**A picture containing curtain, red, holding, night

Description automatically generated**

**CoAP - MQTT Homework**

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| **Question 1** | **What is the difference between the message with MID: 3978 and the one with MID: 22636?** |
| **Action** | coap.mid == 3978  coap.mid == 22636 |
| **Answer** | **message with id==3978 has (con and ack) that is confirmable.**  **message with id==22636 has (non) that means non-confirmable.** |

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| **Question 2** | **Does the client receive the response of message No.6949?** |
| **Action** | coap.mid == 28357 && coap.token == 6fb63c18 |
| **Answer** | **First, we find the id of message also the token.**  **After that, if we filter based on the id and the token, it has both con and ack parameters. this means that message received.** |

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| **Question 3** | **How many replies of type connectable and result code “Content” are received by the server “localhost”?** |
| **Action** | ip.dst==127.0.0.1 && coap.type==2 && coap.code==69 |
| **Answer** | **8 replies. We submit coap.type==2 because we want ack not a message.** |

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| **Question 4** | **How many messages with the topic “factory/department/+” are published by a client with username: “jane”?** |
| **Action** | mqtt.username=="jane"  mqtt && tcp.port in {42821 40989 40005 50985} |
| **Answer** | **0 message. Jane send 4 messages from 4 different port and these ports are for jane but none of them are not equal with this topic.** |

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| **Question 5** | **How many clients connected to the broker “hivemq” have specified a will message?** |
| **Action** | (dns.qry.name=="broker.hivemq.com") && (dns.flags.response==1)  (ip.addr in {3.120.68.56 18.185.199.22}) && (mqtt.conflag.willflag==1) |
| **Answer** | **16. first of all we search the ip of domain in to dns, after we filter based on fined ip also filter the will messages.** |

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| **Question 6** | **How many publishes with QoS 1 do not receive the ACK?** |
| **Action** | mqtt.msgtype==3 && mqtt.qos==1  mqtt.msgtype==4 |
| **Answer** | **50. we filter the type==3 message and Qos==1 also subtract with ack messages.** |

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| **Question 7** | **How many last will messages with QoS set to 0 are delivered?** |
| **Action** | mqtt.conflag.willflag==1 and mqtt.conflag.qos==0  mqtt.msg in {“put messages here”}  mqtt.msg contains "error" and mqtt.qos == 0  mqtt.willmsg contains "error: tvmgvjml" |
| **Answer** | **0. we filter messages that have will flag and Qos==0 and search one by one the content of will messages to understand published from broker to client or nit and finally we find zero publish message.** |

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| **Question 8** | **Are all the messages with QoS > 0 published by the client “4m3DWYzWr40pce6OaBQAfk” correctly delivered to the subscribers?** |
| **Action** | mqtt.clientid == 4m3DWYzWr40pce6OaBQAfk  (ip.src == 10.0.2.15 && tcp.srcport == 58313) && mqtt  (mqtt.msg == “msgPayload1\*”) || (mqtt.msg == “msgPayload2\*”) |
| **Answer** | **1 mesaage.**  **From the result of first filter we find the port address, after that We can see four messages that only one of them has Qos > 0.**  **Finally, we search the content of message and find that send from side of broker to client.** |

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| **Question 9** | **What is the average message length of a connect msg using MQTTv5 protocol? Why messages have different size?** |
| **Answer** | **The MQTTv5 packet or message format consists of a 2-byte fixed header (always present) + Variable-header (not always present) + payload (not always present).** |

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| **Question 10** | **Why there are not any REQ/RESP pings in the .pcap file?** |
| **Answer** | **Client should alive the connection and the duration of time alive is more than Wireshark capture that is 166 s, so we do not have any request.** |