

# Exercise 1: Hardware Assembly, Development Environment, and Smoke Test

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## Overview

In your first exercise, you make sure that you have everything you need to start with the LiFi-project. This includes the **hardware kit**, which requires some assembly, as well as a **development environment** on your computer. You apply different **smoke tests** to both.

## Your Tasks

To pass this exercise, you must complete the following tasks and demonstrate the result in the examination interview.

### 1. Assemble the Hardware

You should have an been provided with a hardware kit for the LiFi-project. For your first task, you need to assemble the separate hardware components into a hardware prototype for the LiFi-project. This involves some screwing and wiring. You find the detailed instructions in the [online script](#).

### 2. Install the Development Environment

In this task, install the necessary software for the development environment on your computer. You find all instructions and download links in the [online script](#). As a reminder, here is a list of the software you need to install:

- Brick Viewer and Brick Daemon
- Visual Studio Code
- Python
- Git

### 3. Smoke Tests

Finally, you should run a number of tests to check your hardware and software setup.

*a) with the Brick Viewer*

1. Connect your hardware kit to your computer using the provided USB cable.
2. Open the Brick Viewer software on your computer.
3. Connect to the hardware kit using the default host and port information. Check whether all devices are found and shown in separate tabs.
4. Perform the various smoke tests detailed in the online script.

*b) with a Python program*

1. Check out the LiFi GitHub repository.
2. Open the file `smoke_test.py` in Visual Studio Code.
3. Run the program from a terminal and check the output for errors.

### Submission and Interview

For your first exercise, please submit one or more photos of your assembled hardware kit via the designated submission folder in [ILIAS](#).

For the exam interview, please bring the assembled hardware kit along with your computer with the development environment installed and configured. You will need to demonstrate that:

- You can connect to your hardware kit from the Brick Viewer software.
- You have a working development environment consisting of the latest version of Visual Studio Code, Python and Git.
- You can connect to your hardware kit from the provided Python program.

Only if you master this exercise are you ready for the next steps in the LiFi-project!