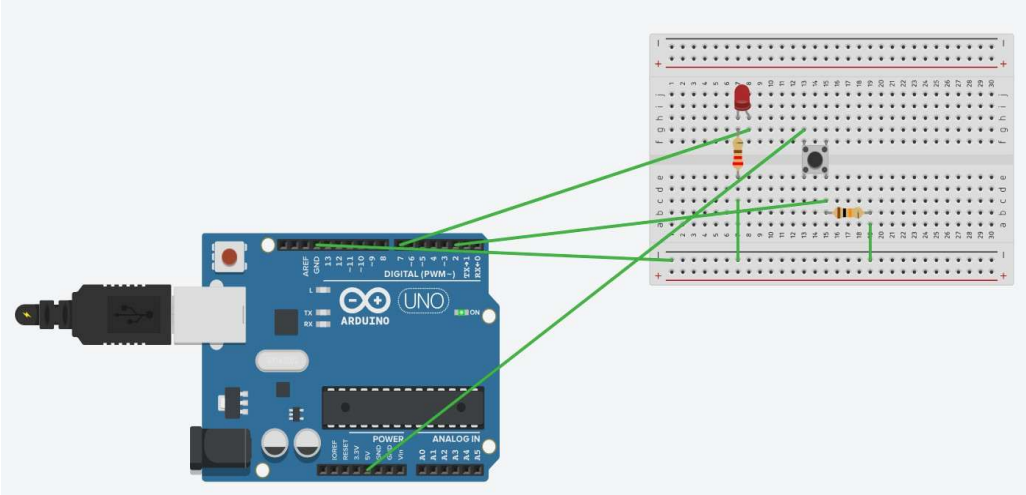
Shri Vile Parle Kelavani Mandal's
DWARKADAS J. SANGHVI COLLEGE OF ENGINEERING
(Autonomous College Affiliated to the University of Mumbai)
NAAC Accredited with "A" Grade (CGPA : 3.18)
Department of Electronics & Telecommunication Engineering

Name: **Batch:**
SAP ID: **Date:**
Rollno:

Objective:	To configure an external interrupt (INT0) on an AVR microcontroller, triggering an interrupt service routine (ISR) that toggles an LED connected to PD7 whenever the interrupt occurs.
Outcome:	The LED connected to pin PD7 will toggle its state each time the external interrupt is triggered.
Tasks/Problem Statement:	Design and implement an AVR assembly program that uses an external interrupt (INT0) to toggle an LED on PD7. The program should initialize necessary registers, enable interrupts, and handle the LED toggling efficiently upon interrupt activation.

Programs, comments, brief explanation and output:	.equ LED_PIN = 0x80
	
	.org 0x0000
	jmp 0x30
	
	.org 0x30
	ldi r16, 0x06
	out SPH, r16
	ldi r16, 0xFF
	out SPL, r16
	ldi r22, 0x00
	sbi ddrd, 7
	ldi r16, 0x03
	sts EICRA, r16
	sbi EIMSK, 0
	sei
	
	MAIN_LOOP:
	rjmp MAIN_LOOP
	.org 0x0002

	ldi r21, 0x80 eor r22, r21 out PORTD, r22 reti
	Output: -  The pushbutton acts as an external interrupt for the LED. Initial state of the LED is OFF. On pressing the pushbutton, it triggers the interrupt and LED switches to ON state.
Conclusion:	The given assembly program demonstrates the use of an external interrupt on an AVR microcontroller to toggle an LED connected to pin PD7. Upon detecting a rising edge signal on external interrupt pin INT0 (PD2), the interrupt service routine (ISR) is triggered, which uses an XOR operation to flip the state of the LED. The main loop keeps the microcontroller running continuously, waiting for the interrupt to occur.