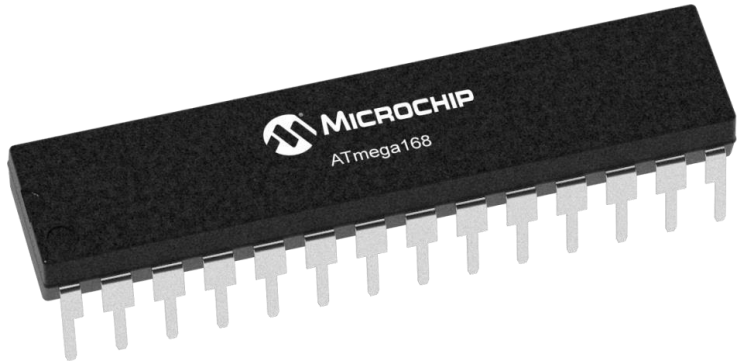
MINI OSCILLOSCOPE

PWM SIGNAL DRAWER

Using :

1- ATMega32 Microcontroller

2- GLCD



AMIT Graduation Project

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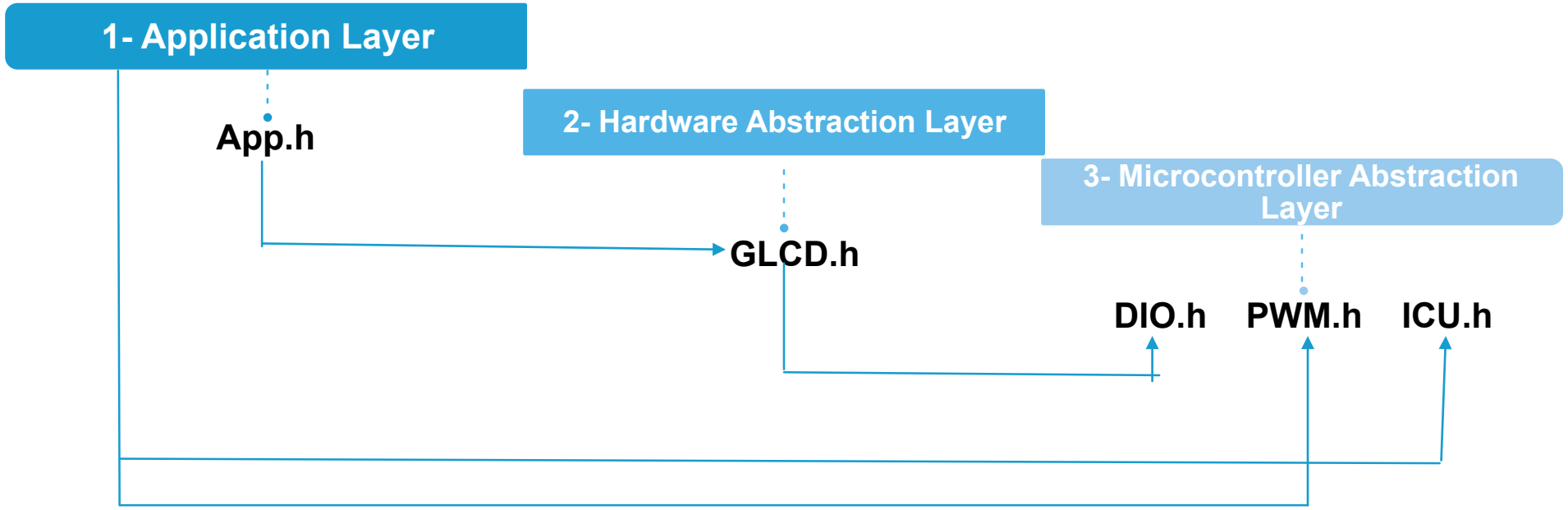
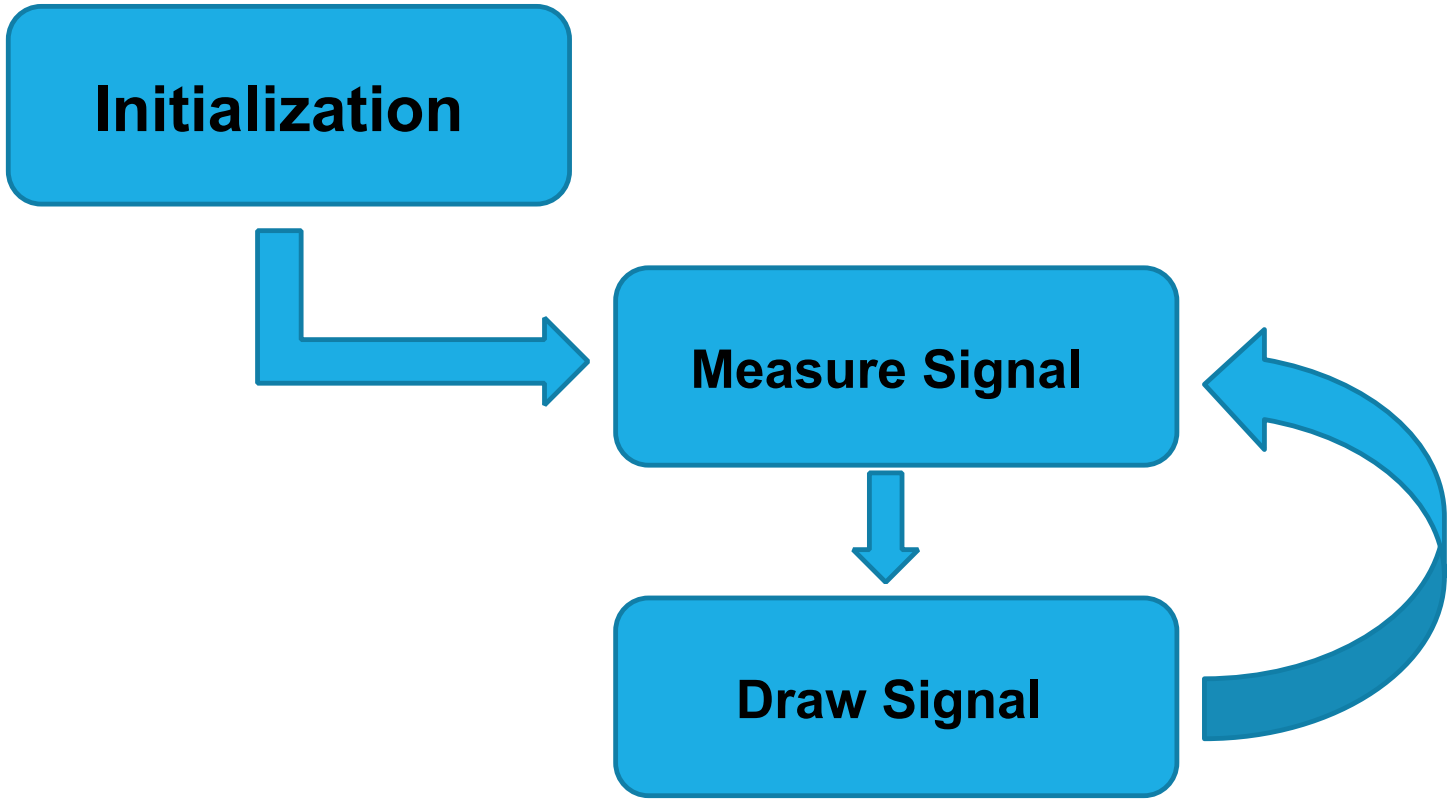
SPECIFICATION

