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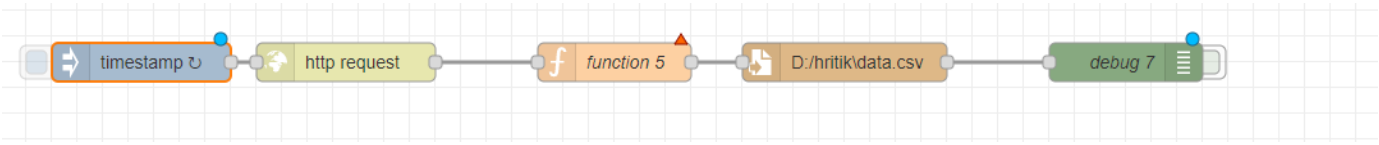
IOT
LAB ASSIGNMENT 9

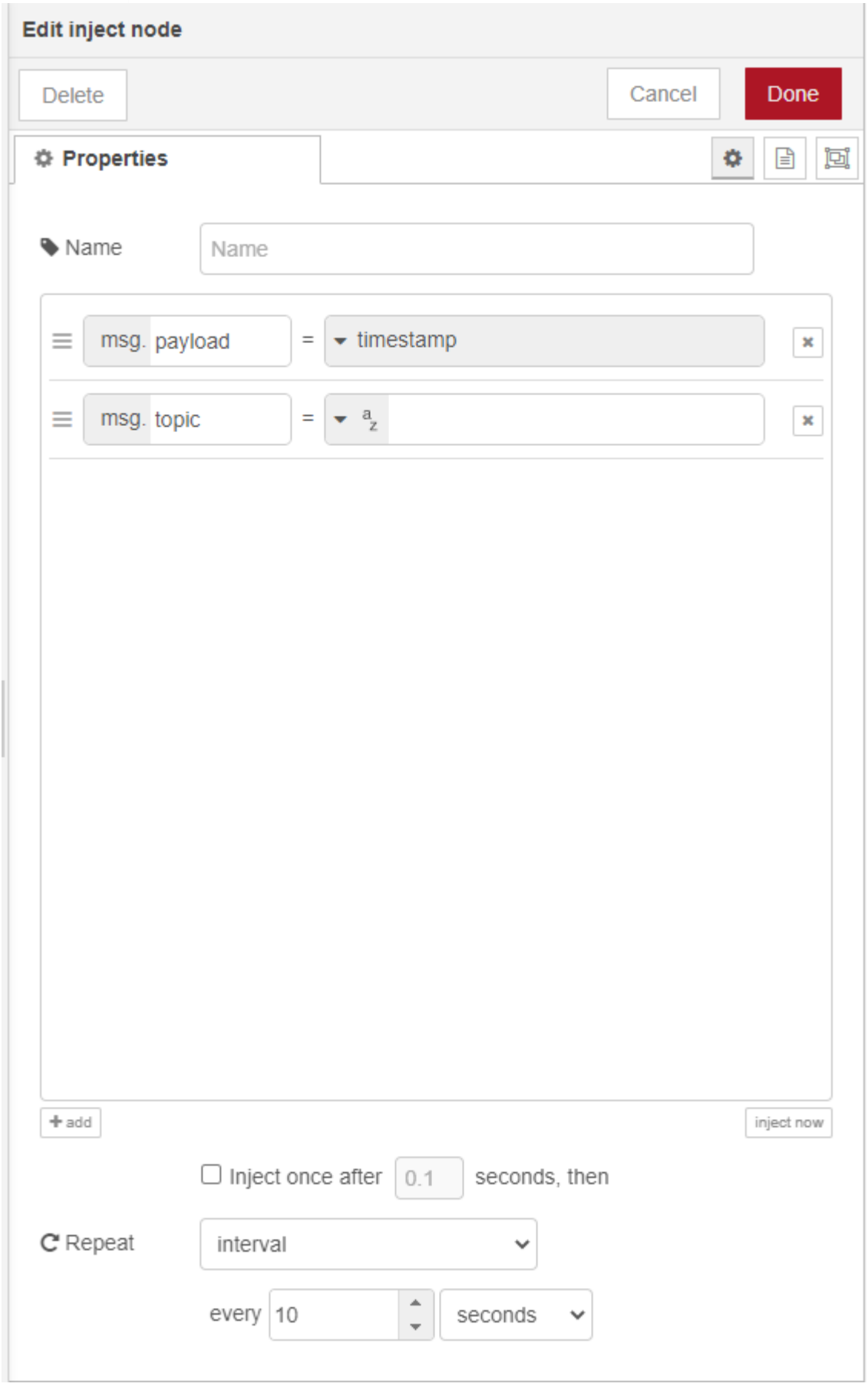
Example-I

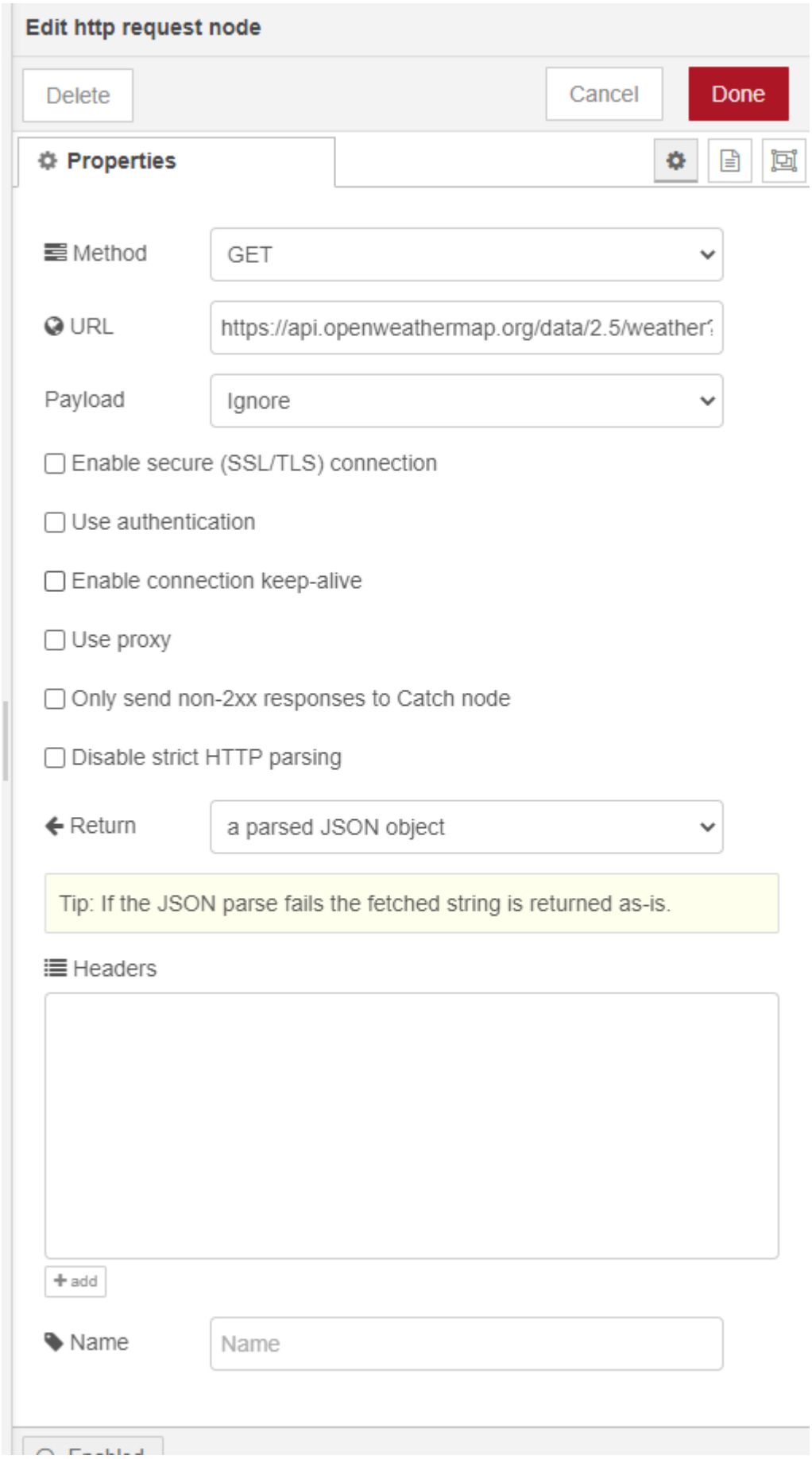
Obtain the open weather report data of your location for every 30 minutes per day and generate the data for temperature, humidly and weather condition along with time stamp in an excel file analyse the temperature vs humidity relation using Linear regression.

