Challenging Task – 1

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Task:- Connecting Pulse Oxilometer to Raspberrypi and display the values

Components:- Raspberrypi, Oxilometer Sensor

Procedure:

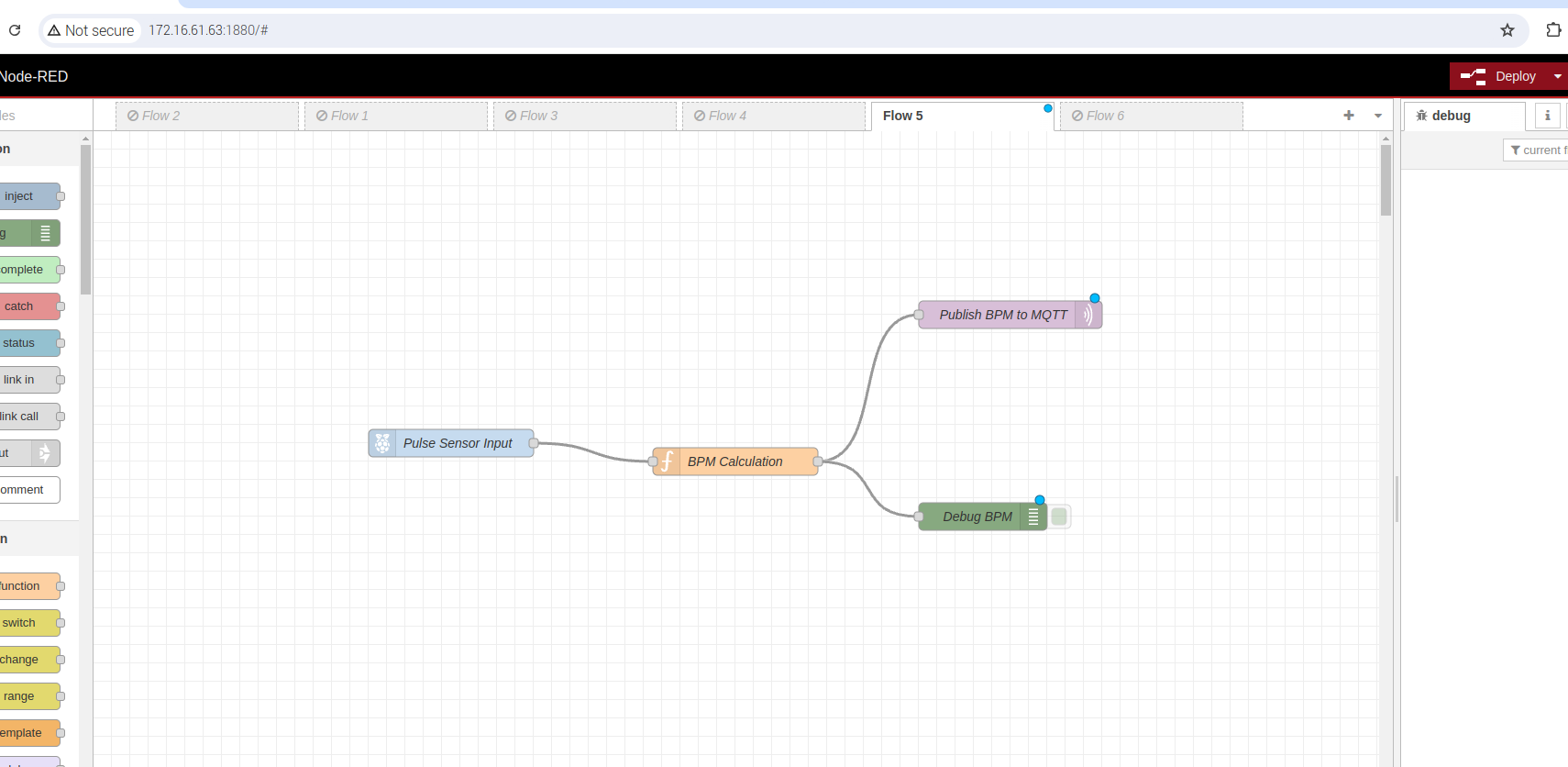
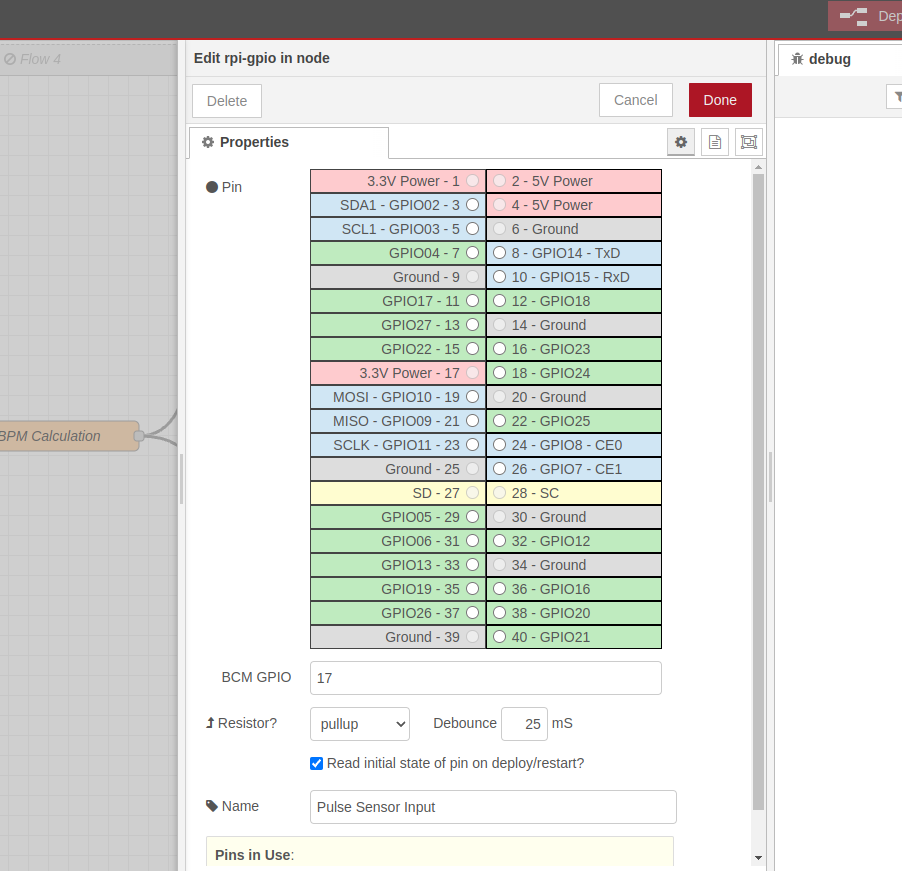
Connect Oxilometer Sensor GND to Raspberrypi pin – 6

