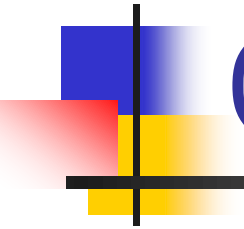
Lab 02

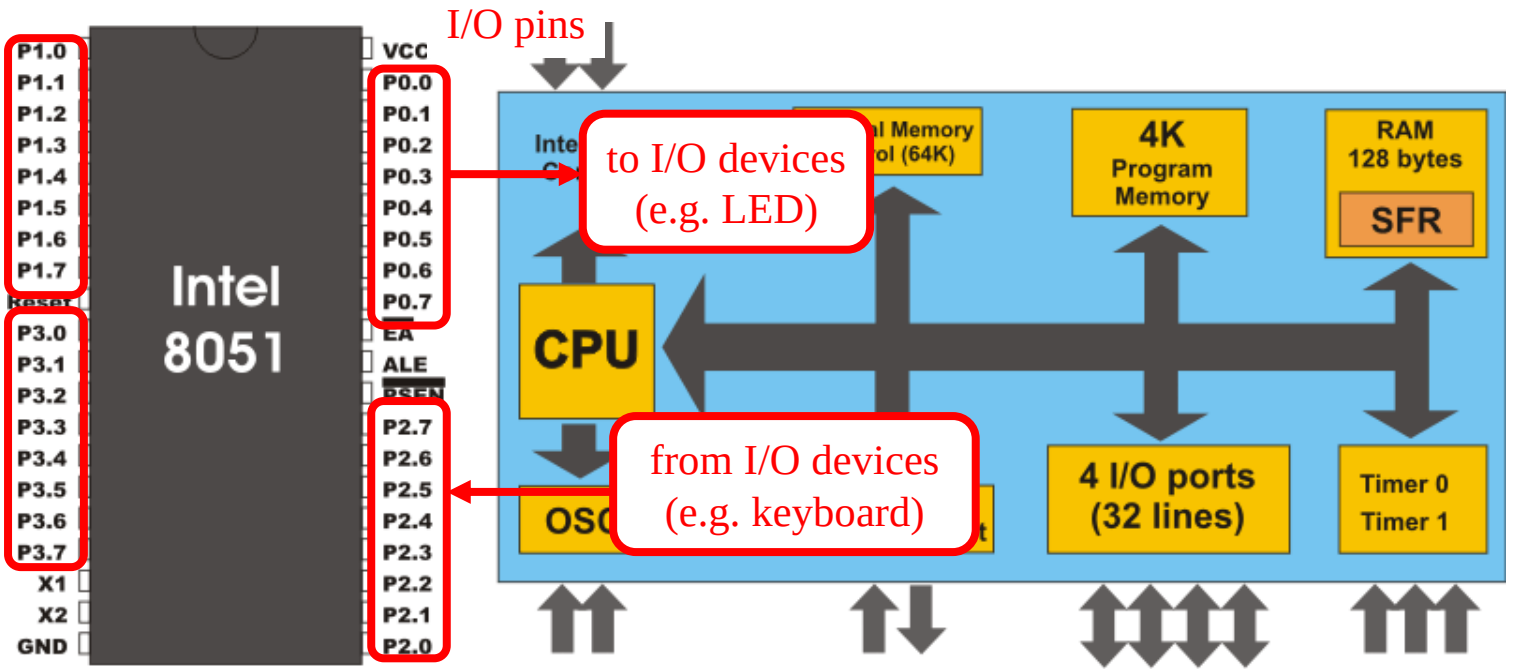
General Purpose Digital I/O (GPIO)



