

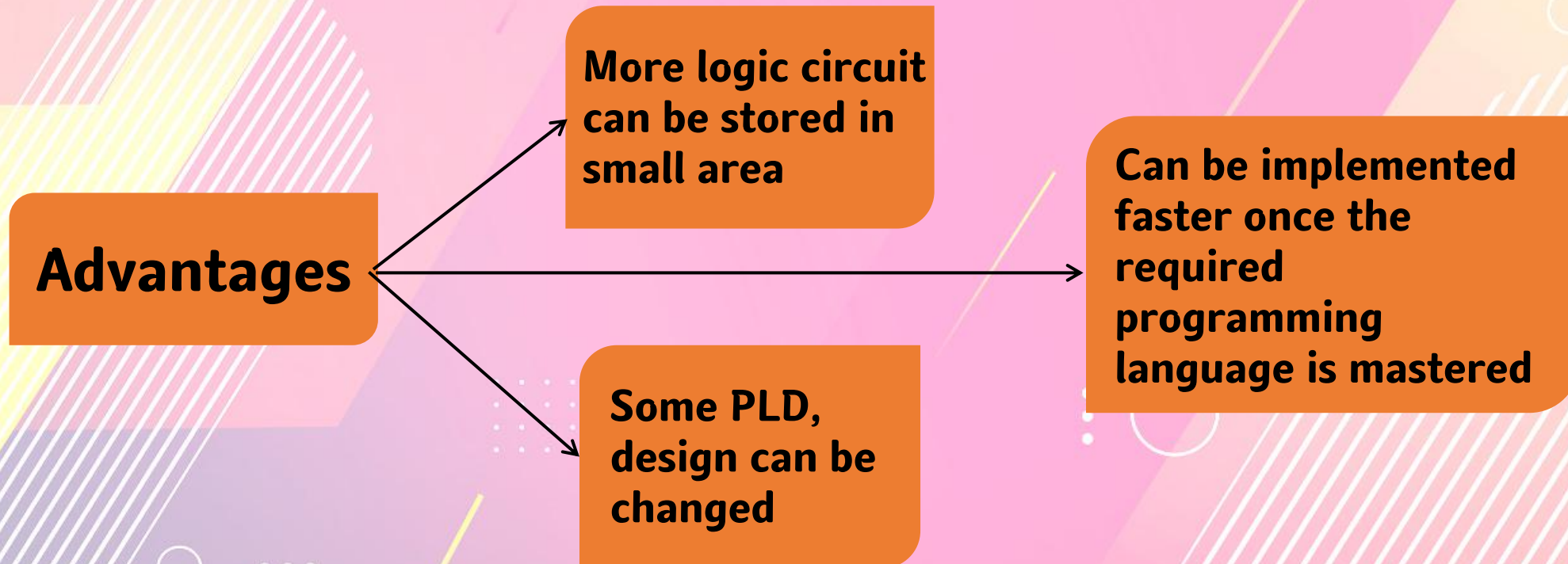


# **PROGRAMMABLE LOGIC DEVICES (PLD)**

# Overview

**Fixed function :** - A specific logic function is contained in the IC (hardwired) and can never be changed.

**PLD :** - Logic function programmed by user



# Types of PLD

## 1. **Simple Programmable Logic Devices (SPLD)**

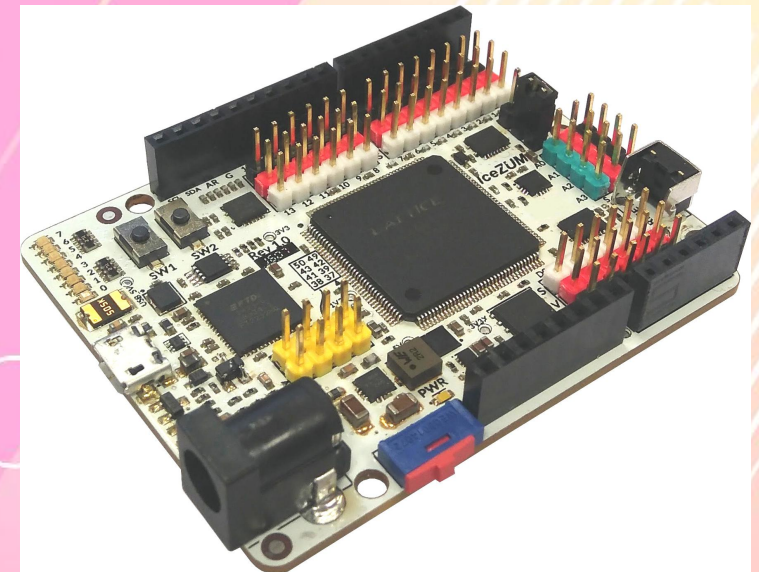
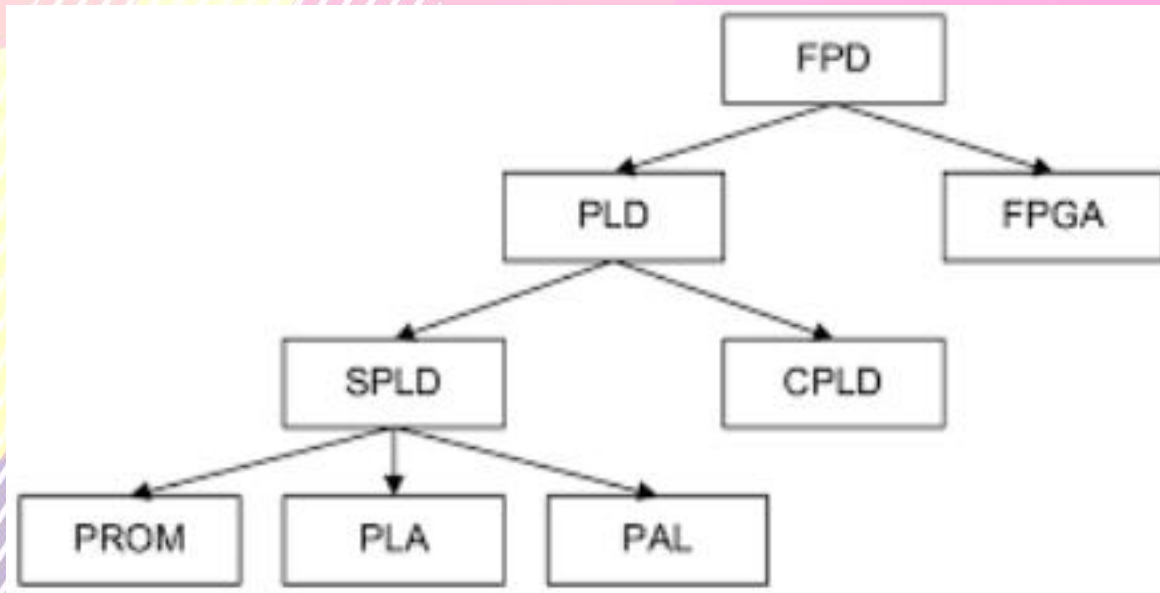
- ~ can replace several fixed-function SSI or MSI
- ~ first type available
- ~ Few categories :
  - PAL (Programmable Array Logic)
  - GAL (Generic Array Logic)
  - PLA (Programmable Logic Array)
  - PROM (Programmable Read-Only memory)

## 2. **Complex Programmable Logic Devices (CPLD)**

- ~ higher capacity than SPLD (2-64 SPLD)
- ~ more complex logic circuits can be programmed
- ~ typically in 44-160 pin package

### 3. **Field-Programmable Gate Arrays (FPGA)**

- ~ different internal organisation than SPLD andd CPLD
- ~ greatest logic capacity
- ~ classes : Fine grain (smaller logic block)  
Coarse grain (large logic block)



# PLD PROGRAMMING

*Logic circuit entered using 2 basic method.*

- ★ Graphical entry : schematic diagram
- ★ Text-based entry (language based entry) :
  - Use Hardware Description Language (HDL)  
eg. ABEL, CUPL, WinCUPL
  - Becoming widely used especially for CPLD and FPGA
    - ~ VHDL
    - ~ Verilog



**THANK YOU**