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Cloud computing Practical

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Objective

Demonstrate RPC, RMI and RESTful or SOAP based Web services.

RPC

- With RPC, we get a procedure call that looks pretty much like a **local call**.
- RPC handles the complexities involved with passing the call from local to the remote computer.

Steps:

(in ubuntu)

1. install rpcbind & rpcgen : sudo apt install rpcbind
2. Run: $ rpcgen print.x
3. $ cc client.c print_clnt.c -o client
4. $ cc server.c print_svc.c -o server
5. $ ./server&
6. $ ./client hostname

RMI

- RMI uses an **object-oriented paradigm** where the user needs to know the **object** and the **method of the object** needs to invoke.

In simple word:

- RMI does the very same thing like RPC, but RMI passes a reference to the object and the method that is being called.

RMI = RPC + Object-orientation

Which is better: RPC or RMI

RMI is a better approach compared to RPC, especially with larger programs as it provides a cleaner code that is easier to identify if something goes wrong.

Examples:
RPC Systems: SUN RPC, DCE RPC
RMI Systems: Java RMI, CORBA, Microsoft DCOM/COM+, SOAP(Simple Object Access Protocol)

SOAP web-service

- The main idea behind designing SOAP was to ensure that programs built on **different platforms and programming languages** could exchange data in an easy manner.
- Approaches for creating SOAP web-service

- Code First Approach

  Writing source code for web service and then WSDL File

- Contract First Approach

  Creating Web-service based on given WSDL File

Steps:

(Code First Approach - deploy method in server)

1. Create web application
2. Select javaEE 5
3. Create new web service for project
4. Set service name and package
5. Design add operation and add parameter
6. add your logic

   eg. double sum = Operand1 + Operand2;

   return sum+””;
7. clean and build and deploy
8. test web service by click on web service

Steps:

(Code First Approach - all method by client)

1. Create java application
2. Select Main class
3. Create new web service client for project
4. Select project and package.
  - Check by web service reference
5. Insert code and call web service operation
6. add operang and call method

   eg. double Operand1 and Operand2
7. clean and build and Run.

SOAP web-service: Observation

We can call addition method by any client

addition method = which have already deployed on server.

RESTful Web Service

- RESTful was designed specifically for working with components such as media components, files, or even objects on a particular hardware device.

- Any web service that is defined on the principles of REST can be called a RestFul web service.

- A Restful service would use the normal HTTP verbs of GET, POST, PUT and DELETE for working with the required components.

Steps:

1. Create server web application
2. Select java EE 7 web
3. Create Restful web service from database
4. Add jdbc sample select package entities and services
5. Create client web application
6. Test restful web service in server application(Browse client)
7. http://localhost:8080/restclient/test-resbeans.html
8. Test Get methods.

Thank You!

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