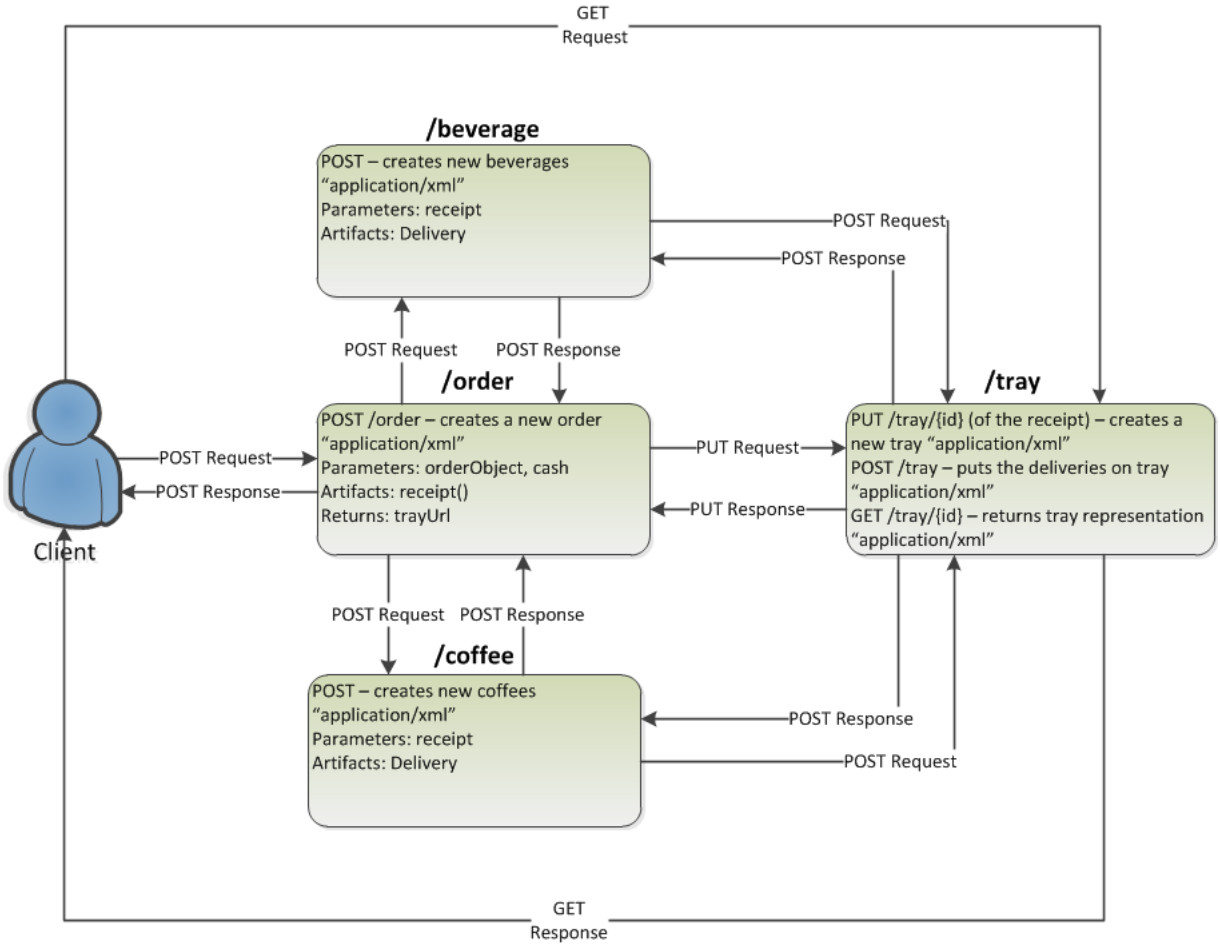
Topic: 8
REST-WS

R. Cotescu (rdc1g10@ecs.soton.ac.uk)
A. Akrivos (aa7g10@ecs.soton.ac.uk)
