Computer Technology I

Lab. 2 : Subroutines

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Contents

1 Task 1 - Switch – Ring counter / Johnson counter

Write a program which switch between Ring counter and Johnson counter. You should not use Interrupt in this lab. The pushbutton must be checked frequently, so there is no delay between the button is pressed and the change between Ring/Johnson. Use SW0 (PA0) for the button. Each time you press the button, the program should change counter.

```
WRITE SHIT HERE
```

This is the flowchart of the task 1:

2 Task 2 - Electronic dice

You should create an electronic dice. Think of the LEDs placed as in the picture below. The number 1 to 6 should be generated randomly. You could use the fact that the time you press the button varies in length.

This is the flowchart of the task 2:

3 Task 3 - Change counter

Write a program that is able to count the number of changes on a switch. As a change we count when the switch SW0 goes from 0 to 1 and from 1 to 0, we expect therefore positive and negative edges. We calculate the changes in a byte variable and display its value on PORTB.

This is the flowchart of the task 3:

4 Task 4 - Delay subroutine with variable delay time

This is the flowchart of the task 4: