

PROGRAMMABLE SEQUENTIAL LOAD OPERATION CONTROL BY ANDROID APPLICATION

Gowdhamkumar. M¹

¹Bachelor Of Engineering, Electrical And Electronics Engineering, Sree Sowdambika College Of Engineering, Aruppukottai, Anna University: Chennai , India.

APSTRACT

Our project is designed to switch industrial loads by making use of android app through logic control device programmed by user. The system is made to be used in repetitive nature works. This remote controlling task is achieved through the use of any android based device (phone/tablet) running on an android OS. Using programmable logical in order to achieve sequential switching of loads proves a very costly operation. Here we propose a simple and cost effective alternative to the issue by making use of node mcu. The controlling part is provided on an android application. Various tasks and in today's industries work on repeated operations in varied orders and intervals. Consider an example there a motor needs to run after every 3 seconds. Set option, Manual option and Auto option. When the set option is selected, the system works according to time intervals entered by user. In auto option the system now works as per default time settings while in the manual option it operated on pressing the selective switches as and when needed by the user. All modes and status are displayed on an LCD display. Identify the load operation you want to control: This could be any kind of load, such as a motor, a pump, a valve, or a light. Choose a hardware module to interface with the load: This could be a relay module, a solid-state relay, or any other hardware device that can switch the load on and off. Connect the hardware module to your Android device: You can use a Bluetooth, Wi-Fi, or USB connection, depending on the capabilities of your Android device and the hardware module. Our project thus provides very cost effective system to automate industry loads as an alternative to high cost PLC's used.

1. INTRODUCTION

To control the machines using an Android device, the system designed to include a mobile application that allows operators to remotely monitor and control the machines using their Android devices. Manufacturing: In manufacturing, Android applications can be used to control the load of machines. The application can be used to monitor the performance of the machines, adjust the load. The system is made to be used in repetitive nature works. This remote controlling task is achieved through the use of any android based device (phone/tablet) running on android OS.

2. METHODOLOGY

.Define the requirements: Determine the specific requirements for the load operation control system, including the types of loads to be controlled, the range of control required, and any safety requirements. Choose the hardware: Select the appropriate hardware components for the system, such as microcontrollers, relays, sensors, and power supplies, based on the requirements defined in step 1. Design the circuit: Create a circuit diagram that connects the hardware components together and meets the requirements defined in step 1. Develop the firmware: Write the firmware that will run on the microcontroller to control the load operations based on the signals received from the Android application. Develop the Android application: Create an Android application that allows the user to interact with the load operation control system, sending commands and receiving status updates. Integrate the hardware and software: Connect the hardware and software components together, ensuring that they communicate correctly and function as intended. Test and debug: Perform thorough testing of the system, including functional, performance, and safety testing, and address any issues that arise. Deploy and maintain: Deploy the system in the intended environment and provide ongoing maintenance and support as needed.

3. MODELING OF PROJECT



4. HARDWARE SPECIFICATIONS

Node MCU ESP8266

Transformer

Diodes

Buck boost converter

Resistors

Transistors

Capacitors

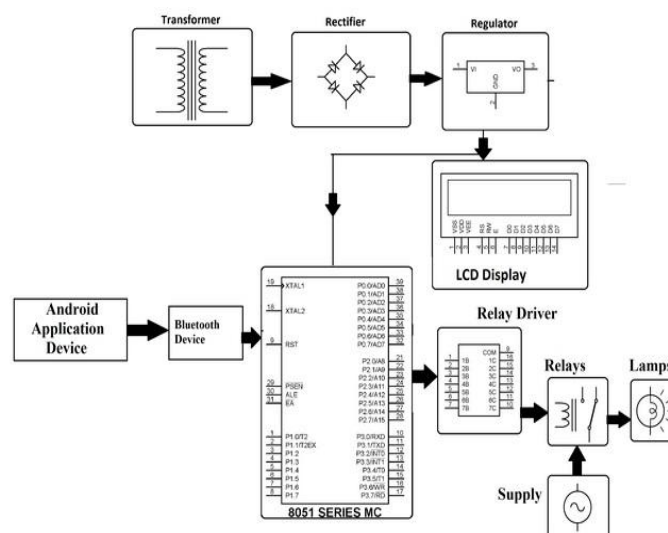
Relay

Relay drive

Dot board

Lamps

5. BLOCK DIAGRAM



6. RESULT AND DISCUSSION

Using background threads for long-running tasks: Running long tasks on the main thread can cause the application to become unresponsive, leading to a poor user experience. Using background threads to perform these tasks can help ensure that the UI remains responsive. Implementing caching: Caching is a technique that can be used to store frequently used data in memory or on disk, so that the application doesn't need to retrieve the data from the network or database each time it is required. This can help reduce network and CPU usage, which can help improve performance and battery life. Using job schedulers: Job schedulers can be used to schedule tasks to run at specific times or when specific conditions are met. This can help ensure that resource-intensive tasks are only run when the device is plugged in or connected to Wi-Fi, for example, to reduce battery and data usage. Managing memory usage: Managing memory usage is important to ensure that the application doesn't use up too much memory, which can cause the system to become slow or unresponsive. Techniques such as using efficient data structures, releasing unused resources, and avoiding memory leaks can help manage memory usage. Optimizing network usage: Optimizing network usage can help reduce data usage and improve performance. Techniques such as using caching, reducing the number of network requests, and compressing data can help optimize network usage. Overall, effective load operation control is an important aspect of Android application engineering. By implementing these best practices and techniques, developers can ensure that their applications are efficient, responsive, and optimized for the target device. My project thus provides very cost effective system to automate industry loads as an alternative to high cost PLC's used.

7. CONCLUSION

My project thus provides very cost effective system to automate industry loads as an alternative to high cost PLC' used. An Android application can be an effective way to control load operations. By using an app, operators can easily access and control load operations from a mobile device, which could improve efficiency and reduce errors. Developing an Android application for load operation control requires a strong understanding of programming languages like Java and Kotlin, as well as experience with Android Studio and other development tools. User interface design is an important consideration when developing an Android application for load operation control. The app should be easy to navigate and use, with clear and intuitive controls. Testing and debugging are critical steps in the

development process, as the app must be reliable and function correctly in all scenarios. Collaboration and communication between project team members is essential for success. The team should work closely together to ensure that the app meets all project requirements and is delivered on time and within budget. Overall, an Android application for load operation control has the potential to be a valuable tool for operators and can improve the efficiency and effectiveness of load operations. However, careful planning, development, and testing are necessary to ensure that the app functions correctly and meets project requirements.

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8. REFERENCE

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