Lab 06: Timer Programming using Assembly

EE222: Microprocessor Systems

1 Administrivia

1.1 Learning Outcomes

By the end of this lab you will be able to

1. Use timer/counter features of Atmega16A in Assembly
2. Create calculated, precise delays through timers

1.2 Deliverables

You are required to submit:

1. Appropriately Commented Code
2. Explicit Calculation of Timer Variables
3. Issues in Developing the Solution and your Response

1.3 Hardware Resources

This is an online lab based on **Atmel Studio** and **Proteus** and does not require any hardware.

2 Introduction

In the previous lab we learned to use AVR timers in C. In this lab experiment we will use AVR Timers in **Assembly language** to achieve precision delays. For the sake of revision, read through the manual of lab 5 to recall about the AVR Timer Programming and relevant registers.

3 Lab Task

In this task you are required to create a \Digital Stop Watch" that records the time in seconds precisely (use CTC mode).

1. Connect two 7-segment-Displays with your ATmega16A.
2. Connect two switches (say Sw1 and Sw2) with your ATmega16A.
3. If Sw1 is high, the Stop Watch must get reset to zero, no matter what is the state of Sw2.
4. If Sw2 is high and Sw1 is low, the Stop Watch must display the seconds passed.
5. If Sw2 is low and Sw1 is also low, the Stop Watch must pause its time and if Sw2 is raised again, it should resume from where it was paused.