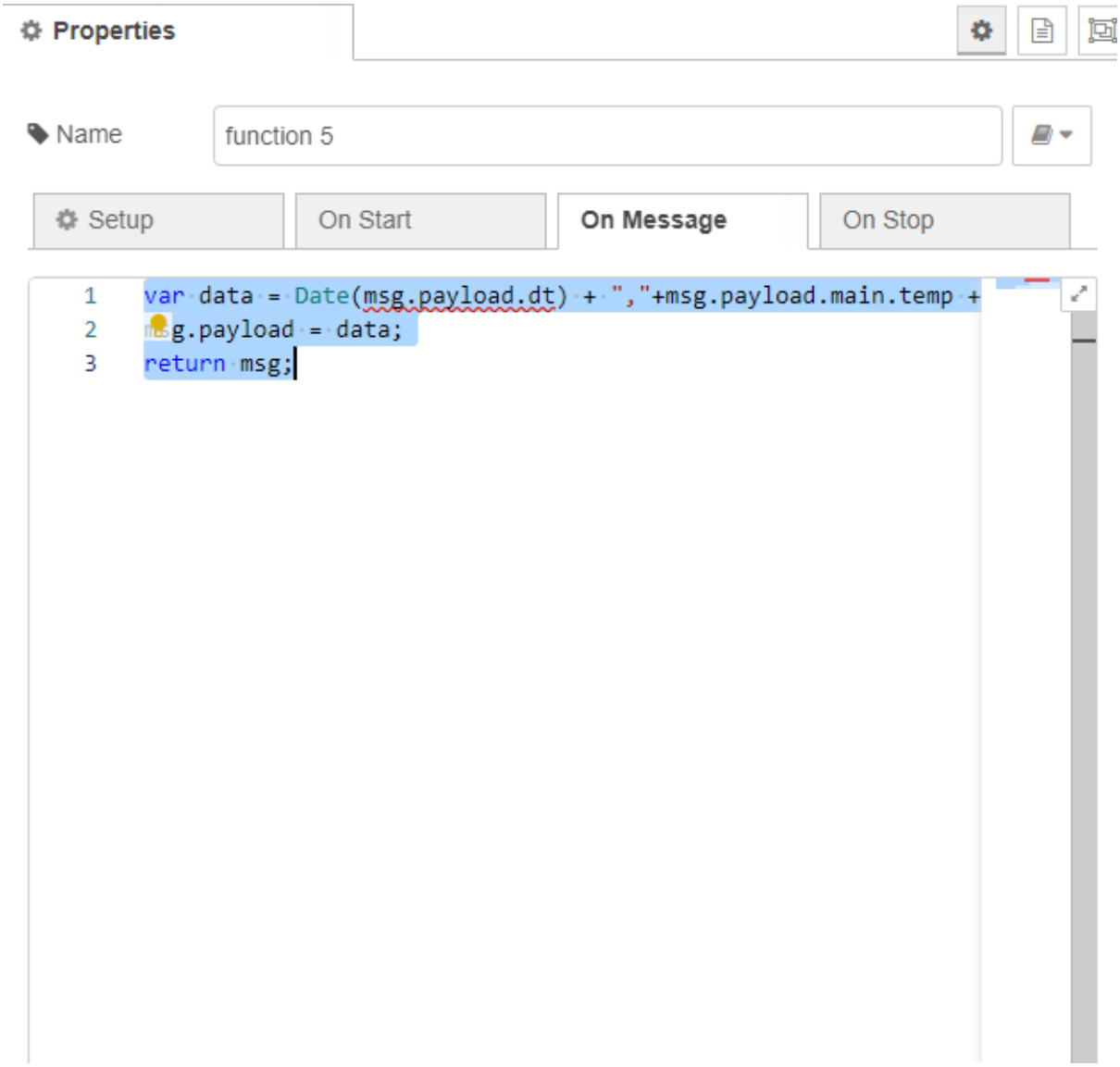
- Use open weather report node from Node Red
- Use conversion nodes if necessary
- Analyse the report

