Exercise #03 (Arduino based)

Topics covered in this hand in:

- Functions
- Code standard
- Test

Introduction

You should write a simple program for Arduino. The program should have two modes which the user should be able to switch between. The two modes shall display a value between 0 and 255 in 8 bits in two different ways.

Components

- Arduino UNO
- 2 red leds
- 3 yellow leds
- 3 green leds
- Boards (also known as bread board)
- cables, resistors
- USB cable
- Button

You can borrow all of the components above from the course. Contact Henrik during a supervision.

Program description

Connect 8 leds to digital output. They should be placed on the bread board in the following order:

- led 1 (green)

- led 2 (green)
- led 3 (green)
- led 4 (yellow)
- led 5 (yellow)
- led 6 (yellow)
- led 7 (red)
- led 8 (red)

A simple button should be connected to on input pin.

Two modes

One press on the button should switch between modes:

- Mode 1 - VU meter
- Mode 2 - Binary value display

The modes are described below.

Mode 1 - VU meter

Given input on an analog input pin (0..255) the program shalll light the leds according to the following:

```
Input       Lit leds
value
-------------------------
0-31        1
32-63       1-2
64-95       1-3
96-127      1-4
128-159     1-5
160-191     1-6
192-223     1-7
224-255     1-8
```

Mode 2 - Binary value display

The input value ranges between 0 and 255. This means that 8 bits are enough (surprisingly a char is 8 bits - nudge nudge) to store all possible values. Light led 1 if the lowest bit is set to 1, led 2 if the second lowest bit is set ... etc.

Example: The value 177 is represented in the following way in binary format `10110001`. This binary value will light the following leds: 8, 6, 5 and 1

Tests

You shall test and verify all the functions. The tests shall be performed on a computer - not on an Arduino.