

Lecture 6.m

In Class Test 1 Review

Web Services

Communication Models

Dr. Gabriele Pierantoni

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Web Service Communication Modes

Web Service Communication Models

Function oriented: RPC (Remote Procedure Calls)

- Distributed function call interface
- Widely deployed and supported, but not loosely coupled
- Basic communication unit: WSDL operation
- Other approaches: CORBA, DCE/RPC, Java RMI

Web Service Communication Models

Message oriented: SOA (Service-Oriented Architecture)

- basic communication unit: message, rather than an operation

Resource oriented: REST (Representational State Transfer)

- Standard operations in HTTP: GET, POST, PUT, DELETE
- Interacting with stateful resources, rather than messages or operations

Web Service Communication Models

Function Oriented Communication

- Web Service request is a **method** or a **procedure call** with associated input and output parameters that can be simple data types or complex objects, in which case the objects have to be serialized as bits and bytes when traversing through the Internet
- The service consumer sends a message formatted specifically to be mapped to a web service using XML to marshal data
- If a response is available, the web service returns an XML message that must be un-marshalled, if there is no response the return message indicates the problem

Web Service Communication Models

Function Oriented communication

- Implemented as XML-RPC to support a simplistic, yet viable invocation model over the Internet using HTTP
- The request and the reply are modelled as **synchronous messages**, i.e. an application sends a message and waits for a response (request-response mode)
- RPC-oriented interactions are good for **brief data exchanges**

Web Service Communication Models

Message- (or document-) oriented communication

- Web Service request is a **complete XML document** that is intended to be processed whole and during the communication a complete document might be exchanged
- Document-Oriented interactions are **data-oriented communications** that often assume that the service consumers and providers have agreed to share a common business document, such as a purchase order or an invoice

Web Service Communication Models

Message- (or document-) oriented communication

- These parties also typically agree on a common process flow, or interaction patterns for exchanging the shared document
- If the document is already held in common, fragments of information required to fill in specific sections of the shared document, such as purchase price or promised delivery date, might be exchanged
- Document-oriented interactions are suitable for **bulk data exchanges**

Web Service Communication Models

Resource-oriented communication

- REST request is a simple HTTP request just like a regular browser would send to a Web Server
- There is typically no XML request sent
- REST response is typically an XML document sent back in a regular HTTP response, just as if a browser had requested it.