Cloud Web Application

Cloud Web App for DC Motor Control

Abstract

Develop Web App for controlling 3 DC Motors over MQTT and collect health status of the system. Plot graph for the same using selected data.

Group No. : B07-SCD-BITS-PS1-2021

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Contents

Revision History

Revision Number	Prepared By	Revision Date	Revision Details
1.0	Nirzari Shah	8th July, 2021	Coded Frontend elements: Favicon, Banner, Menu Bar, Status Bar and Footer (On the basis of the UI/UX Design feedback we received by Hemant Sir on 7th July, 2021) UI/UX Design: Figma Link: https://www.figma.com/proto/v4IHQPIUhzuKVMPF3wASVG/ReMoNet_DC_Motor_Control?node-id=201%3A69&scaling=scale-down&page-id=201%3A68&starting-point-node-id=201%3A69 Google Sites Link: https://sites.google.com/view/dc-motor-control-project
2.0	Nirzari Shah	11th July, 2021	1.Embedded the code for Current Day, Date and Time 2. Developed basic Client Area of three individual tabs: Home, Masters and Provision Drives
3.0	Nirzari Shah	16th July, 2021	Developed detailed Client Area of 3 individual tabs: Home, Masters and Provision Drives Revised on the basis of the edits suggested by Hemant Sir (in the Client Area) as per meet on 13th July, 2021
4.0	Lakshya Pratap	17th July, 2021	Added horizontal scrolling attribute to the Drive Register Master Table

5.0	Lakshya Pratap	19th July, 2021	Linked MySQL Database to the Frontend part of website

6.0 (Final Version)	Nirzari Shah	20th July, 2021	Inserted iconic buttons (with mouse hover functions) in place of textual buttons for the tabular data on Masters Page: *Edit by Pencil *Save by Tick *Delete by Cross *Add Row by Plus Inserted real-time graph, which shows health status of the DC Motors on the Home Page

Disclaimer

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Overview

- Develop Web App to Acquire data from Controller for 3 DC motors using MQTT
    - Voltage
    - Current
    - Temperature
    - Vibration
    - Speed and Direction
- Save the data in database
- Display the same in tabular form of Main Page of the Web Application
- Plot graph for the same using filtered data
- Set and Monitor Alerts
- Send Control Commands to the Controller using MQTT

Features

1. **Compulsory Feature:**
    a. Favicon of the company
    b. Logo of the company
    c. Banner of the company
    d. Status Bar
    e. Menu Bar
    f. Client Area
    g. Footer

2. **Nice to have Feature:**
    a. Graphical presentation of Health Status of DC Motor on Home Page
    b. Current Day-Date-Time display on the Status Bar
    c. User Identity on the Status Bar

3. **Functional Feature:**
    a. Graphical presentation of Health Status of DC Motor on Home Page
    b. Edit: Row Editing of the database available on Masters Page by clicking on “pencil” button in the “Actions” column.
    c. Save: Saving of the database of row edited on Masters Page by clicking on “tick” button in the “Actions” column.
    d. Delete: Deleting a row of the database available on Masters Page by clicking on “cross” button in the “Actions” column.
    e. Add Row: Adding a row to the database on Masters Page by clicking on “plus” button in the “Actions” column.

4. **Non-Functional Feature:**
    a. The database of the website is maintained with the help of MySQL on local server
    b. The website is completely responsive in nature.

Description

The Project is of developing web application for controlling 3 DC Motors over MQTT and collect health status of the system. Further plot graph for the same using selected data. For this, we need to collaborate with SCD-BITS-PS1-2021- 09, group working on the Embedded part project of DC Motor Control. The data we will require to work on, for the project, will be sent over by this group through MQTT broker. We have implemented the project mainly in 3 phases: 1. Documentation 2. UI/UX Designing 3. Website Development

The DC Motor Control Website is part of the ReMoNet website. Initial two pages of ReMoNet are:

1. First page, i.e., welcome page: anyone with the access to server can land on the page (No Login required)

2. Second page: contains micro-sites with different team's login page

3 rd page onwards, we had to build the website for DC Motor Control and monitoring it's Health Status. We have completed this project in 3 main phases: 1. Documentation 2. UI/UX Design 3. Website Development

PLATFORMS AND TOOLS:

- Edge Computer: Python
- MQTT Broker: Mosquitto
- Web Application: Javascript, Node.js, Angular, MySQL
- UI/UX Design Tool: Figma
- Code Language: HTML, CSS

Design

Overview of Design

Architecture

Architecture diagram

Modules

Filename

Constants (consts and #defines for C)

Variables

Functions

Testing (Separate spreadsheet to be created based on following details)

Testing Plan

Tests Description

Test (Number, Description)

Test Inputs

Test Expected Outputs

Appendix A (All appropriate Appendices to follow)

Version 1.0:

Frontend coding for static elements was there in this version:

- Favicon
- Logo
- Banner
- Status Bar
- Menu Bar
- Footer

Tables in the Client Area are static

Version 2.0:

In this version, improvements were made to the client area.

The tables were made dynamic in this version, which had clickable options: “Edit”, “Save”, “Delete” and “Add Row”

1. “Edit” button allows the user to change details of that particular row of the table.

2. “Save” button allows the user to save the changes made while editing the row.

3. “Delete” button allows the user to delete that particular row from the table.

4. “Add Row” button allows the user to add a row with all column details filling up.

These all action buttons will reflect the changes not only in the table shown, but will also be reflected in the MySQL Database. In this version, also embedded the code for Current Day, Date and Time in the Status Bar of the website.

Version 3.0 & 4.0:

In this version, changes were made to the client area, Home’s and Master’s Page. The two tables on the Home Page were to be combined into one table. On the Master Page 3 accordions were to be removed and some detailing of the other 2 accordions was to be done.

Version 5.0:

In this version, improvements were made to the client area. MySQL Database was created and linked to the website front-end code with the help of PHP backend language.

Version 6.0 - Final Version

Inserted and replaced the textual buttons (Edit, Save, Delete and Add Row) by iconic buttons (Pencil, Tick, Cross, Plus) and added real-time graphical representation of the health status of DC Motors on Home page.