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Implementing a MQTT Client Dashboard -- An IoT Protocol

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IMPLEMENTING A MQTT CLIENT DASHBOARD – AN IOT PROTOCOL

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In this modern era, we have smartphones, smart homes, and smart appliances. This comes under the different scales of the Internet of Things (IoT), from the small personal smart space scale to the huge smart city scale. They are many communication protocols used by the wide variety of smart devices and applications in order to exchange data and commands in these smart spaces. Out of the many IoT protocols, there is one that is called Message Queuing Telemetry Transport (MQTT). MQTT is lightweight, intuitive, and easy to use messaging protocol suitable for IoT applications and devices. Aside from the traditional request/response communication, MQTT protocol uses a paradigm known as publish/subscribe. Users (applications/devices) can publish or send data under certain topics. Similarly, other users can show interest in receiving updates and messages published on certain topic(s) by first subscribing. A topic is a meta-data and a short description of the communicated messages (e.g., Chicago weather, traffic updates), and users can subscribe to a wide range of topics. This semester, I am adapting a 300-level course to an honors credit, fulfilling one of the curriculum requirements of the Honors Program. To adapt a course, I am expanding on what I am learning for my Computer Networks class by exploring the work of the MQTT protocol to implement a user-friendly JavaScript-based dashboard for MQTT users. Using the dashboard, a user can subscribe to a topic or a set of topics, publish a message(s), subscribe to topic(s), and view the published messages in a suitable format. The developed dashboard allows different types of messages to be published and displayed, that include JSON/XML-based content, documents, and images. The presentation in the symposium will include a live demo running multiple instances of the dashboard, representing the different users, for the attendees to participate and test the real-time message exchange through the MQTT dashboard.