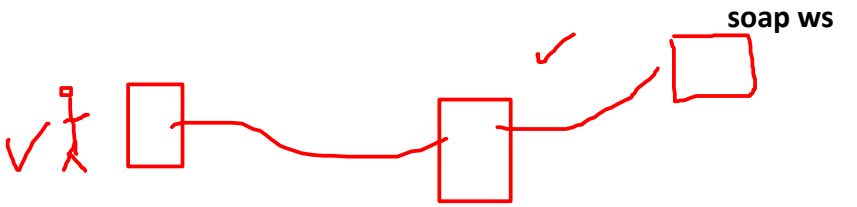
Full stack java dev
.net dev
MEAN

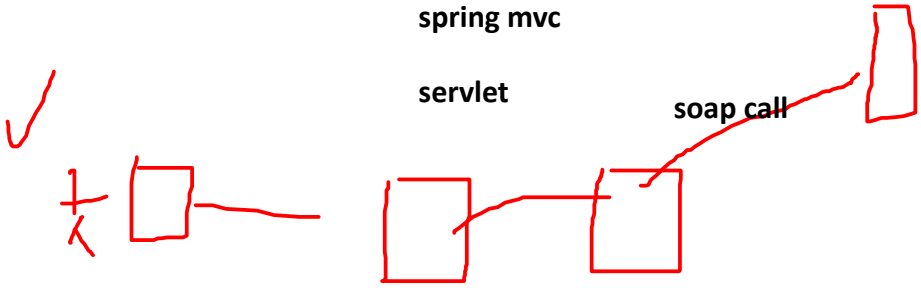
Spring with angular/react

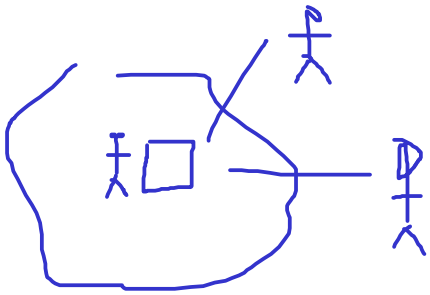




how then soap is used in industry







in java we have many ways to create soap ws

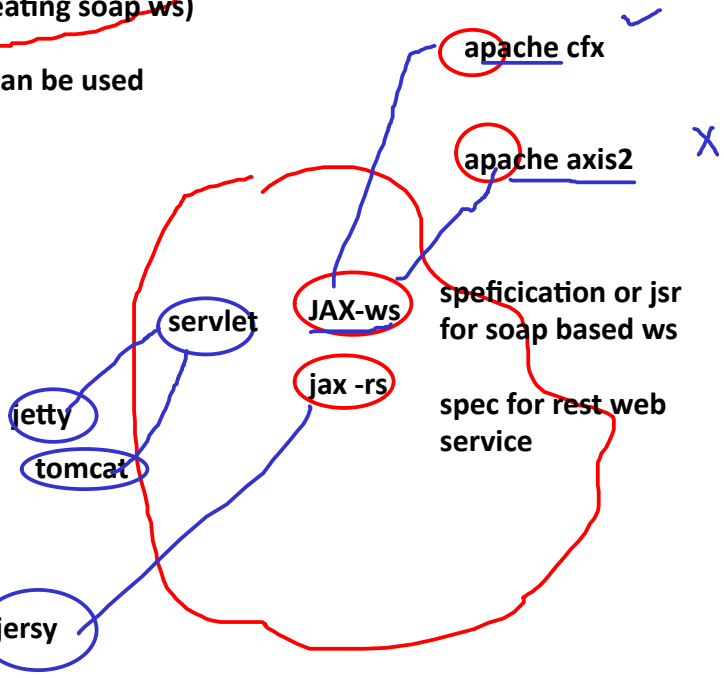
1. hello world using Endpint.publish (.....) only for learning

2. u can jax-ws-ri (ref implementation)

3. apache axis2 (open source framework for creating soap ws)

4. apache cxf (more powerful framework that can be used to create soap as well as rest service)

5. spring boot + soap



pls do practice on servlet jsp crud application
spring
hibernate
web service

practice make us perfact!
:)

Spring rest is not depend on jsr