G. Panagopoulos (gp3g10@ecs.soton.ac.uk)

December 2010

Topics on Web Services

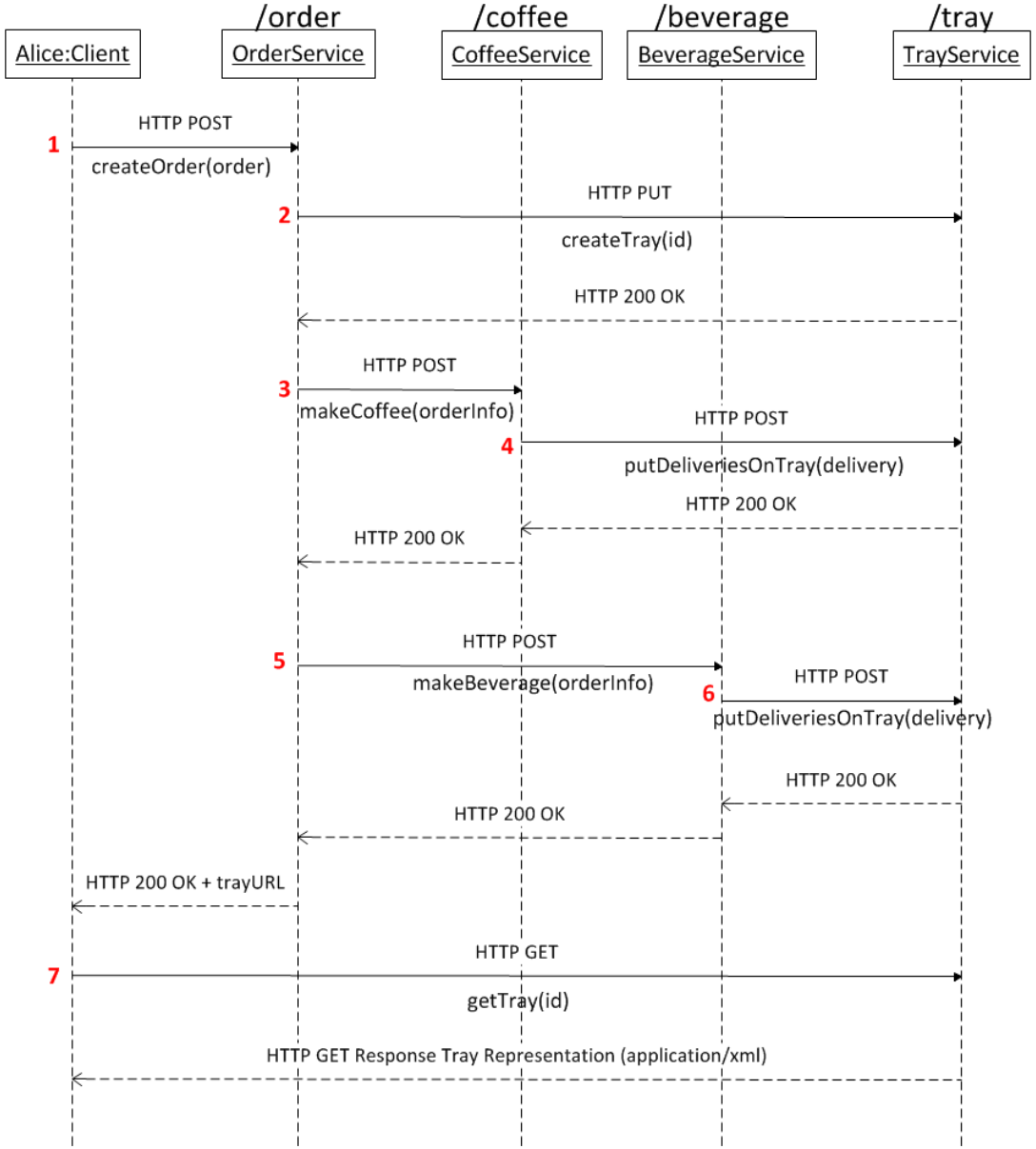
Architecture (i)