NODE –RED




Edit inject node
Delete
Cancel
Done
Properties
Name
Name
msg. payload
=
timestamp
msg. topic
=
add
inject now
Inject once after
0.1
seconds, then
Repeat
interval
every
10
seconds

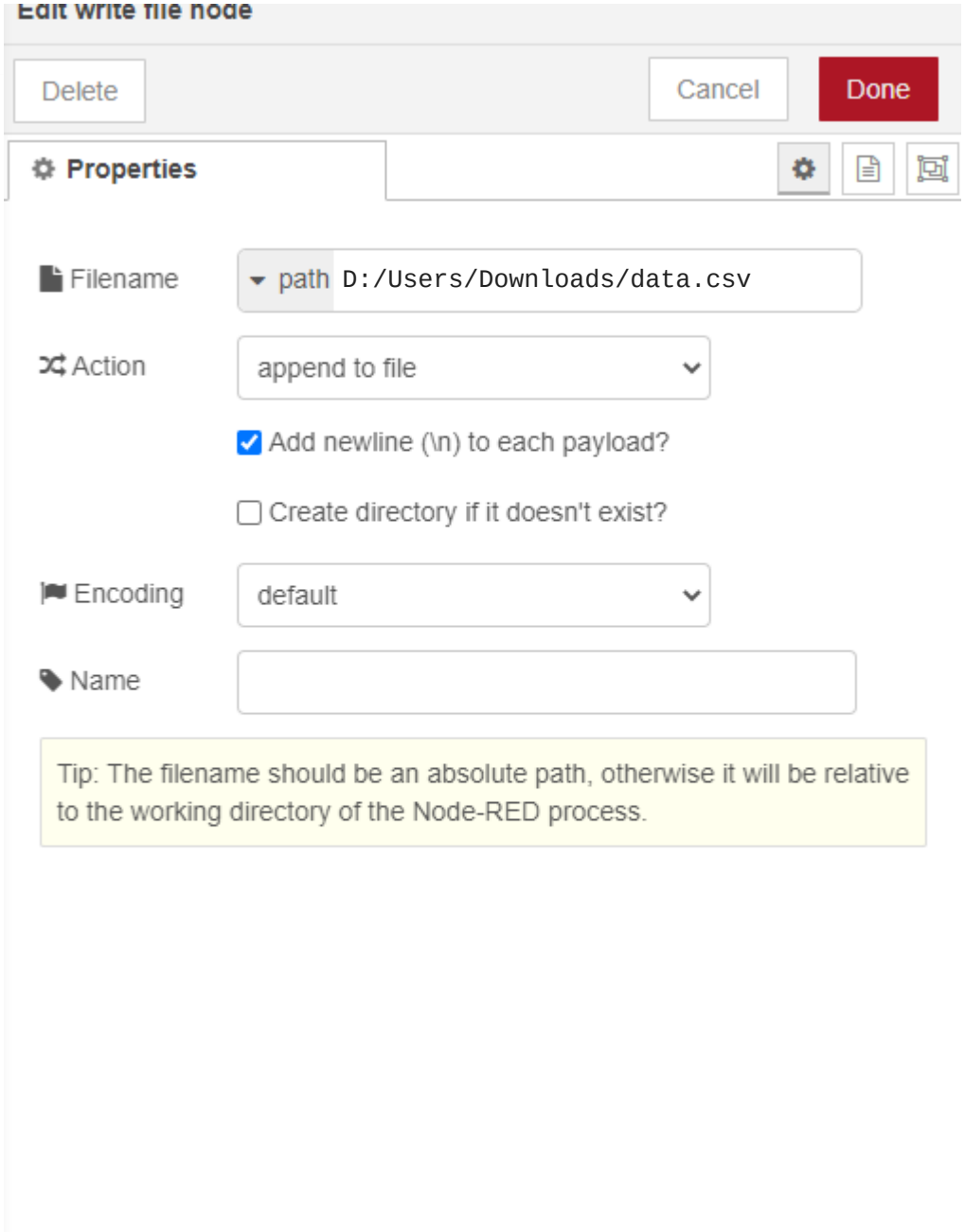

Edit http request node
Delete
Cancel
Done
Properties
Method
GET
URL
https://api.openweathermap.org/data/2.5/weather
Payload
Ignore
Enable secure (SSL/TLS) connection
Use authentication
Enable connection keep-alive
Use proxy
Only send non-2xx responses to Catch node
Disable strict HTTP parsing
Return
a parsed JSON object
Tip: If the JSON parse fails the fetched string is returned as-is.
Headers
add
Name
Name



