AMIT Graduation Project

Presented by : Abdallah Maher Ismayil
Emb Oct22

PWM Drawer

- PWM Drawer using Graphical LCD and ATmega32.
- The generated wave came from external sources (Pulse generator).

• Specification

❑ With the graphical LCD we can display the following:

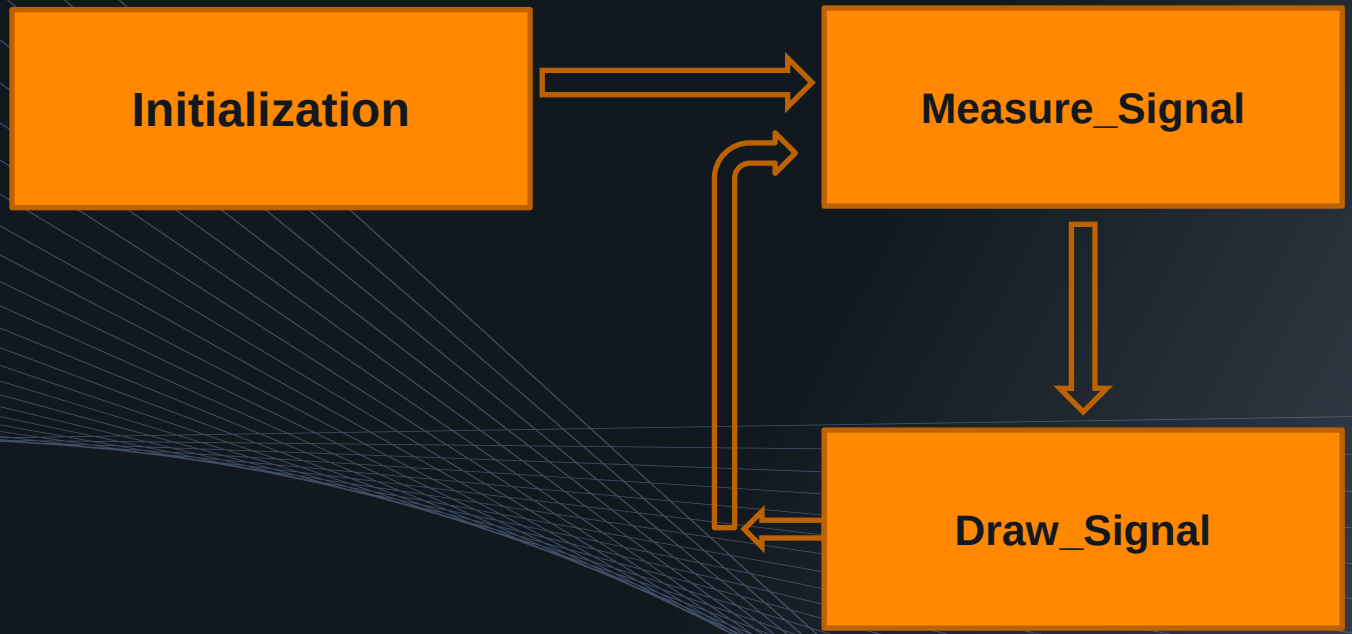
· The shape of the generated PWM from externally sources.

· The frequency in KHz of the generated wave .

· The duty cycle of the generated wave .

· The time of the single cycle.