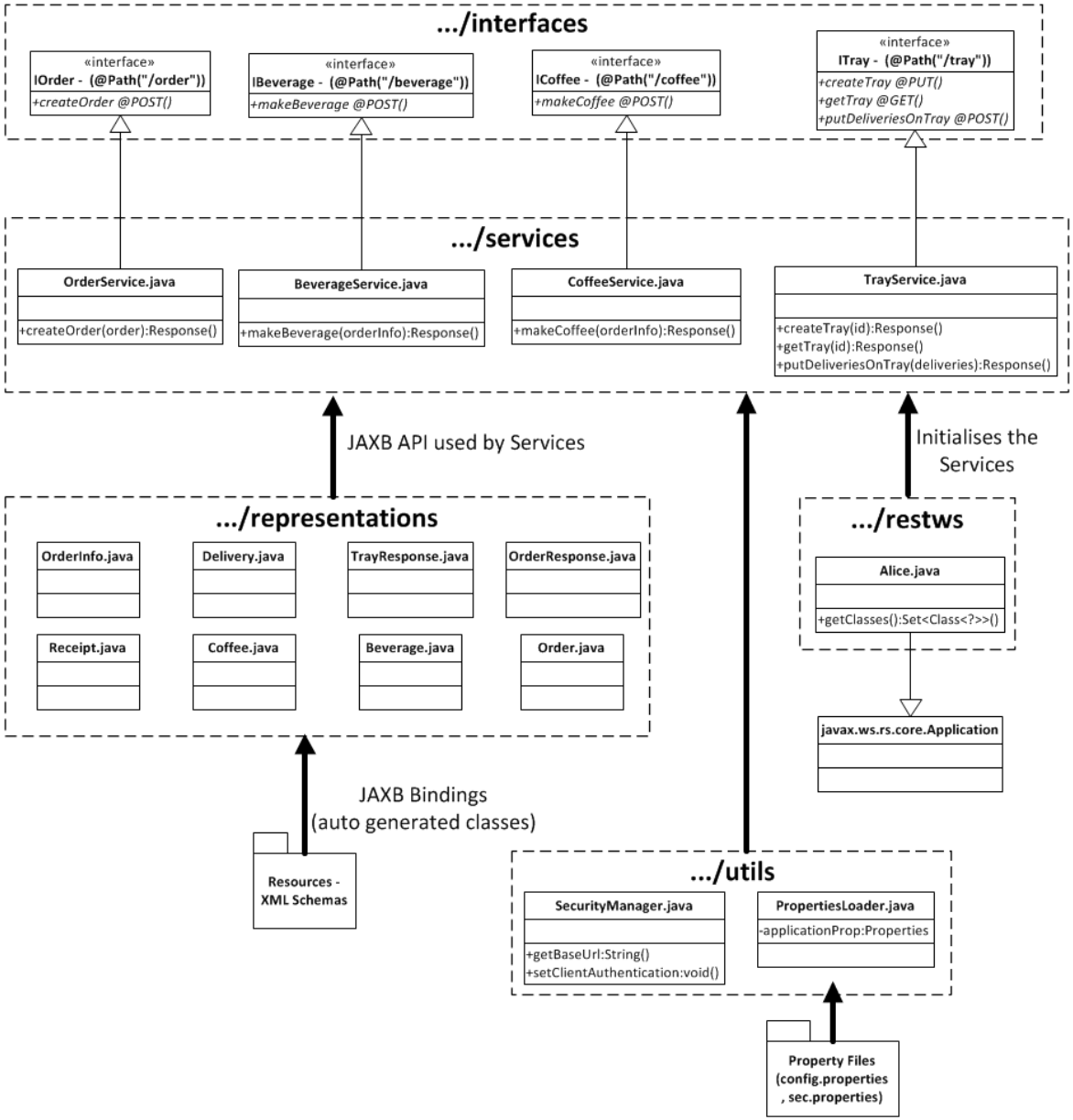
Architecture (ii)

- HTTP POST Requests to create resources
  - When the client is NOT aware of the Resource URI
- HTTP PUT Requests to create/update resources
  - When the client is aware of the Resource URI
- HTTP GET Requests to view the representation of the Resource
- Every method returns an HTTP Response containing status code
  - HTTP 200 OK – Returns if the call was successful
  - HTTP 404 Not Found – Returned in case of Resource not found error
  - HTTP 401 Not Authorised – Returned if the user doesn't authenticate
  - HTTP 500 – Server Error (e.g. config.properties file not found)
- The Message-body of the HTTP Messages is ("application/xml")

Sequence Diagram



Class Diagram



Implementation (i)

- 4 Services
  - Order
  - CoffeeService
  - BeverageService
  - TrayService
- JAX-RS API annotations used for the creation of the services
- REST clients created with JAXRSClientFactory (using the interfaces for the services – efficient and easy)
- JAXB API used to generate the serializable Java objects from the XSDs
- BASIC user authentication over HTTPS (for all WS) with automatic key generation (Maven plug-in)
- Persistence done with POJOs

Testing

- Testing done with soapUI using REST clients
- Depending on methods we test for HTTP headers or XML response
- We have 2 test suites:
  - 1 for testing user authentication
  - 1 for testing user – system interaction
  - Assertions are either Xpath queries or Groovy scripts for checking HTTP headers for the Response

Challenges

- All members of the group implemented REST web services for the first time, although previous SOAP implementations have been done by all
- Assuring security for REST web services since there are no specially designed specifications (e.g. WS-Security for SOAP)
- WSDL 1.1 does not support all the HTTP methods and WSDL 2.0, although has better REST support, is not implemented by the Apache CXF framework – therefore the implementation uses interfaces as contracts

Conclusions

- REST (REpresentational State Transfer)
  - a distributed systems architecture that allows the communication of components via simple HTTP messages(POST, GET, PUT, DELETE etc.)
  - based on the protocols that made the WEB so popular
  - offers loose coupling
- However there is no support for RESTful services in WSDL 1.1 (remember the previous slide?)
- WSDL 2.0 (1.2) tries to solve this issue but:
  - Not yet widely adopted
  - Not yet supported by CXF
  - There is some support from the Axis2 framework but lacks a mature and well written documentation (lone wolf)
- Hacking Java's certificates store for *testing* HTTPS is not nice!