MICROCONTROLLER BASED MULTIPLE DEVICE CONTROL BASED ON ONE INPUT SWITCH

The project aims in designing a system which is capable of controlling many electrical devices using a single switch. Construction of this system uses only one pin of the micro controller. The efficiency of the micro controller is limited due to its limited input and output pins as well as the available memory within the controller. Due to these reasons the micro processors are having upper hand over the microcontrollers. This is the only disadvantage which is limiting the role of the microcontroller in modern electronics for certain extent. The solution provided in our controller can be used in different applications where there is the necessity of giving multiple inputs in multiple cases.

The micro controller is provided with many features such as SPI, RS232, I2C, PWM, ADC etc. among these features ADC module is used in our project. The ADC module is nothing but analog to digital module which is a very costly module and there will be only one module available in the controller. This is connected to all the ADC pins of the controller and shared by them as per the first call first serve basis.

The ADC module of the controller is connected with a variable resistance which is also called as potentiometer (POT). This potentiometer is capable of varying its resistance with respect to the position of its knob. The input from the user is taken from this knob and this is fed to the controller ADC pin. The ADC module takes the input from the potentiometer and generates a unique 8-bit equivalent number for each resistance value. Depending on the resistance value the controller controls the switching of many electrical devices with respect to the program embedded in it. Also, displays device controlling on LCD. The Microcontroller is programmed using Embedded C language.

The features of this project are:
1. Decreases hardware complexity.
2. Displays on LCD.
3. Uses only one input switch.

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The project provides learning's on this fallowing advancements:

1. Interfacing LCD display.
2. Conversion of AC supply to DC supply.
3. Programmatically initializing the ADC module.
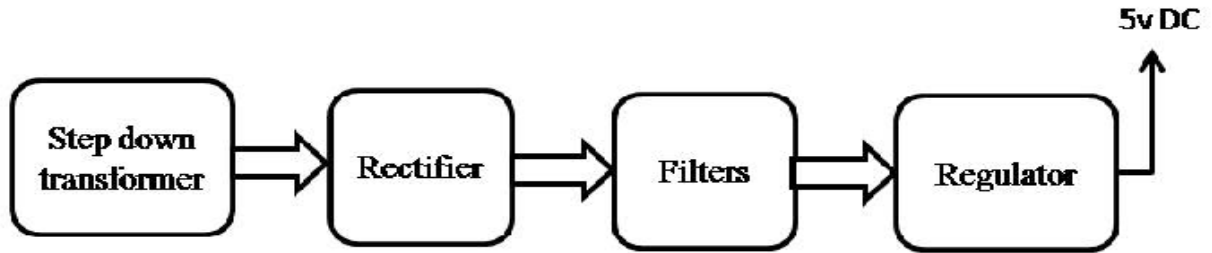4. Embedded C programming for microcontroller.
5. PCB designing.

The major building blocks of this project are:

1. Regulated power supply.
2. Potentiometer.
3. Relay with driver.
4. Triac with driver.
5. Reset.
6. Microcontroller.
7. LCD driver.
8. Liquid crystal display (LCD).
9. LED indicators.

Software's used:

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

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Regulated Power Supply:

Block diagram:

Micro controller based multiple devices control based on one input switch

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