

## Exercise Sheet 5

Deadline: June 29, 2023 – 04:00 am CEST

### Exercise 1 Project „Room Manager RESTful Web Service“

*Web services* based on the *RESTful* (representational state transfer) software paradigm are increasingly important in modern distributed systems. Web services allow to design and develop loosely coupled distributed applications on a global scale using the well-known Internet infrastructure.

#### Getting to know REST

REST is not a particular technology but a programming paradigm. Similar to RPC REST is used in the context of client-server scenarios. One key property of REST applications is the fact that it is *stateless*, e.g., each message must be self contained and comprise the entire information needed by the receiver.

In most cases HTTP is used as the underlying protocol to implement REST applications. The REST server provides access to its *resources* which are described via *URLs*. For accessing these resources the HTTP methods (`GET`, `POST`, `PUT`, `DELETE`, ...) can be used to read or modify their content. With HTTP libraries being available for nearly any modern operating system or programming language REST is very platform independent.

In this exercise you should - once again - implement a client in the programming language C. You can either implement the HTTP requests yourself or use a library which takes care of that. The recommendation is to use the well-known and widely deployed *libcurl* (<https://curl.se/libcurl/>). Familiarize yourself with its use.

One helpful feature of *libcurl* is the command line tool `curl`. It can be used to interact with REST services from the command line. Use this opportunity to discover the rest service and test functionalities.

You are also free to use a different C library. In that case please send a mail to [oliver.hahm@fb2.fra-uas.de](mailto:oliver.hahm@fb2.fra-uas.de).

#### RESTful Room Manager

Your task:

- Adapt the provided CLI client to be used with REST.

- The actual implementation has to be done in `restroomman_client.c`. The main application in `restroomman_cli.c` does not require any modifications. The provided header file provides some documentation.

The documentation of the REST service is - as one would expect - provided as HTML page via the web service itself.

You will find a list of the available resources and, for each resource a description of which HTTP methods are applicable to it and what they do in each case.

The REST service is provided at `http://10.18.2.182:8080`.

The most important REST resource for you at the beginning will be the query of the current version number. The resource URI for this is `/version`.

Test this with `curl`, for example: `curl -v -H "Accept:text/plain" http://10.18.2.182:8080/version`<sup>1</sup>

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<sup>1</sup>Per default, the `curl` program makes HTTP GET requests. Other HTTP methods can be specified using the `-X <method>` option.