Home Assignment 3 Arduino Workshop Interfacing and Communications[1]

Objectives

Learn the formulation of real life problem into a program.

Introduction:

This assignment contains few unsolved problems we left in class!! I hope you do attempt them.

Problem 1.1: Servo motor

We discussed that angle of shaft of servo motor (hobby ones with internal driver card) can be controlled by applying a PWM signal to signal pin of motor. Assuming the minimum duty (δ_{min}) corresponds to minimum angle (α_{min}) of shaft and maximum duty (δ_{max}) corresponds to maximum angle (α_{max}) of shaft, find the equation or write a function which returns the required duty cycle to be applied given the desired angle of shaft.

Problem 1.2: H-Bridge Drivers

I'll leave this problem open to you. Find out as many as possible *undesired conditions* that may occur in H-bridge driver. Find out the protections that are generally made available on driver chips.

I also recommend you to look at what are sink currents that the input signal channels require. On which parameters do they depend? Does this current depend on type of transistors used in H-bridge?

[1] Author: Abhishek N. Kulkarni