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Analyzing of the Wireshark data and replicate real MQTT massages and send them to a thinkspeak channel.

1.Inject: This input used as a stimulation after 0.1 sec to start our program.

2.Traffic.csv: The original data is read by this block from storage as a file and the output is defined as a massage per line.

3.Convert data to js values: csv file is converted to Java Script variable and output sends as a massage per raw.

4.Split data on spaces: Actually, we want to split our data based on spaces which are exist among data.

5.Select publish massage: We define a function to filter publish massages by the following code:

```
var n = msg.payload.search("Publish");  “we search for Publish”
if (n > 0)  “If exist, return it”
   return msg;
```

6.Topic selection: We select and separate desired topics in our data by using a switch and defining 4 desired topics.

7.Split HEX codes in same row: We use this split block to separate our data using “,” which are in the same row.

8.Select HEX payload: The goal is to select HEX payloads and after considering all of the HEX payload, we realized that all of them started with "7b22". So we used it as a filter.

```
if (msg.payload.search("7b22") > 0){
   var strLen = msg.payload.length;
   msg.payload = msg.payload.substring(msg.payload.search("7b22"), strLen);
   return msg;}
```

9.hex2string: Now, that is the time to convert our desired data to string to becomes readable. So, we use define this function:

```
msg.payload = Buffer.from(msg.payload, 'hex').toString();
return msg;
```

10.Make js class on payload: We convert the string to a Java Script variable.

11.Select numerical part of the value: Our goal is have a final data without string ’value’ in payload.col2 . Therefore, we remove that by change block (searching for ‘value:’ and replacing with blank).

12.http and exec formation of plc: Basically, form of our massage for delivering is made in this function:

```
var api_key = "ZGP69UMELXX9HWKQ";
var mqtt_key = "CETVDOE3ZF9YPMPF";
var channel_ID = "1066981";
var data = msg.payload.col2 ;
msg.url = "https://api.thingspeak.com/update?api_key=" + api_key + "&field1=" + data;
msg.payload="'channels/"+channel_ID+"/publish/"+mqtt_key+"'-m
'field1="+data+"&status=MQTTPUBLISH' -d ";
return msg;
```

13.Limit one msg/60s: We limit our delivering massage by 60s delay block. We don’t have any limitation for this time. Because Min time for sending data to thinkspeak is 20s.

14.Execute mosquitto to publish mqtt: Now, that is the time for sending data as mqtt.

<u>http request to thinkspeak</u>: that is a ‘http’ request for sending data via http.