Design and Implementation of Automatic Turn off for Water Pump with Four Different Time Slots using ARM 7 Processor

Abstract:

In many rural and urban areas, water scarcity is the major problem, and wastage of water during supplying is treated as a major culprit. This project provides a solution to operate water pumps or motors for the required time duration. Many times we forget to turn OFF the water pump or system after the prescribed time, this might lead to pour out of the water from the tanks.

The hardware and software components of this project include the following.

- ARM7 TDMI-S LPC 2148
- Crystal Oscillator
- Reset Circuit
- Switches
- Transistor Driver Circuit
- Water Pump
- Relays
- 16X2 LCD Display
- Keil Compiler
- Embedded C Language

Description:

This proposed system uses two power supplies, one is a 3.3-volt power supply for the microcontroller, and the other is a regulated power supply of 5 volts for modules. Here four switches are interfaced with the ARM processor for giving input time slots.

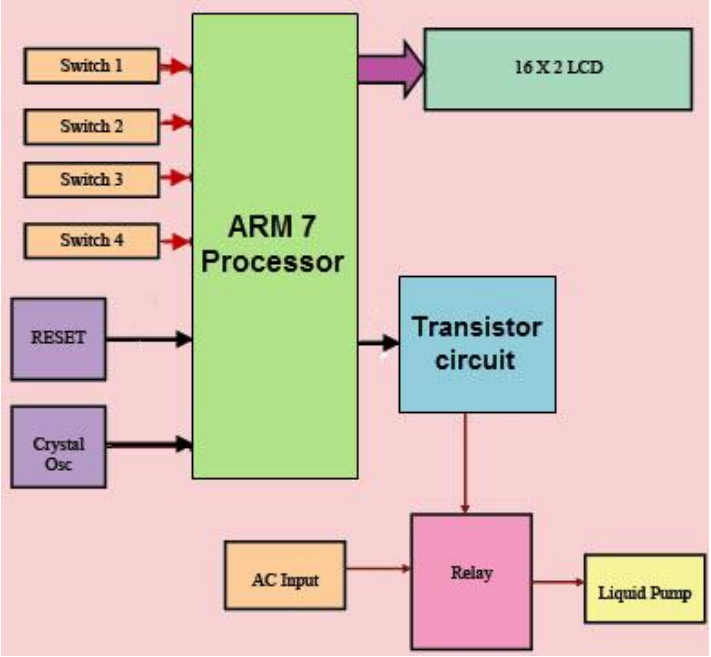

Fig.1: Automatic Turn off for Water Pump with Four Different Time Slots using ARM 7 Processor

The ARM processor is programmed in such that for every switch pressing it enables the output for driving the transistor circuit with a certain time period. This transistor circuit further drives the pump through the relay. The 16X2 LCD is interfaced to the processor for displaying the time duration and also to indicate the status of the water pump.