SMRTTECH 4ID3: IoT Devices and Networks Lab #2

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As a future professional member, the student is responsible for honestly performing the required work without plagiarism and cheating. Submitting this work with my name and student number is a statement of understanding that this work is our own and adheres to the Academic Integrity Policy of McMaster University. Aaron Upadhyay 400382779

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Pre-Lab Questions [10 marks]

Q1 – In your own words, describe the publish-subscribe messaging pattern. What role does the broker play? What role do the clients play? (Suggested: 2 sentences, 3 points)

The broker is essentially the center of communication and manages all the messages received. The clients are the ones who connect to the broker and then essentially act as the publisher through sending messages/data or as subscribers through registering to receive topics.

Q2 – In your own words, what does QoS mean for MQTT transmissions? What levels of QoS exist? (Suggested: 3 sentences, 2 points)

QoS stands for quality of service, and it is the metric which explains the reliability that a message would be delivered between the client and the broker. In QoS there are three levels, 0 or at most once, 1 or at least once, and 2 exactly once. At most once it means that the message will be sent without caring if they ever reach the destination. At least once it is more reliable and means that the message will be received at least once, although sometimes messages are delivered more than once. Finally, exactly once meaning the message will be received on the client even if it was offline or some time however, it uses much more resources than QoS 0 and QoS 1.

Q3 – In your own words, what is the role of each field below when connecting to an MQTT broker? (Suggested: 3 sentences, 2 points)

Host IP Address	The host IP (also called the hostname) refers to the network IP address of the broker itself. This is used to identify the broker and locate it when an MQTT client's router wishes to establish a network connection using the three-way handshake to begin to send and/or receive data using this centralized host.
Topic Name	Topic names are used to identify and hierarchically categorize the data (or topics) a system receives or sends. Topic names are simply identifiers used for determining which communication channels (topic names) house what data (topics or even subtopics of interest) for publishing and/or subscribing.
Protocol (TCP/WS/WSS/TLS)	The role of communication protocols is to deal with specifically how data is received and sent, as well as communication behavior between the devices, network, and client. These different protocols vary in characteristics regarding methods of transmission, data privacy/security (encrypted or not), compatibility (depends on project/application), performance, and hardware requirements.

Q4 – View the status of your local Git repository to verify that there aren't any uncommitted changes. Pull changes from GitHub to ensure that your local repository is up to date. Include a screenshot that demonstrates you viewed the status of your repository.