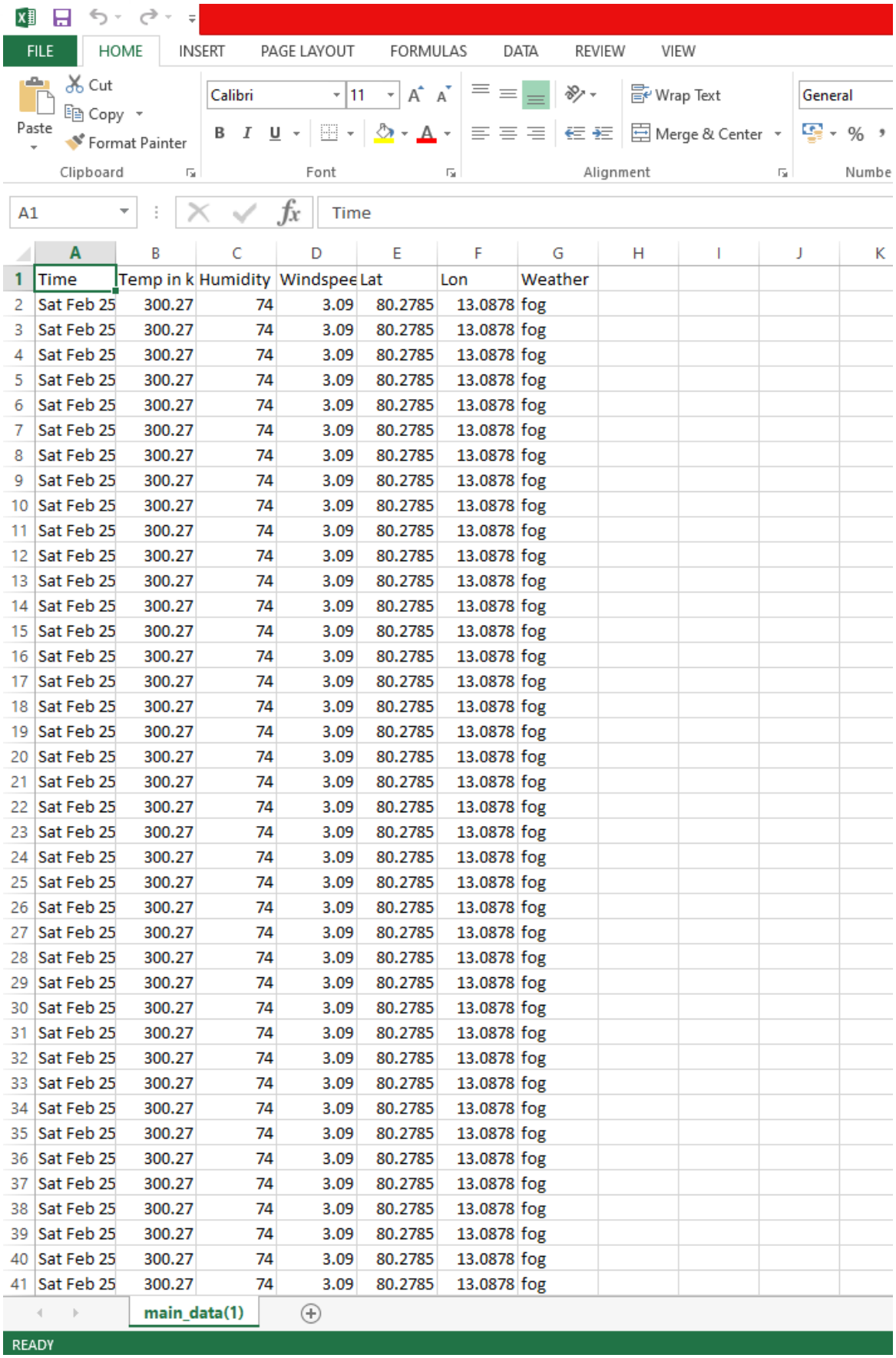
var data = Date(msg.payload.dt) + ","+msg.payload.main.temp + ',' + msg.payload.main.humidity + ',' + msg.payload.wind.speed + ',' + msg.payload.coord.lon + ',' + msg.payload.coord.lat + ","+msg.payload.weather[0].description;

msg.payload = data;

return msg;


