

PWM Drawer using Graphical LCD and ATmega32A

AMIT Graduation Project

Presented by: Eng. Shaimaa K. El-Baklish, M.Sc.

Layered Architecture



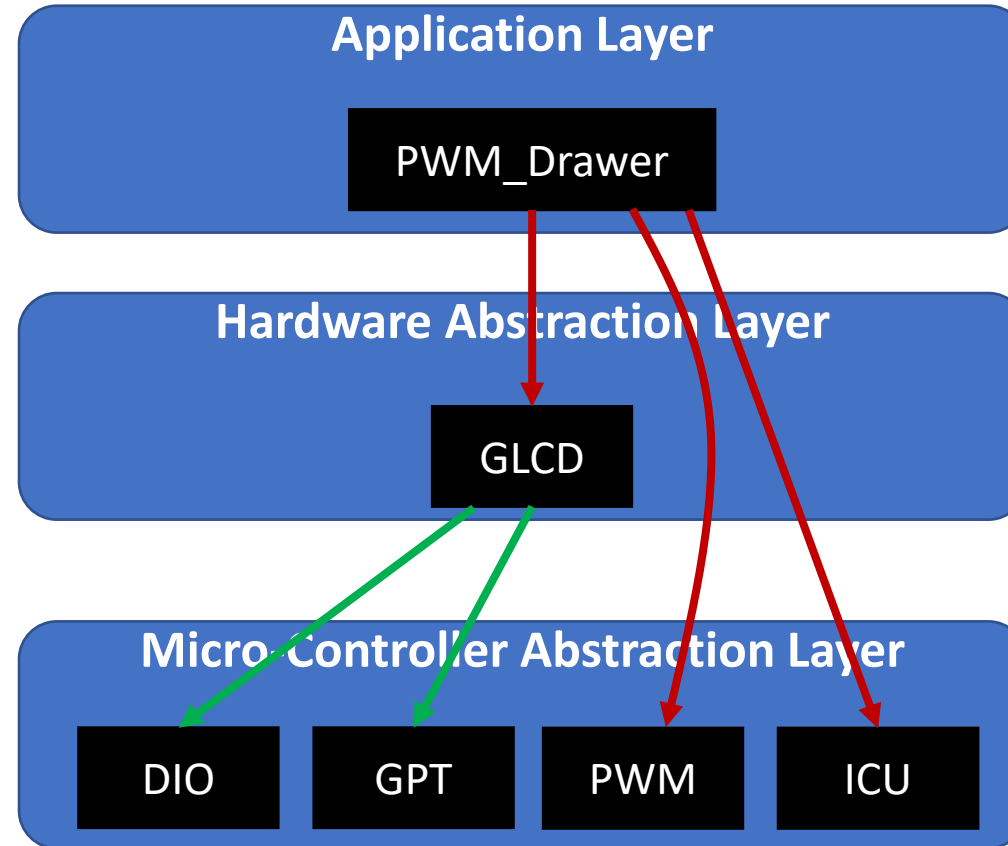
Flow Chart



Special Patterns on Graphical LCD



Layered Architecture



Layered Architecture



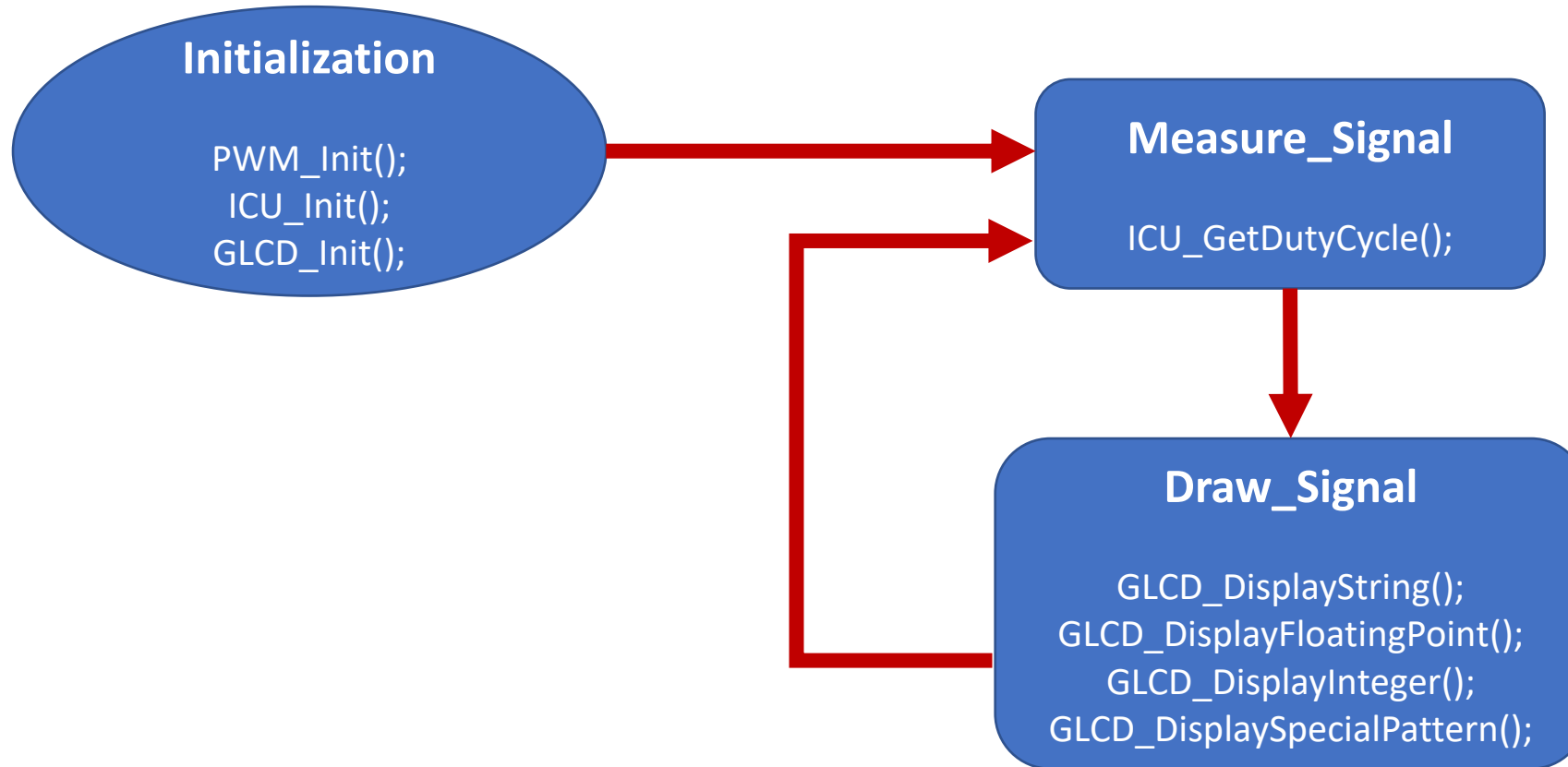
Flow Chart



Special Patterns on Graphical LCD



Flowchart



Layered Architecture



Flow Chart



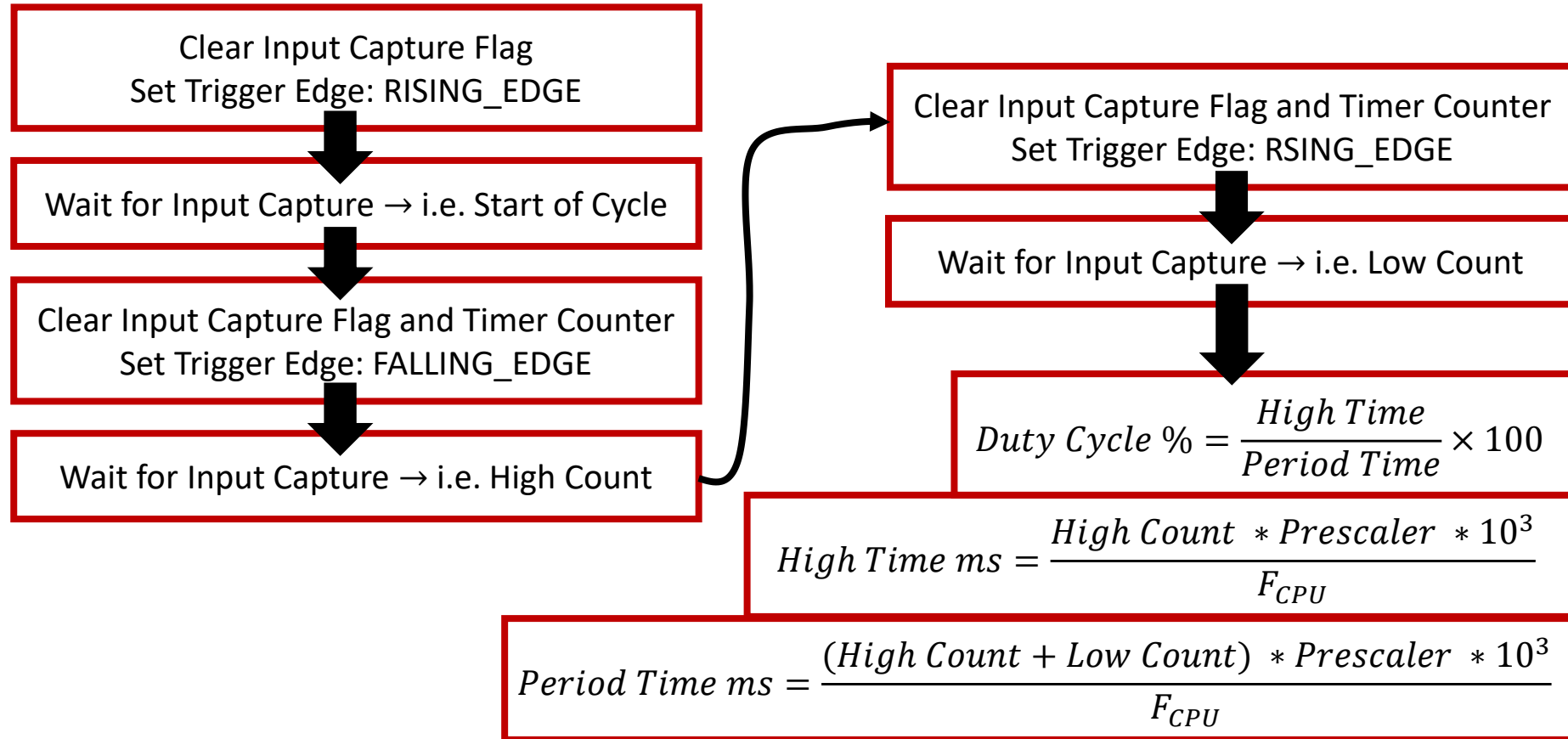
Special Patterns on Graphical LCD



Flowchart Continued (1)

Measure_Signal

ICU_GetDutyCycle();



Layered Architecture



Flow Chart



Special Patterns on Graphical LCD



Flowchart Continued (2)

Draw_Signal

```
GLCD_DisplayString();  
GLCD_DisplayFloatingPoint();  
GLCD_DisplayInteger();  
GLCD_DisplaySpecialPattern();
```

Choose a scale (milliseconds
to pixel) as $\frac{\text{Period Time}}{5}$.

GLCD Line 0: Display Frequency Value in kHz.

GLCD Line 1: Display Duty Cycle Value in %.

GLCD Line 4: Display Period Time Value in
milliseconds.

GLCD Line 5: Display Arrow on First Cycle
Period Time.

GLCD Line 6: Display the PWM signal shape.

