Hochschule Konstanz
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Degree: Applied Informatics (AIN)
Lecture: Ubiquitous Computing

Laboratory 2: Smart Home

Objective: Smart Lighting is an important part of Smart Home. Lights and colours can affect our feelings, well-being and emotions. They can help us to feel more relaxed, concentrated or prepare our brain for going to bed.
The main aim of this laboratory exercise is to get first experiences with controlling Smart Lighting on example of Philips Hue.
The report must include ALL points mentioned in the exercises' descriptions.
Format for the report name: "Lab_2_*surname1*_*surname2*.pdf"

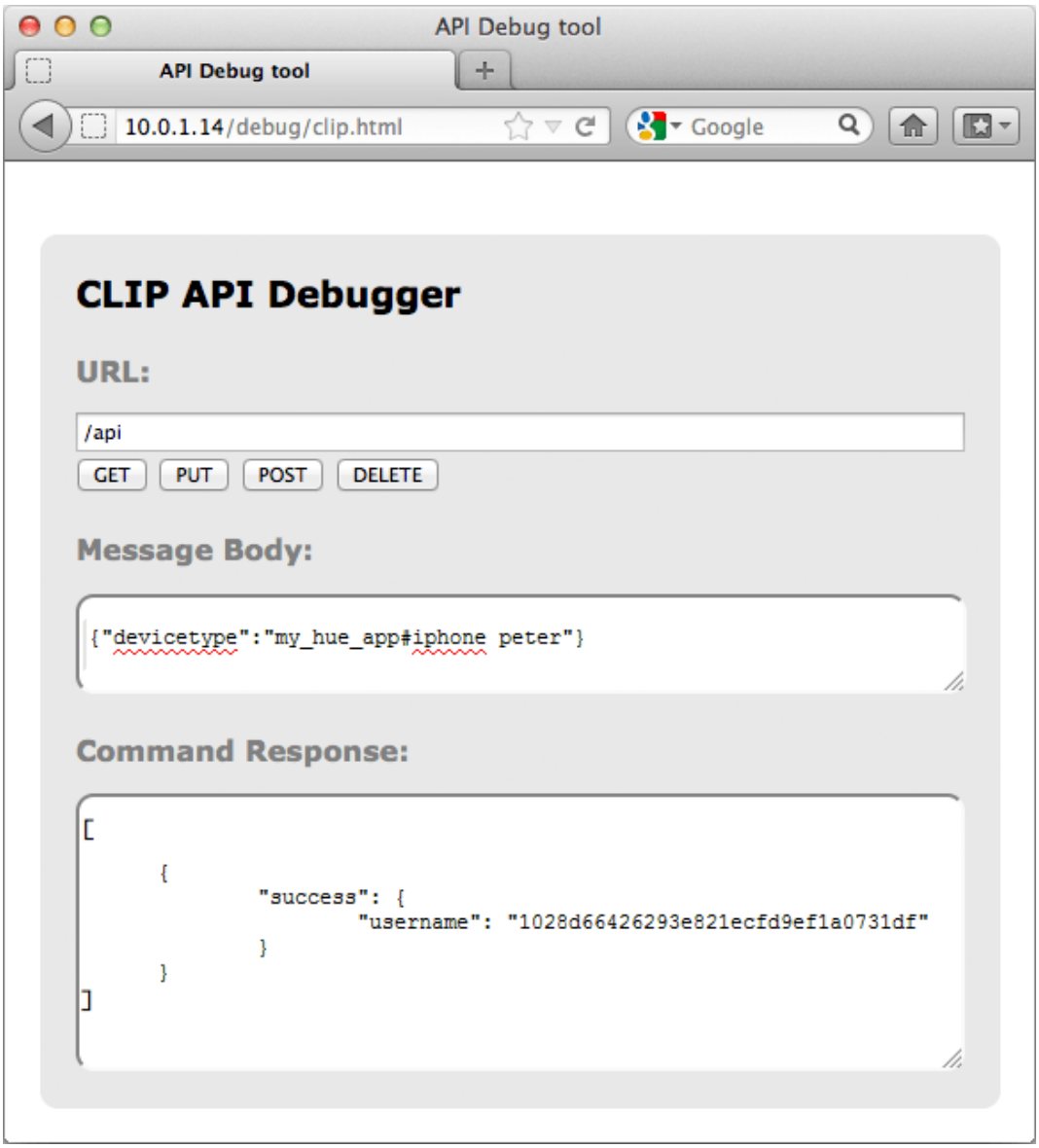
1 Philips HUE basics

For understanding the Philips Hue system and getting first experiences on it, you can use the test web app built into every bridge. You can find detailed information on "Getting Started" page at Philips Hue Developer Program web site: https://developers.meethue.com/.

Execute the following tasks and write a report containing used commands, "Command Responses" from web app and a short description of your results (changed states of light bulbs – what do we "see").

1.1 First steps: connecting to the HUE Bridge using test web app

As first, you have to find out the IP-address of HUE Bridge. Every group should decide which one would be used. After that, get authorized username and notice it for further interaction with the system. Connection to bridge should be done one after another (keeping other bridges/light bulbs turned off, while one group is connecting the PC to bridge) to avoid the wrong combinations group-bridge-bulb.



Write the used commands, responses and your actions in “real world” down in report.

