ECE 448/528 – Application Software Design

HOMEWORK #3

Due date: Thursday, March 2nd 2023, 23:59 PM

1. Multiple users may control the same plug via the web page. If one of them requests to switch on the plug and another one requests to switch off the plug at the same time… *(5 points)*

i)   What will they see in their web pages as responses?
ii)   In the end, is the plug switched on or off?

2. Consider three actions "toggle", "on", and "off" that one may apply to a plug. If the actions need to be delivered via messages, discuss among the three delivery guarantees – at least one, exactly once, and at most once – which may or may not cause problems and why. *(5 points)*

3. MQTT messages for the plug power updates for Project 3 only contain the power consumptions in plain text. Design a new power update message format that contains a timestamp of when the power consumption is measured as well as the power consumption. Should the message be published to a different topic? *(5 points)*