Layered Architecture



Flow Chart



Special Patterns on Graphical LCD

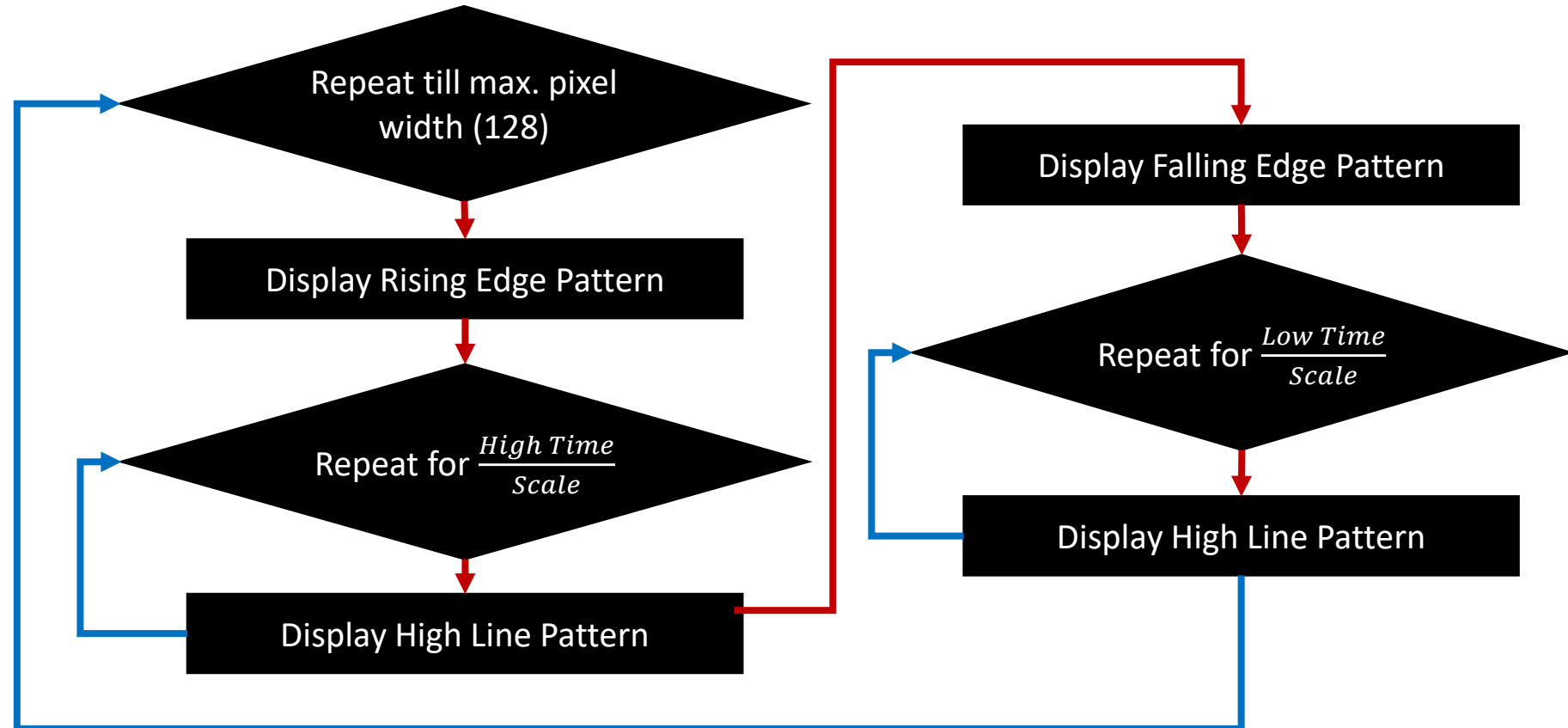


Flowchart Continued (3)

Draw_Signal

```
GLCD_DisplayString();  
GLCD_DisplayFloatingPoint();  
GLCD_DisplayInteger();  
GLCD_DisplaySpecialPattern();
```

GLCD Line 6: Display the PWM signal shape.