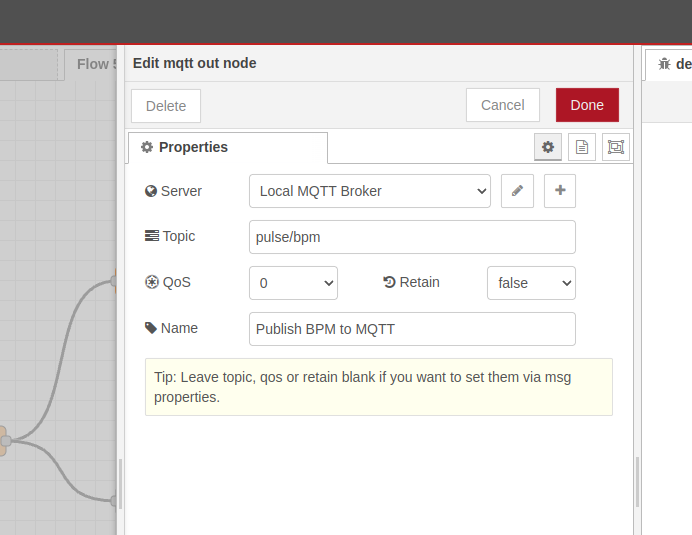
Connect Oxilometer Sensor VCC to Raspberrypi pin – 1 3.3V