- ❑ 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.

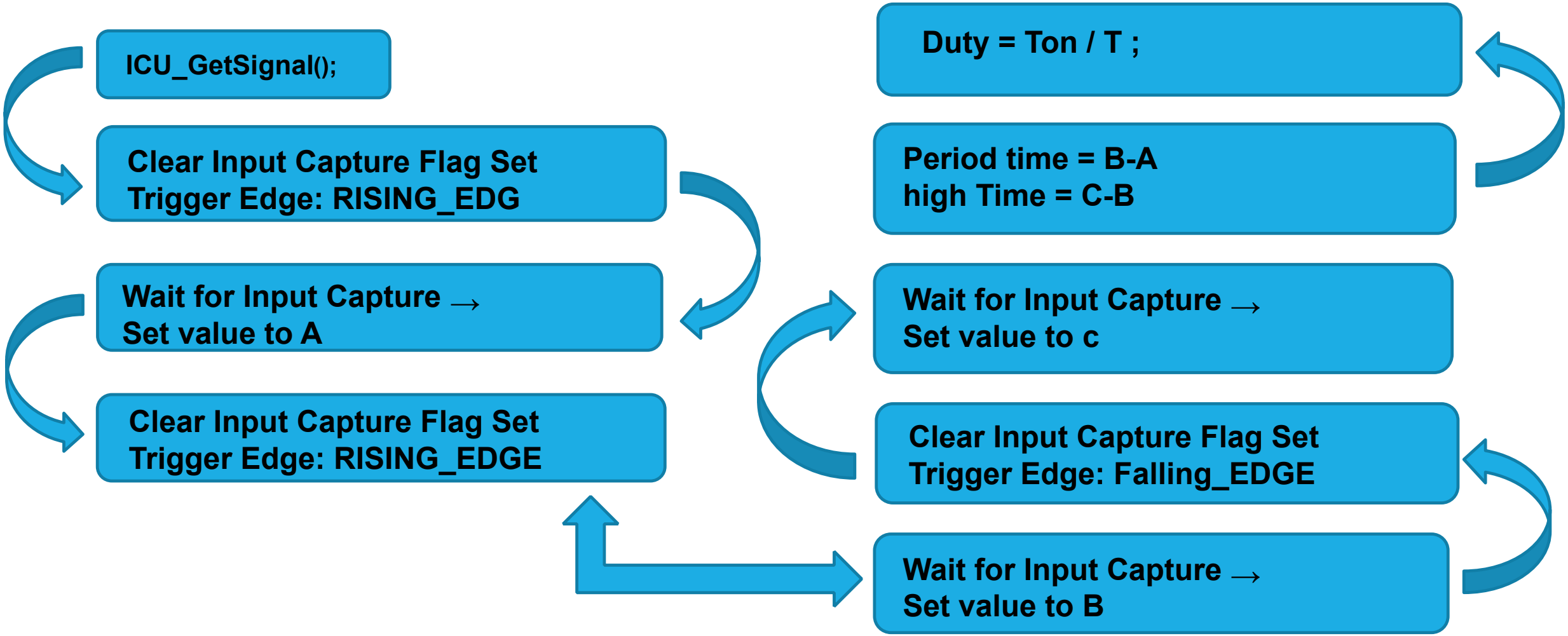
LAYERED ARCHITECTURE



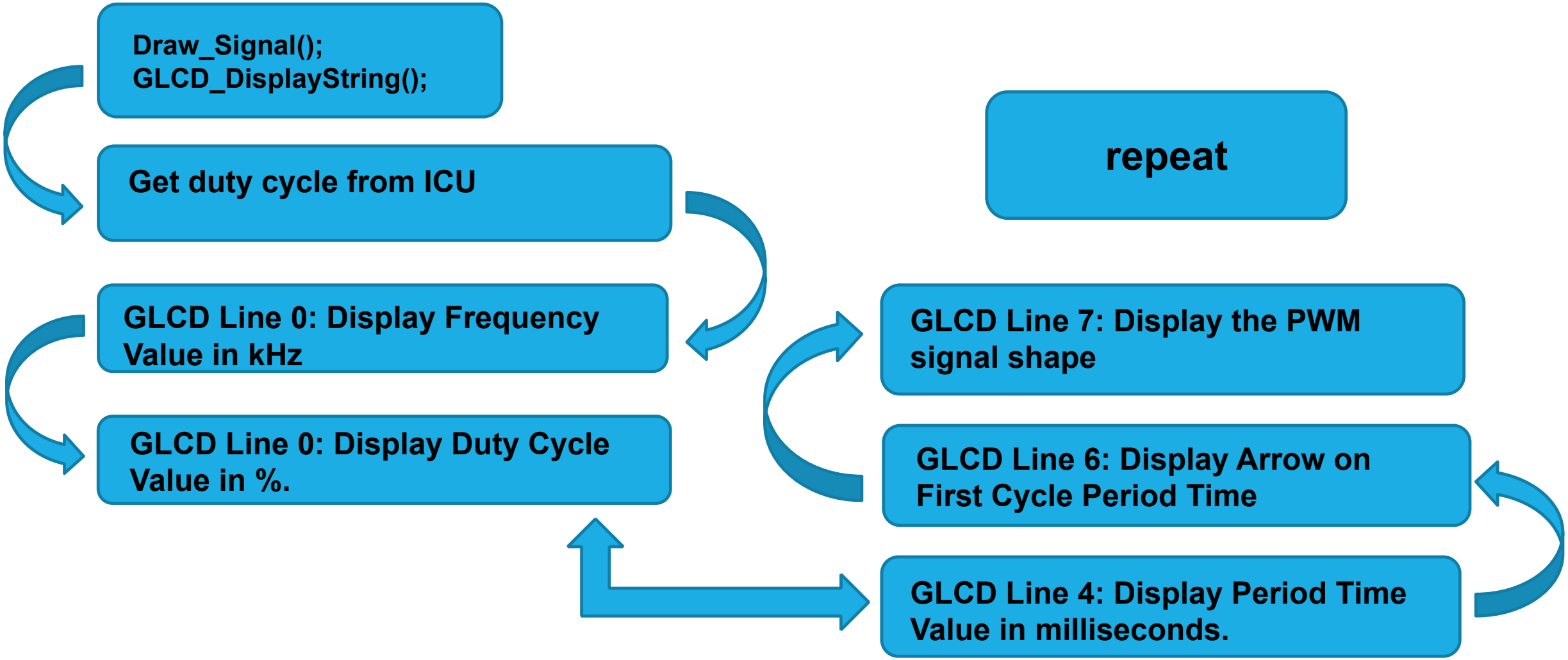
FLOWCHART

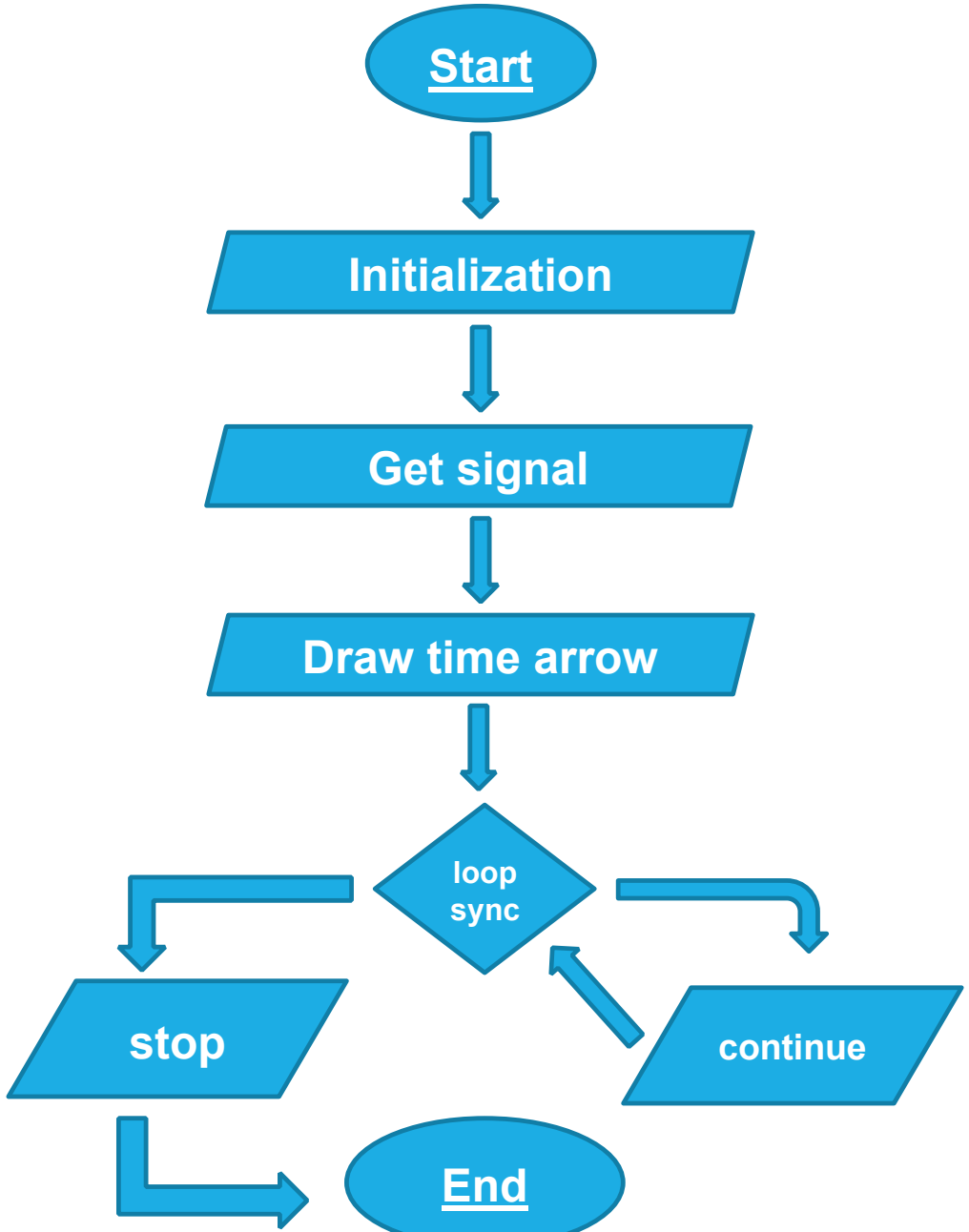


MEASURE SIGNAL


ICU_GetSignal();
Clear Input Capture Flag Set
Trigger Edge: RISING_EDG
Wait for Input Capture →
Set value to A
Clear Input Capture Flag Set
Trigger Edge: RISING_EDGE
Wait for Input Capture →
Set value to B
Clear Input Capture Flag Set
Trigger Edge: Falling_EDGE
Wait for Input Capture →
Set value to c
Period time = B-A
high Time = C-B
Duty = Ton / T ;

DRAW SIGNAL


Draw_Signal();
GLCD_DisplayString();
Get duty cycle from ICU
GLCD Line 0: Display Frequency Value in kHz
GLCD Line 0: Display Duty Cycle Value in %.
repeat
GLCD Line 7: Display the PWM signal shape
GLCD Line 6: Display Arrow on First Cycle Period Time
GLCD Line 4: Display Period Time Value in milliseconds.


Start
Initialization
Get signal
Draw time arrow
loop
sync
stop
continue
End