Monday, 12 December 2022

Washing Machine Project Report : TEAM 50

- Project Idea

Our washing machine mainly consists of 3 parts, the motor, the pump and the FPGA board connecting everything together. For the motor we used a motor driver to supply voltage from a 9v battery. The water pump circuit has its power supplied from the 5v output of the FPGA board and it is connected to a relay. The FPGA board outputs a signal to the motor driver to control the motor and a signal to the relay to control the water pump. Flipping on the switch on the FPGA turns on the washing machine and everything will follow on automatically.

- Inputs,Outputs And Assignments

Inputs : Clock signal (P11) , Switch signal (C10,SW0).

Outputs : Pump (AB5,IO0), Motor (AB21,IO14), PumpLED (A8,LEDR0), MotorLED (A9,LEDR1)

- Code Explanation

Our code simply uses 2 variables in a process statement, the first variable counts the ticks of the clock on every rising edge, and using that we could determine how many seconds have passed since we know the clock frequency (we used the 50MHz clock ; 50,000 ticks means 1 second has passed), we could then store that value in another variable. We then use if conditions on the “seconds” variable to determine the outputs based on how much time has passed since starting the system.