1. Flowchart


Initialization
Measure_Signal
Draw_Signal

Measure_Signal

Clear ICF (Input Capture flag) flag
Set Trigger Edge: Rising Edge

Take value of capture register
Start cycle

Clear ICF flag
Set Trigger Edge: Falling Edge

Take value of capture register
High

Clear ICF (Input Capture flag) flag
Set Trigger Edge: Rising Edge

Take value of capture register
Low

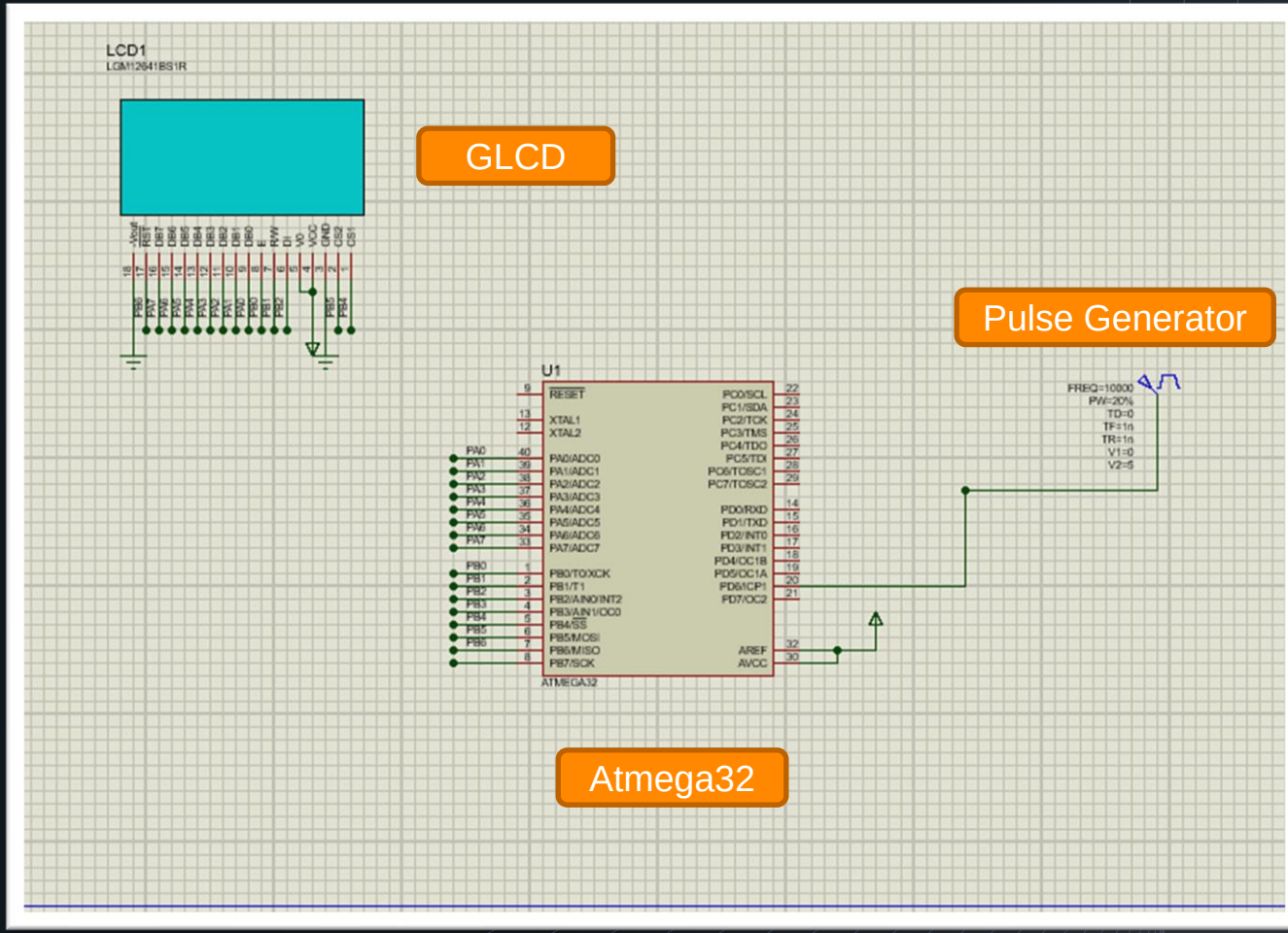
Stop the timer

Calculate frequency
$\frac{F\_CPU}{Period*1000}$ in Khz

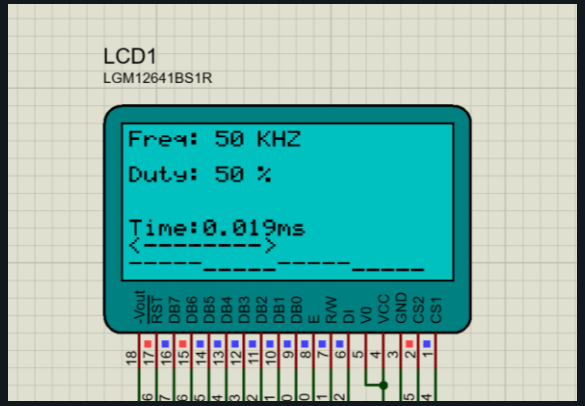
Calculate Duty Cycle
$\frac{High}{Period} x\ 100\ \%$

