EMBEDDED SYSTEMS LAB 2

Fall Semester 2023

Lab Experiment Lab 2– External Interrupt (Assembler)

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Place of execution: Research1

Date of Execution: 12th September 2023

Introduction:

Pre-Lab Tasks:

Lab Assignments:

1. Setting up circuit
2. When the button is clicked, the LED turns off, and on. If the button is pressed and held, the LED remains off, and turns off when the button is released.

Code:

.org 0x0000

rjmp main

.org INT0addr

rjmp INT0\_handler

.org INT\_VECTORS\_SIZE

.def dreg = r18

main:

cli

ldi r17, LOW(RAMEND)

out SPL, r17

ldi r17, HIGH(RAMEND)

out SPH, r17 ; set Stack Pointer

sbi DDRB, 0x00 ; set PB0 as output (Pin 8)

sbi PORTB, 0x00 ; set PB0

cbi DDRD, 0x02 ; set PD2 as input

cbi PORTD, 0x02

ldi r16, 0x01 ; enable external interrupts

out EIMSK, r16

ldi r16, 0x05 ; change triggers

sts EICRA, r16

ldi r16, 0x20

sei

loop:

rjmp loop

INT0\_handler:

push r17

in r17, SREG ; push status register to SP

com r16

out PORTB, r16 ; negate PORTB (PINB5)

out SREG, r17 ; restore status register

pop r17

reti ; return from handler (INT0)