

## **ECE 448/528 – Application Software Design**

### **HOMEWORK #4**

***Due date: Thursday, March 30th 2023, 23:59 PM***

1. Consider the RESTful interface design of a service that allows clients to query power consumptions of plugs during certain time period *(10 points)*
  - i) For a plug with name 'plugName', clients would like to know all available power consumption data of it, via a HTTP GET request to /api/power/plugName. How would you specify the path in @GetMapping and specify the parameters with annotations in Spring Boot?
  - ii) For a plug with name "plugName", clients would like to know all available power consumption data of it after a date time like "2022/03/05 11:34:55 PM" via a HTTP GET request to /api/power/plugName?begin=20220305113455AM. Show how the answers in i) should be updated while still supporting conditions from i).
  - iii) Based on ii), clients would like to specify an ending data time. Show how the answers in ii) should be updated while still supporting conditions from i) and ii).
  - iv) Provide an example of a response body in JSON for the above RESTful requests should return.
  
2. For Project 4, we mentioned in the lecture that you'll need a data model for plug states and that plug states should come from the MQTT broker. Since clients will also be able to control those plugs via RESTful services, should you update the state of a plug to "on" if a RESTful request to switch that plug on is received? Explain your answer with a short discussion of pros and cons. *(5 points)*