1.2 Executing simple commands using test web app

Try easy commands:

- turning on/off,
- changing brightness,
- changing saturation,
- changing colour

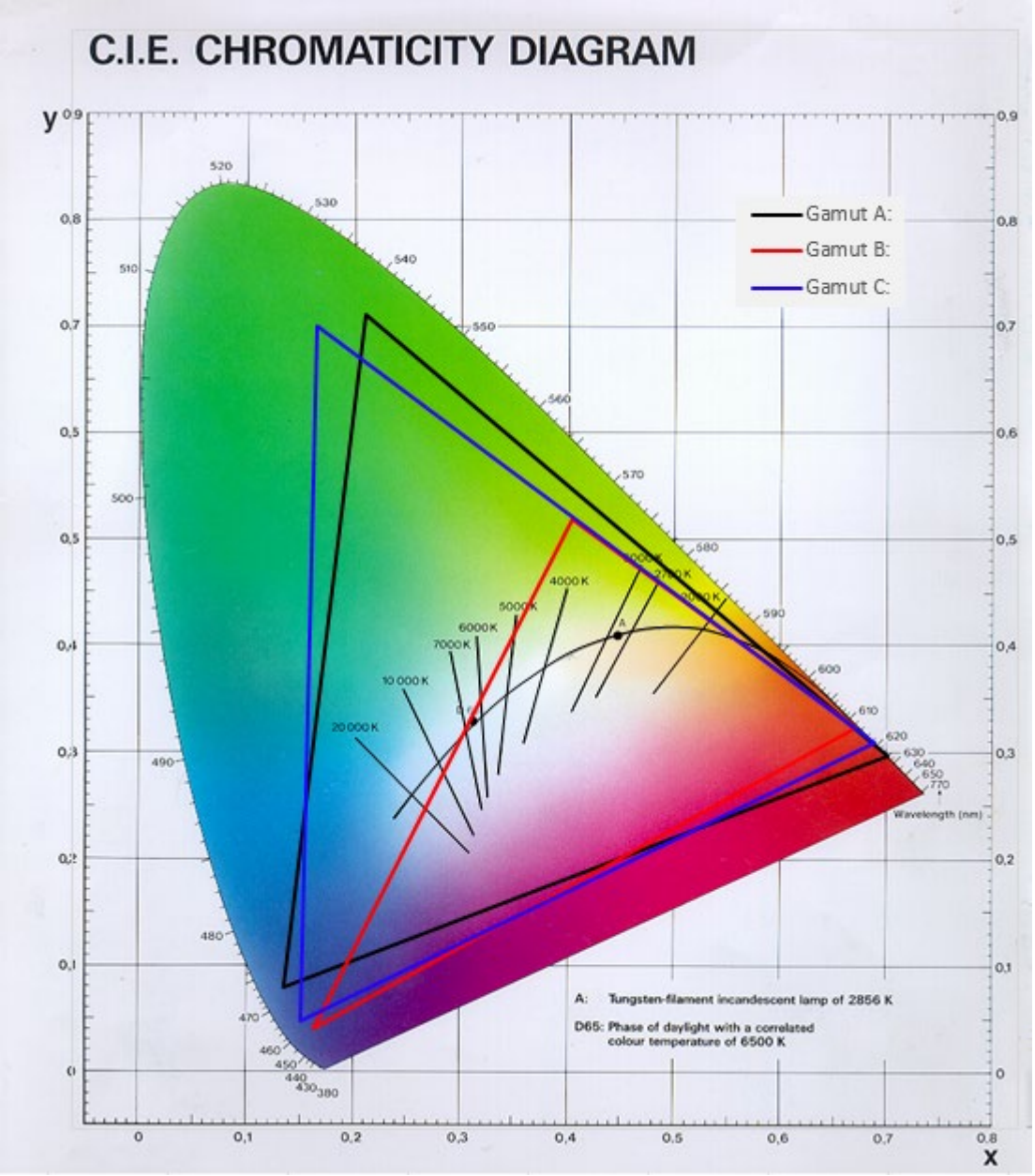
for one light bulb and/or group of light bulbs.

The colours to be used: blue, green, yellow, red, purple, orange. Every team has to use one of them (without repetition).

Write the used commands, chosen colour and the necessary values of parameters for this colour in your report.

1.3 Advanced colours changing

Read “Getting Started -> Core concepts” at Hue Developer Program web site. Try different methods of setting up the colours of light bulbs. Try colorloop.



Note down the used methods, commands and short explanation of differences between different methods in your report.

2 Application for Philips HUE control

As next step after understanding Philips Hue basics, an application for Philips Hue light bulbs control can be developed. Every group should implement a unique simple function, which should be first discussed and confirmed by lecturer/tutor.

2.1 Getting more theoretical knowledge for application development

Read all remaining pages of “Getting Started” at already known Hue Developer Program web site. Check Application Design Guidance at the same page. You need to register an account to get the access. For the further development, you may need the information from “Philips Hue API” and “Tools and SDKs”, which can be accessed after logging in.

2.2 Application development

You are free to choose the platform, you will use for your development. You can find SDKs and other libraries/tools in internet e.g. at Hue Developer web site. The confirmed by lecturer/tutor functionality should be implemented in developed application. Application must have interactive user interface for launching the mentioned function and (optionally) other functionality.

Upload the source code of your application, executable file, screenshots and a short explanation of its work. You have to present the work of your application on chosen platform. If you do not show the work of application personally to lecturer/tutor, you should also make a short video of its work and upload it.