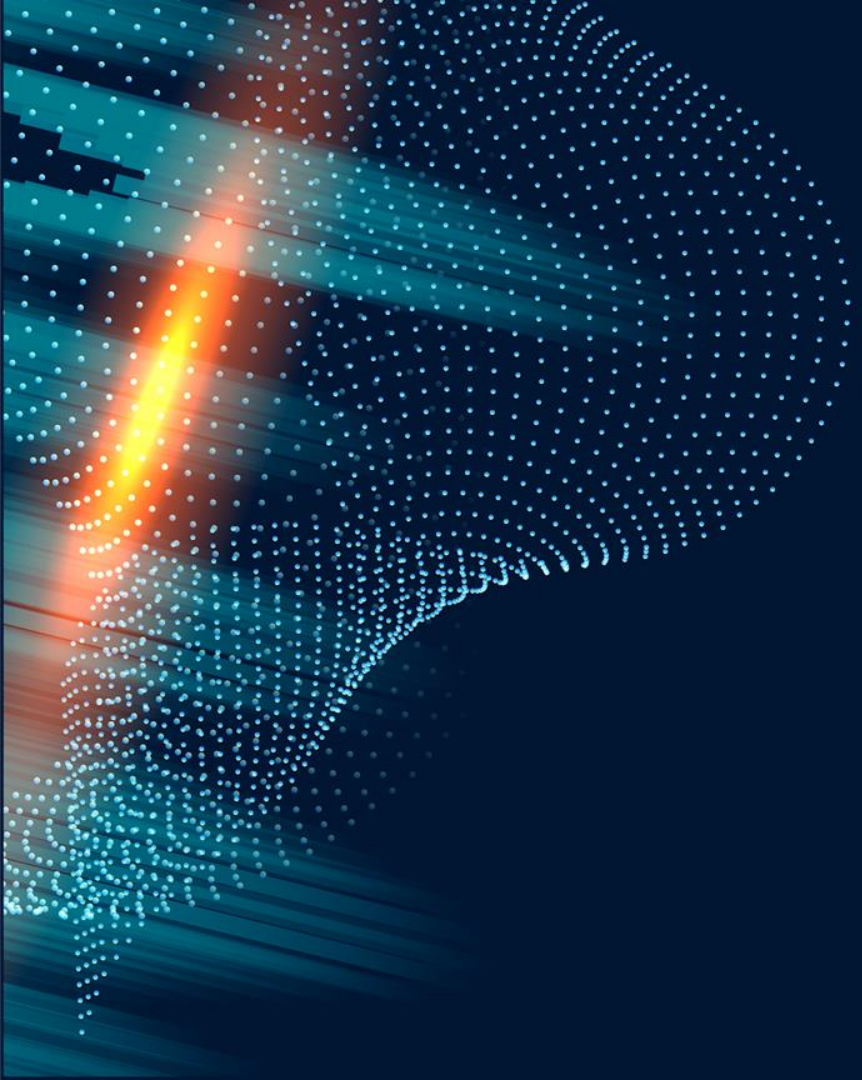
PWM

Drawer

AMIT Graduation project



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01

PWM Definition

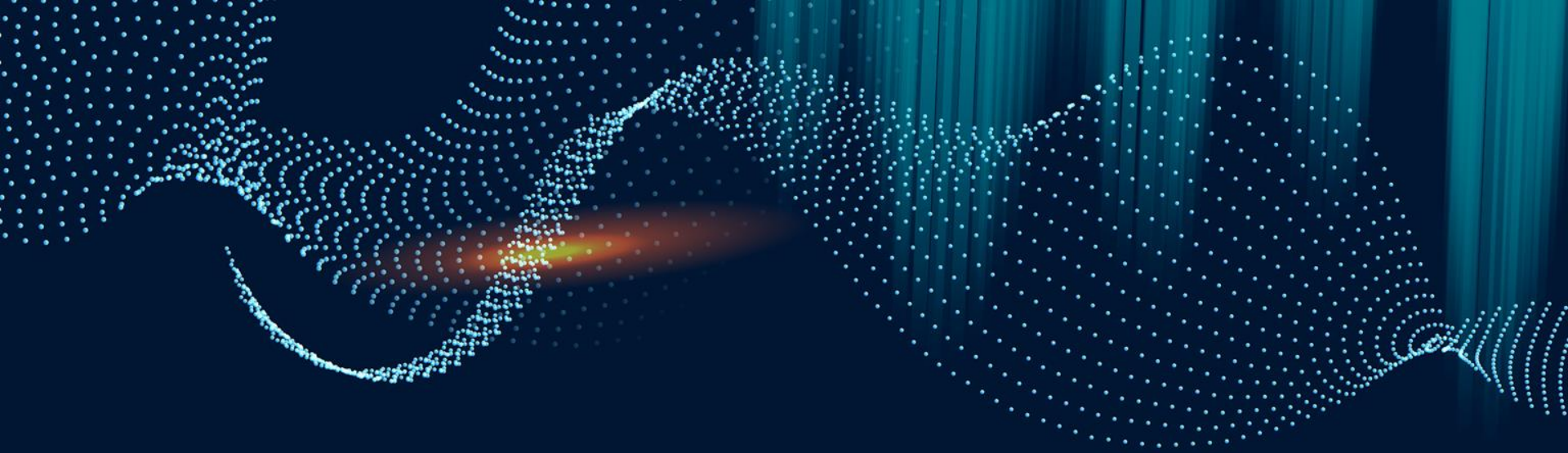
02

Calcualtions

03

Simulation

Pulse-width modulation (PWM) is a modulation process or technique used in most communication systems for encoding the amplitude of a signal right into a pulse width or duration of another signal, usually a carrier signal, for transmission.



01 PWM

Steps:

Pulse Width Modulation Process:
The pulse is being created internally from the microcontroller itself starting from high to low. **Capturing The Modulation:**
The modulation is being captured by the input capture within the microcontroller itself.
Displaying Data:
