Project Proposal

LATE 30/30 Points

3/17/2023

Attempt 1

REVIEW FEEDBACK
3/22/2023

Attempt 1 Score: **30/30**

View Feedback

Unlimited Attempts Allowed
3/13/2023 to 3/22/2023

Details

Propose a Project for this subject.

Think of a problem that exists in today's environment and what types of solutions can be done that may use processor technology. Choose the simplest solution among all of those listed and make this your proposal.

It should have a process, an output, a means to show its state. and at least one control button.

Choose a name for the Project.

Example:

Project PLC 4434

Type in the description of what is the problem that its considered as partly a solution for. How it should work.

Example

In todays learning environments institutions invest a lot of time and money on learning materials that can be rendered obsolete when drivers become unavailable or unsupported and the programs unavailable or non -distributed. This is the case for the OMRON CP1E/L/H PLCS. Replacing these units are difficult since one is 25,000 Pesos per unit and require significant amount of time to render training for unless the institution purchases the same type of machine or its replacement unit. Creating an alternative PLC Emulator that can take code for Controllino and convert it into PIC16F84A instruction set can be an alternative that even students can build and carry home to test and use for learning extending the time to learning LD Programming beyond class hours.

Create a PLC Machine that can emulate PLC Program using LD but having a PIC16F84A as a base processor.

OMRON PLC has 4 inputs and 4 Outputs permanently assigned.

A PIC16F84A has 8 PORTB Bits and 5 PORTA bits making it more than equal to the basic requirement to mimic a basic PLC function.

This solution only emulates logical operations and no Analog Inputs or Analog Outputs that the OMRON PLC Can do.

This is a text only assignment. Successful proposals with be grades rejected proposals will be reassigned to the group.

Sample Project Proposal.docx (https://dlsu.instructure.com/courses/119642/files/13714049?wrap=1)
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Topic 1: Waste management system (Trash Bin)

Proposed project name: *Trash Trekker: “Pick it up!*

A waste management system is intended to handle waste materials efficiently and effectively, to minimize waste volume, and to enhance environmental sustainability. A waste management system's principal objective is to lessen the effect of trash on the environment and public health.

There are several automotive and transportation problems that can be solved using PIC, 4x4 tactile keypad, ultrasonic sensor, and LCD. Here’s a proposed solution:

Waste management system

1. Use an ultrasonic sensor to measure the level of trash in a waste bin.
2. Use PIC to process the sensor data and send a notification when the bin is full.
3. Use a 4x4 tactile keypad to reset and change bin capacity.
4. Display the bin level and notification on LCD.

A 4x4 tactile keypad can be used in the waste management system to provide additional functionality and control. Here are a few ways to use the keypad:

1. Reset bin level: The 4x4 tactile keypad can be used to reset the bin level after the bin has been emptied. This could be done by assigning a specific button on the keypad as a reset button.
2. Change bin capacity: The keypad can also be used to change the bin capacity if the size of the bin is adjusted. This could be done by assigning specific buttons on the keypad to different bin capacity levels. You can also use the keypad input to set different threshold values for triggering the system based on the distance readings from the sensor. This can help customize the system and optimize its performance for different use cases.

Overall, the 4x4 tactile keypad can be used to provide additional control and customization to the waste management system, making it more efficient and effective.

Here's how the project could be implemented:

1. Connect the 4x4 keypad to the PIC's input pins to allow the user to enter the distance level of the trash.
2. Connect the ultrasonic sensor to the PIC's input pins to measure the distance of the trash from the sensor.
3. Connect the LCD to the PIC's output pins to display the measured distance and the level.
4. Write a program in C or assembly language that waits for the user to press a key on the keypad to enter the change of level.
5. When the user presses the key, the program should start sensing the distance using the ultrasonic sensor.
6. Once the ultrasonic sensor has been triggered, the program should display the result on the LCD.
7. The program should then return to the keypad input mode, waiting for the user to reset and enter the distance level mode again.

This system can help reduce overflowing trash bins, reducing litter and promoting proper waste management. Overall, this project is relatively simple, but it would require knowledge of how to interface the PIC with the keypad, ultrasonic sensor, and LCD, as well as some basic programming skills.

Topic 2: *Simple Security System (Sensor)*

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The system's intended purpose is to send a signal to the user when there is activity that is present in the room. This set-up can be placed anywhere where it is needed to provide additional safety to the area.

This system will be a simple one and it will just consist of a PIC, motion sensor, keypad and an LED. The LED will function as an Alarm and will have several states.

1. If the LED is off, then that means the door is closed.
2. If the LED is blinking, that means that the door is open.
3. If the LED is steadily on, that means that the door has been open for a prolonged amount of time.
4. A keypad can be used as a reset function or a setting function on how long it will take until the LED blinks

How this project will be implemented:

1. Program the PIC circuit with the necessary states.
2. Attach the motion sensor and LED and test if it is working. If needed, adjust the sensitivity of the sensor.
3. Attach the motion sensor to the desired area and test the product if there is anything more that needs to be added to the programming.

This program is a simple program that can ensure the safety of an area and it would be quite useful to areas that are heavily populated.

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