TECHNISCHE UNIVERSITÄT DARMSTADT

TK1: Distributed Systems - Programming & Algorithms

3rd Theory Exercise
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Prof. Dr. Max Mühlhäuser
Dr. Immanuel Schweizer

Jens Heuschkel, MSc.
Michael Stein, MSc.

TELEKOOPERATION
Fachbereich Informatik
Hochschulstr. 10
64289 Darmstadt

Task 1.1: Threading (2 P.)

Explain in a few sentences (in your own words) the introduced concepts of a Monitor.

Task 1.2: Transparency in Java RMI (4 P.)

Describe for each type of transparency (cmp. Chapter 1) if it is provided by RMI and give a short explanation why.

Task 1.3: RMI - single-threaded vs. multi-threaded (4 P.)

A client executes RMI on a server. The client requires 4 ms to compute the arguments for each request, and the server requires 9 ms to process each request. The process time of the local operating system of each send or receive operation is 0.3 ms and the network time to transfer the request or response is 4 ms. The Marshalling and Demarshalling takes 1 ms in total per message.

Estimate the time, which the client requires to generate two requests and obtain a refund, if

1. it is single-threaded
2. it has two threads, which can generate concurrent requests on a single processor. The server, which has also one processor, processes the requests in order of the received message.