The data is being displayed on the LCD in form of a square wave representing the pulse width and frequency & duty cycle while the frequency always remains constant.

Components:

LCD

Capture the Wave

Microcontroller (atmega 32)

Produce the Squrewave

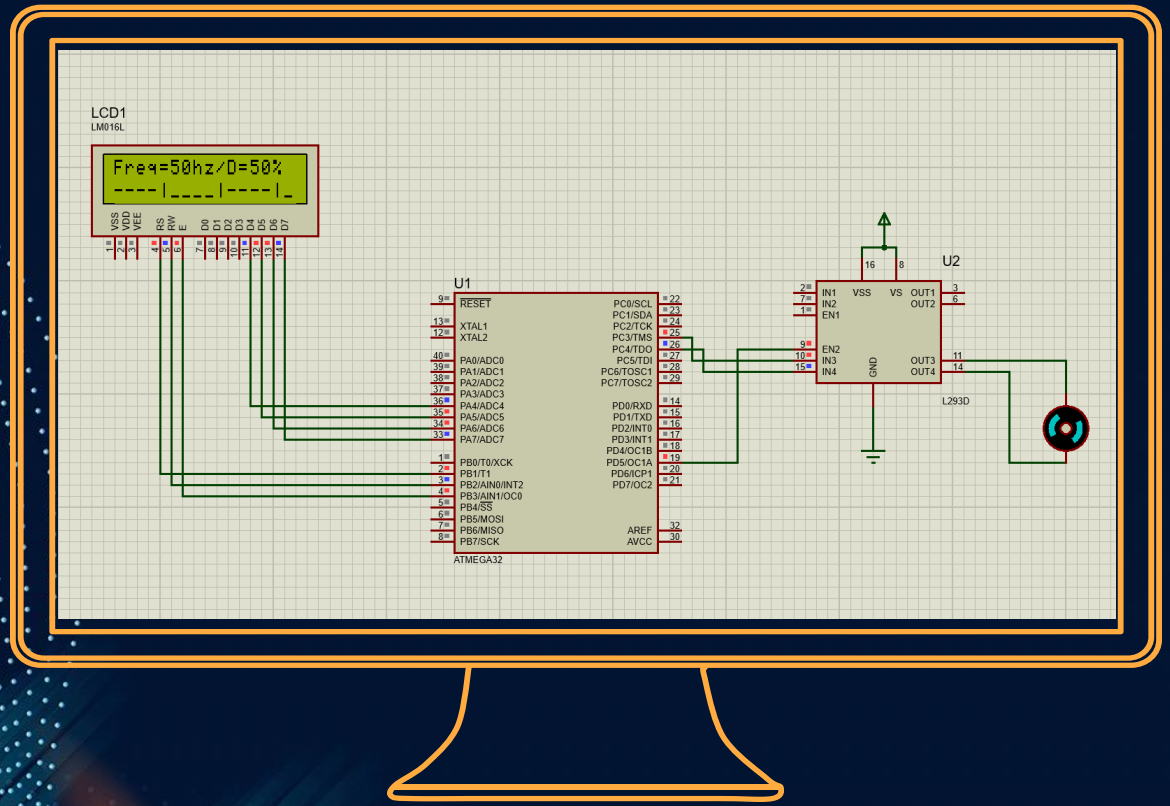
2.Calculations

Calculate for:
Tpreiod desired= 20 ms
Frequency desired= 50hz

- System Frequency = 16000000hz
- Presacalar = 64
- TickTime = 0.004 ms

- To have 20 ms period ==> count till 5000 ==> ICR1
- To have 10 ms on time ==> Put 2500 in OCR1A

Simulation:


LCD1
LM016L
Freq=50hz/D=50%
VSS VDD VEE RS RW E D0 D1 D2 D3 D4 D5 D6 D7
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0/XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32
U2
IN1
IN2
EN1
EN2
IN3
IN4
VSS
VS
GND
OUT1
OUT2
OUT3
OUT4
L293D

Thanks!
Any question?