Layered Architecture



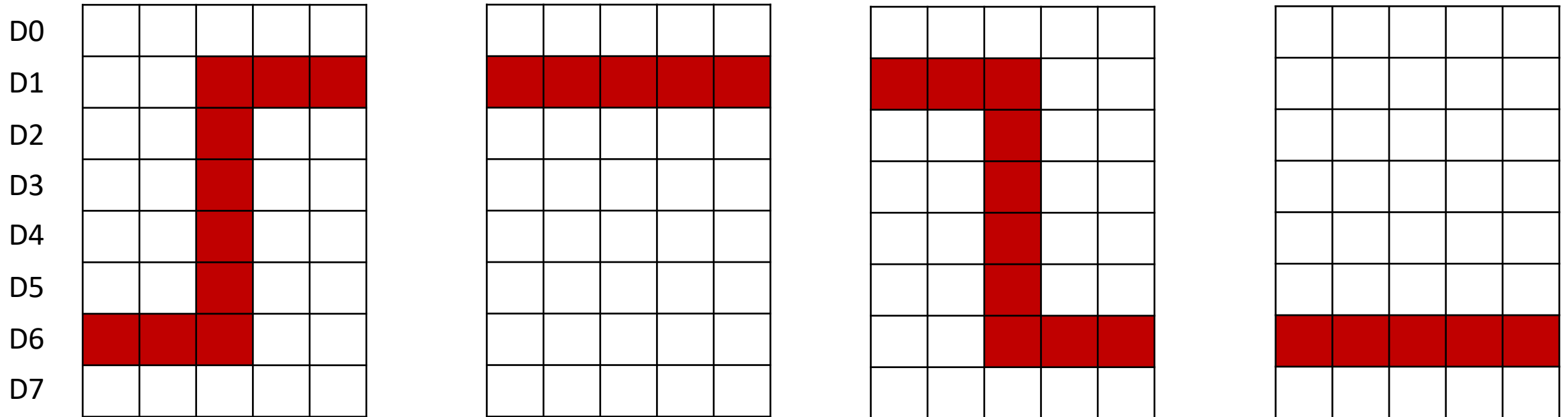
Flow Chart



Special Patterns on Graphical LCD



Special Patterns on Graphical LCD



Layered Architecture



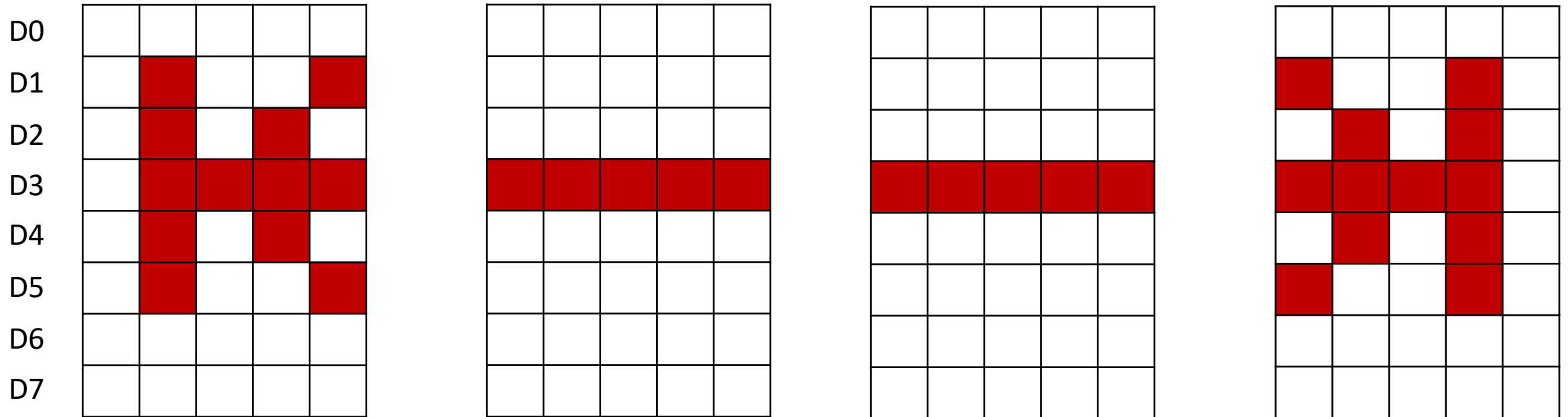
Flow Chart



ADC Programming in ATmega328P



Special Patterns on Graphical LCD



Layered Architecture



Flow Chart



ADC Programming in ATmega328P





Layered Architecture



Flow Chart



Special Patterns on Graphical LCD

