Dept. of Computer Science and Engineering
CSE3201 – Digital Logic Design
Lab 10
Motor Control of an Industrial Cutting Machine

In this lab you will redesign the controller in Lab 9 in order to add some more functionality. You can use the ASM to implement this lab.

Introduction

The basic functionality is the same as in Lab 9. However here we will set the number of pulses to cut after (in Lab 9 that was constant at 4).

One more input is added, take this input from SW0. If SW0=1, the controller operates normally like in Lab9.

If SW0=0, then you can enter the number of pulses that you want to cut after. KEY[3] is used to increment that number by 1. Every time you push KEY[3], that number is increased by 1. The number of pulses you cut after is permanently displayed on a 7-segment display. When you start the operation, put SW0 in the 0 position, push KEY[3] as many times as you want to cut after. The number is displayed on a7-segment display (that is a different display than the one used to indicate how many pulses we removed so far) and stays there until you change it (we will not reset that number in the middle of the operation in this lab, that means it will be set just once and that is it).
After you set the number, put SW0 in the 1 position and the controller starts normal operation.

Pre-Lab Work

Draw the ASM diagram for this controller and show the Verilog implementation.

Lab report

See the guidelines for the lab report on the Lab section of the course web page. In your report you have to justify the design decisions you made in your design.