Edit write file node
Delete
Cancel
Done
Properties
Filename
path
D:/Users/Downloads/data.csv
Action
append to file
Add newline (\n) to each payload?
Create directory if it doesn't exist?
Encoding
default
Name
Tip: The filename should be an absolute path, otherwise it will be relative to the working directory of the Node-RED process.

DATA

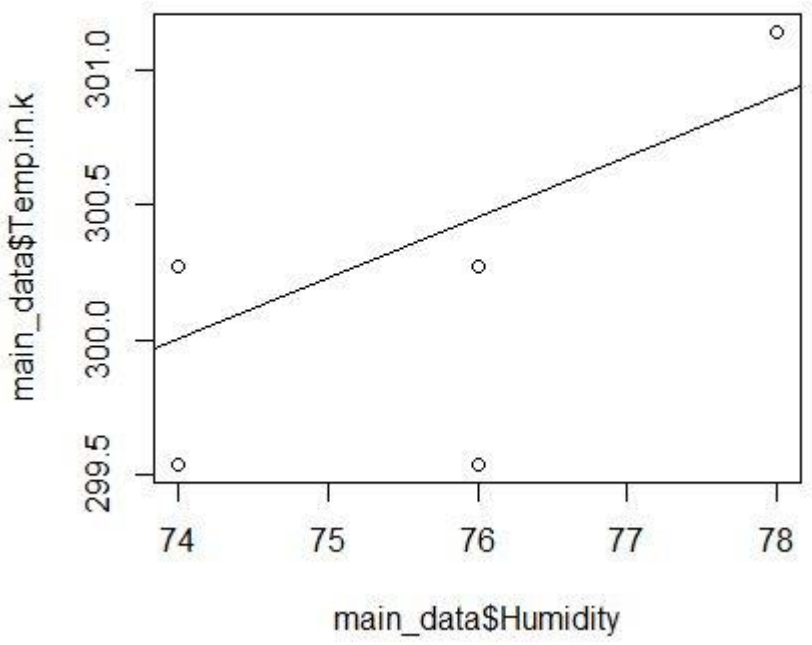


	A	B	C	D	E	F	G
1	Time	Temp in k	Humidity	Windspee	Lat	Lon	Weather
2	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
3	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
4	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
5	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
6	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
7	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
8	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
9	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
10	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
11	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
12	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
13	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
14	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
15	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
16	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
17	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
18	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
19	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
20	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
21	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
22	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
23	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
24	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
25	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
26	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
27	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
28	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
29	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
30	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
31	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
32	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
33	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
34	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
35	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
36	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
37	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
38	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
39	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
40	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog
41	Sat Feb 25	300.27	74	3.09	80.2785	13.0878	fog

R –CODE

```
main_data <- read.csv("C:/Users/Downloads/main_data.csv")
main_data
model1<-lm(Temp.in.k~Humidity,data=main_data)
plot(main_data$Humidity,main_data$Temp.in.k)
abline(model1,col="black")
```

PLOT



```
> summary(model1)

Call:
lm(formula = Temp.in.k ~ Humidity, data = main_data)

Residuals:
    Min      1Q  Median      3Q     Max
-0.9127 -0.1827  0.2384  0.2662  0.2662

Coefficients:
             Estimate Std. Error t value Pr(>|t|)
(Intercept) 283.39362    0.61396  461.58   <2e-16 ***
Humidity      0.22446    0.00813   27.61   <2e-16 ***
---
Signif. codes:  0 ‘***’ 0.001 ‘**’ 0.01 ‘*’ 0.05 ‘.’ 0.1 ‘ ’ 1

Residual standard error: 0.3917 on 842 degrees of freedom
Multiple R-squared:  0.4752,    Adjusted R-squared:  0.4745
F-statistic: 762.3 on 1 and 842 DF,  p-value: < 2.2e-16
```