

Prof. Dr. Stefan Tai  
Markus Klems

# Enterprise Computing (WS 2014)

## Exercise 1 (3 Portfoliopunkte)

### Info:

- The solution to this exercise must be handed in by Tuesday, Nov 4th 2014, 2PM to Markus Klems.
- The solution must be printed out. Please write your name on the solution sheet.

### Task 1 – Layers & Tiers (20%)

What do you think of this statement: „There is no problem in system design which cannot be solved by adding a level of indirection”? Write a short explanation of the pros and cons that are the consequence of adding indirection into a system.

### Solution:

### Task 2 – Middleware (20%)

Shortly describe the main differences between synchronous and asynchronous communication.

### Solution:

### Task 3 – JMS (60%)

Set up the Eclipse project with JMS sample source code like this:

- Clone the project from <https://gitlab.tubit.tu-berlin.de/klems/messaging>
- Open the project in Eclipse.
- Build the project with Maven.
- Change the `java.naming.security.credentials` in `jndi.properties` from `secret` to `AKZZ91s72TRa`

#### a) PubSub Chat Example (20%)

In `Chat.java`, change the following line

```
TopicSubscriber subscriber =  
    subSession.createSubscriber(chatTopic, null, true);
```

to

```
TopicSubscriber subscriber =  
    subSession.createSubscriber(chatTopic, null, false);
```

Now open two Chat windows with users “Angie” and “Edward” (start the Java Chat application twice) and type:

**Angie:** How is the weather in Moscow?

**Edward:** Pretty cold.

**Angie:** Bye

What is the actual output that you see on the console after having made the slight code change above? Write the output of Angie’s Chat window here:

**Solution:**

### b) Point-to-Point QBorrower and QLender Example (40%)

The example code is in the project package *com.jms.p2p*. First, you must set the *jndi.properties* settings as follows because we are in a P2P messaging scenario here:

```
connectionFactoryNames = QueueCF
queue.LoanRequestQ =.jms.LoanRequestQ
queue.LoanResponseQ = .jms.LoanResponseQ
```

Modify the example as follows and add your code snippets in the blanks below:

- Add an additional String value “Name” to the MapMessage
- The borrower must enter her/his name in addition to salary and requested amount of money
- The lender declines the request, no matter which salary or amount, if the borrower’s name equals to “Donald Duck”

#### Solution:

```
// QBorrower.java
private void sendLoanRequest(double salary, double loanAmt, String name) {
...
    msg.setDouble("LoanAmount", loanAmt);

    msg.setJMSReplyTo(responseQ);
...
}

public static void main(String argv[]) {
...

...
}
```

```
// QLender.java
public void onMessage(Message message) {
...
    double loanAmt = msg.getDouble("LoanAmount");

...
    if (
    ) {

        } else {
            if (loanAmt < 200000) {
                accepted = (salary / loanAmt) > .25;
            } else {
                accepted = (salary / loanAmt) > .33;
            }
            System.out.println("'" + "Percent = " + (salary / loanAmt)
                + ", loan is " + (accepted ? "Accepted!" :
                "Declined"));
        }
    }
...
}
```