ENGINE

Teaching online electronics, microcontrollers and programming in Higher Education

Output 2: Online Course for Microcontrollers: syllabus, open educational resources

Open project leaflet: Module_1-3 communication and ADC

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Executive summary

This file contains open projects.

Chapter 1: **Open project 1**

Draw a circuit and write the appropriate code so that the Arduino Uno works as a Serial Echo. That is, to send back the data it reads to the serial port.

Chapter 2: **Open project 2**

Draw a circuit and write the appropriate code so that the Arduino Uno works as a dimmer. More specifically, a potentiometer connected to PIN_A0 will adjust the brightness of an LED connected to PIN_10.

***Tip**. The resolution of ADC is 10 bits (0 ~ 1024), while the resolution of PWM is 8 bits (0 ~ 512)*

Chapter 3: **Open project 3**

Draw a circuit and write the appropriate code so that the Arduino Uno works as an up / down-counter that counts from 0 to 9 (or from 9 to 0) and shows the numbers in a common cathode 7 segment display. All settings will be made via serial communication. The commands that the Arduino Uno will accept are:

- "s" => start
- "p" => pause
- "r" => reset
- "c" => continue
- "U" => up-counter
- "D" => down-counter

Starting the system, by default will be a down-counter, and will change number every second.

Tip1. *Pay attention to the connections of the 7 segment display*

Tip2. *Pay attention to the commands of serial communication between lowercase and uppercase letters*