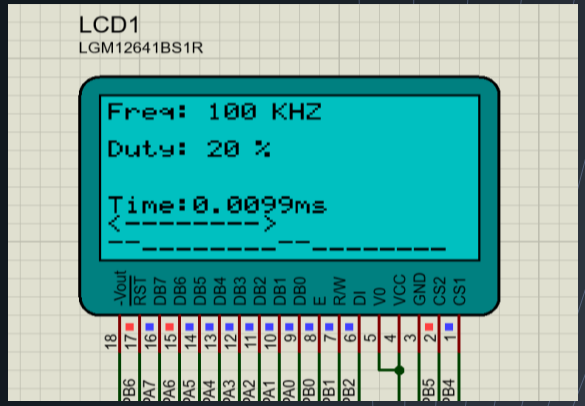
Calculate Periodic Time
$\frac{1}{frequancy(Khz)}$ in ms

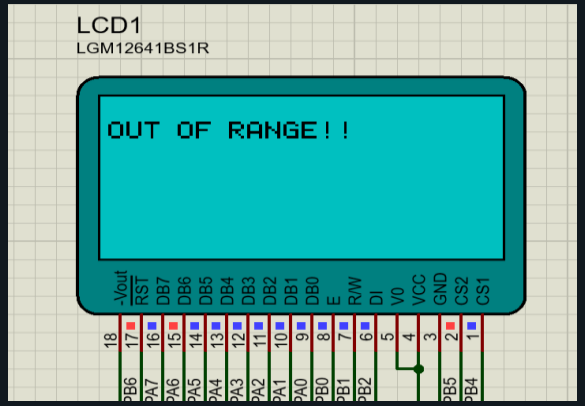
2. SIMULATION

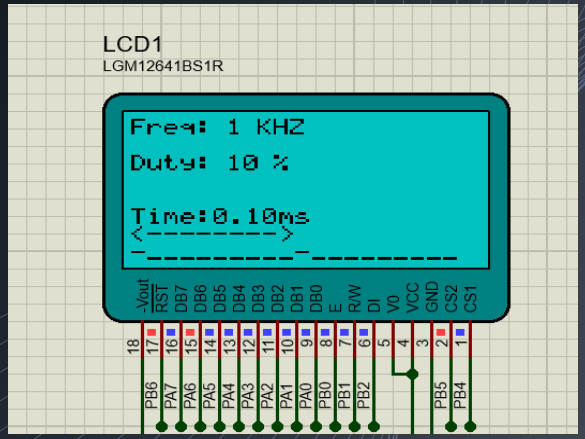

LCD1
LCM12641BS1R
GLCD
Pulse Generator
U1
RESET
XTAL1
XTAL2
PA0/ADC0
PA1/ADC1
PA2/ADC2
PA3/ADC3
PA4/ADC4
PA5/ADC5
PA6/ADC6
PA7/ADC7
PB0/T0XCK
PB1/T1
PB2/AIN0/INT2
PB3/AIN1/OC0
PB4/SS
PB5/MOSI
PB6/MISO
PB7/SCK
PC0/SCL
PC1/SDA
PC2/TCK
PC3/TMS
PC4/TDO
PC5/TDI
PC6/TOSC1
PC7/TOSC2
PD0/RXD
PD1/TXD
PD2/INT0
PD3/INT1
PD4/OC1B
PD5/OC1A
PD6/ICP1
PD7/OC2
AREF
AVCC
ATMEGA32
FREQ=10000
PW=20%
TD=0
TF=1n
TR=1n
V1=0
V2=5
Atmega32

3.
PROTOTYPES


LCD1
LGM12641BS1R
Freq: 50 KHZ
Duty: 50 %
Time:0.019ms


LCD1
LGM12641BS1R
Freq: 100 KHZ
Duty: 20 %
Time:0.0099ms


LCD1
LGM12641BS1R
OUT OF RANGE!!


LCD1
LGM12641BS1R
Freq: 1 KHZ
Duty: 10 %
Time:0.10ms

THANK YOU