**Laboratory report**

**Training project laboratory**

**Microcontroller programming in assembly languag**

Name: Kormoua Khongmeng

Neptun code: I3MLPQ

Lab instructor: Kovács Viktor

**Task 1.1:**

**Main:** MOV WDTCN, #0DEh //Disable Watchdog

MOV WDTCN, #0ADh

CALL CPanel\_Init //Initialize ports for the extension board

CLR SWITCH\_EN

CLR N\_LED\_EN

**LOOP:**

SETB C

SETB BTN1

SETB N\_LD1

MOV C, BTN1

MOV N\_LD1, C

JMP LOOP

END

In this task we want to read a direct information from the bottom to the LED. we first enable both the botton and LED then we copy the bit information from the botton to the carry and finally, we copy it into LED because we cannot copy content from bit to bit directly.

**Task 1.2:**

**Main:** MOV WDTCN, #0DEh //Disable Watchdog

MOV WDTCN, #0ADh

CALL CPanel\_Init //Initialize ports for the extension board

CLR SWITCH\_EN

CLR N\_LED\_EN

SETB PSW\_F0

**LOOP:**

MOV C, BTN2

JNC CISZERO

**SAVEF0:** MOV PSW\_F0, C

JMP LOOP

**CISZERO:**

JB PSW\_F0, ONOFF

JMP SAVEF0

**ONOFF:**

CPL N\_LD2

JMP SAVEF0

END

In this task we want to find the point where we push the botton which is the falling edge of the botton signal where t = 0 and t – 1 = 1. when we detect this point we will toggle the LED.

**Task 1.3:**

**Main:** MOV WDTCN, #0DEh //Disable Watchdog

MOV WDTCN, #0ADh

CALL CPanel\_Init //Initialize ports for the extension board

CLR SWITCH\_EN

CLR N\_LED\_EN

SETB PSW\_F0

**LOOP:**

MOV C, BTN2

JNB BTN1, RESET

JNC CISZERO

**SAVEF0:** MOV PSW\_F0, C

JMP LOOP

**CISZERO:**

JB PSW\_F0, ON

JMP SAVEF0

**ON:**

// adjusting port2 to fit port3

MOV A, SWITCHPORT

RR A

RRC A

RR A

RLC A

MOV LEDPORT, A

JMP SAVEF0

**RESET:**

MOV LEDPORT, #0FFh

JMP LOOP

END

In this task, to turn on the LED we just want to read port 2 (switch) to port 3 (LED). But since the layout of bit of switch in port 2 is not match with the layout of bit of LED in port 3, we read port 2 to accumulator first then adjust it by RR, RRC, RR, RLC then our accumulator is ready to be read to port 3.

to reset LED or port 3, we know that LEDs are low-active signal. So, we can clear port 3 by set it to high level for all bits another word is copy #0FFh to it