Homework #2 – PWM

Arduino board can deliver up to 40mA per pin and 200mA in total. Therefore, an Arduino can't power a dc motor or any other high-power component. This limitation can be lifted with the help of transistors and MOSFETs in particular. The transistor will act as a switch and can be controlled by other electronic components (like our Arduino board). The good point about transistors is that they can be activated with low power and at the same time deliver high power to their consumers. So for instance you can easily power up a dc motor with 5A current draw with the help of the right transistor. One other thing that makes the transistors special is their fast-switching capability. Some can be easily switched one million times a second. All the above features allow us to be able to control high-power components with PWM technique.

In this experiment you should write a program and design the appropriate circuit to control the speed of a brushed dc motor with the help of a MOSFET (IRFZ44N). The user should be able to change the motor's speed by setting a potentiometer to the desired value. You should also explain in your report why we don't use BJT transistors for high-power switching applications.

Components used in proteus:

SIMULINO UNO, IRFZ44N, POT-HG, MOTOR

Good Luck

Graders Team
Shiraz University
Computer Science and Engineering Dept.
Microprocessors Lab
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