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Embedded Linux – Exercise 3 Solution

1. Install temperature module and drivers
2. Install sshfs and fuse
3. Mount webserver directory onto the raspberry pi
4. Use already made python script to write out temperature data to a database on the web server, also adding a loop to continually do the process every 5 minutes.
5. Use php to serve up the html webpage & import the JavaScript library “canvasJS”—a simple library for creating graphs in js.

\*\*How I’d process the temperature timespan request -- sample code logic\*\*

1. On the html document being fully loaded, the graph object is created and AJAX requests temperature data to display in the graph. When the page is loaded it assumes that all temperature values should be displayed.
2. Have the “Go Get It” button code call a JavaScript function, using data entered in the text field
3. The JavaScript function uses AJAX to process the request, passing a server-side php script interval data (n/5 ), finally creating & returning an SQL query in that selects the latest (n/5) temperature values--since temperature is only recorded once every 5 minutes this is all there is to do here.

\*\*\*Sample code for rendering graph w/ AJAX – includes displaying specific temp intervals\*\*\*

<!DOCTYPE HTML>

<html>

<head>

<script type="text/javascript">

var sqlArray;

var xmlhttp;

var chart;

window.onload = function () {

updateGraph();

}

function updateGraph()

{

xmlhttp=new XMLHttpRequest();

tempInterval = document.getElementById("tempIntervalTextField").value

if(tempInterval == “”){

xmlhttp.open(“GET”, “getTemp.php”,true);

xmlhttp.send();

}else{

xmlhttp.open(“GET”, “getTemp.php?interval=” + (tempInterval/5),true);

xmlhttp.send();

}

xmlhttp.onreadystatechange=function(){

if (xmlhttp.readyState==4) {

sqlArray=JSON.parse(xmlhttp.responseText);

createGraph();

}

}

}

Function createGraph(){

chart = new CanvasJS.Chart("tempChart",

{

title:{text: "Temperature vs. Time"},

data: [

{

type: "line",

dataPoints: []

for (var sql in sqlArray)

{

dataPoints.push({ x: new Date(sql.date), y: sql.temperature });

}

}

]

});

}

</script>

<script type="text/javascript" src="/assets/script/canvasjs.min.js"></script></head>

<body>

<div id="tempChart" style="height: 300px; width: 100%;">

<input type="text" id=”tempIntervalTextField” name="firstname">

<div id=" "><h2> </h2></div>

<button type="button" onclick="updateGraph()">Change Content</button>

</div>

</body>

</html>

\*\*\*SOURCES\*\*\*

CanvasJS libraries - <http://canvasjs.com/>

Fuse - <http://fuse.sourceforge.net/>

Sshfs - <http://fuse.sourceforge.net/sshfs.html>

Sqlite3 - <https://sqlite.org/>