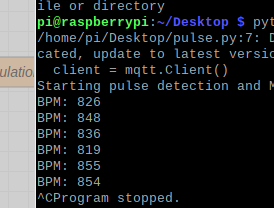
Connect Oxilometer Sensor GPIO to Raspberrypi pin – 11, GPIO 17

Setup ythe MQTT Nodes in NodeRed and Publish the topic topic/pulse

Node Red Configuration

  
Output Sensor Readings using MQTT



Function code to calculate BPM

var pulse\_count = context.get('pulse\_count') || 0;

var last\_time = context.get('last\_time') || Date.now();

// Detect pulse

if(msg.payload == 1){

pulse\_count += 1;

}

// Calculate BPM every 60 seconds

var current\_time = Date.now();

if (current\_time - last\_time >= 60000) {

var bpm = pulse\_count;

pulse\_count = 0;

last\_time = current\_time;

// Send BPM as output

msg.payload = bpm;

// Store count and time for next cycle

context.set('pulse\_count', pulse\_count);

context.set('last\_time', last\_time);

return msg.payload;

}

return null;

**Complete Node Red Config. Code**

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{

"id": "c343a7f6786650ef",

"type": "tab",

"label": "Flow 5",

"disabled": false,

"info": "",

"env": []

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"id": "f597441665fdd0cd",

"type": "rpi-gpio in",

"z": "c343a7f6786650ef",

"name": "Pulse Sensor Input",

"pin": "17",

"intype": "up",

"debounce": "2",

"read": true,

"bcm": true,

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"dc48b9a1cbfacd36"

]

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"type": "function",

"z": "c343a7f6786650ef",

"name": "BPM Calculation",

"func": "var pulse\_count = context.get('pulse\_count') || 0;\nvar last\_time = context.get('last\_time') || Date.now();\n\n// Detect pulse\nif(msg.payload == 1){\n pulse\_count += 1;\n}\n\n// Calculate BPM every 60 seconds\nvar current\_time = Date.now();\nif (current\_time - last\_time >= 60000) {\n var bpm = pulse\_count;\n pulse\_count = 0;\n last\_time = current\_time;\n // Send BPM as output\n msg.payload = bpm;\n // Store count and time for next cycle\n context.set('pulse\_count', pulse\_count);\n context.set('last\_time', last\_time);\n return msg.payload;\n}\nreturn null;",

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"timeout": "",

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"initialize": "",

"finalize": "",

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"6a038aa1d56f12f0",

"512cc1f234624ae0"

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"id": "6a038aa1d56f12f0",

"type": "mqtt out",

"z": "c343a7f6786650ef",

"name": "Publish BPM to MQTT",

"topic": "pulse/bpm",

"qos": "0",

"retain": "false",

"respTopic": "",

"contentType": "",

"userProps": "",

"correl": "",

"expiry": "",

"broker": "mqtt-broker",

"x": 1000,

"y": 200,

"wires": []

},

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"id": "512cc1f234624ae0",

"type": "debug",

"z": "c343a7f6786650ef",

"name": "Debug BPM",

"active": true,

"tosidebar": true,

"console": false,

"tostatus": false,

"complete": "payload",

"targetType": "msg",

"statusVal": "",

"statusType": "auto",

"x": 1030,

"y": 400,

"wires": []

},

{

"id": "mqtt-broker",

"type": "mqtt-broker",

"name": "Local Broker",

"broker": "localhost",

"port": "1883",

"clientid": "node-red-client",

"autoConnect": true,

"usetls": false,

"protocolVersion": 4,

"keepalive": "60",

"cleansession": true,

"autoUnsubscribe": true,

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"birthQos": "0",

"birthPayload": "",

"closeTopic": "",

"closePayload": "",

"willTopic": "",

"willQos": "0",

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}

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