Objectives of this lab

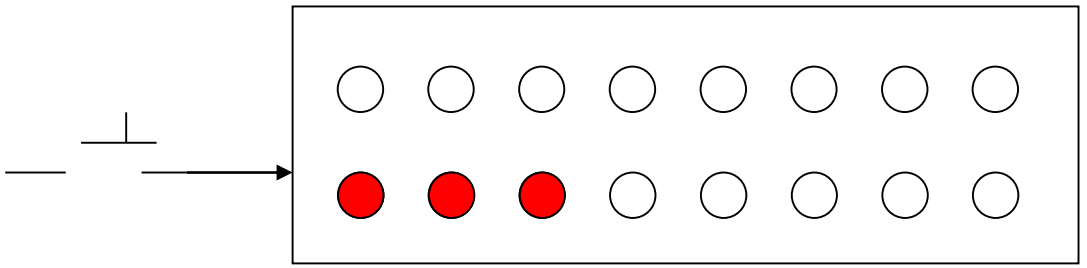
(1) to build up your imagination on how a program affects hardware signals

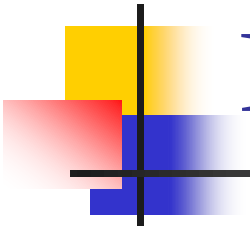
(2) to learn how to send/receive signals from an application processor to external devices through I/O pads



Your work today

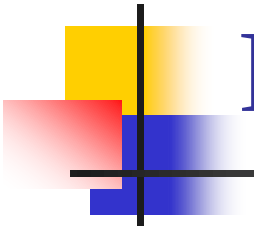
- design a LED box
  - initial: all LED off
  - the LED runs some pattern after some button pressed
    - you can design your own pattern





Preparations before the Lab

- Read the data sheet of SiliconLab C8051F040 SoC
  - Chap. 17
- Read the schematics of the Big8051 experiment board
  - On LEDs



Pre-Lab Report

- Q1: Explain what is watch-dog timer
  - Somewhere in your OS textbook
- Q2: Explain what is memory-mapped I/O
  - Check the textbooks of Computer Organization, Computer Architecture, or OS

Pre-Lab Report (cont'd)

- Q3:
  - Read Figure 17.1 of C8051F040 spec and the schematics of Big8051
  - List all control signal values to turn-on an LED at P0.0

Value of these Control signals

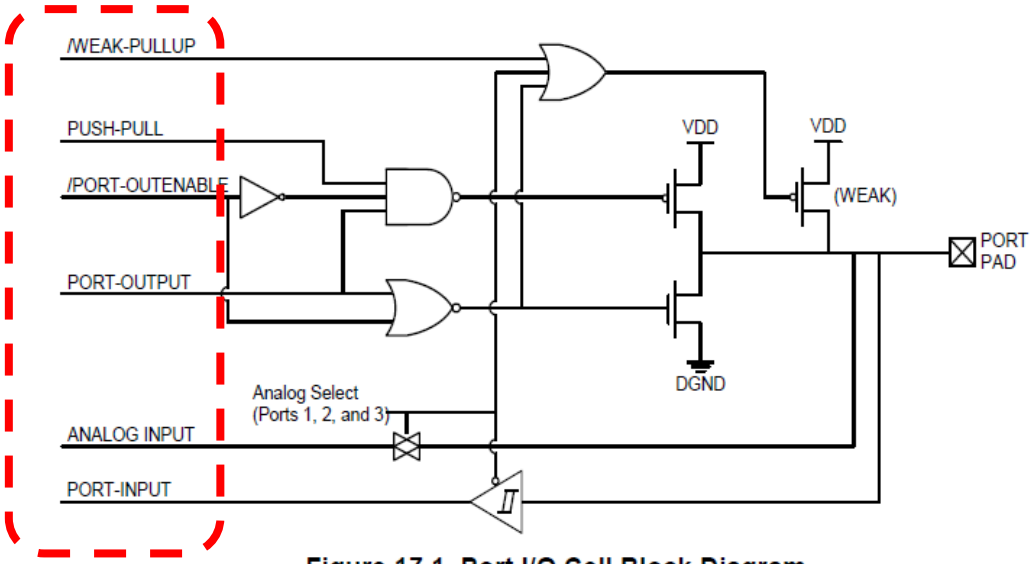


Figure 17.1. Port I/O Cell Block Diagram

Pre-Lab Report (cont'd)

- Q4:
  - Read Figure 17.2 of C8051F040 spec
  - List the values of all control registers to configure port P0 as a digital output port

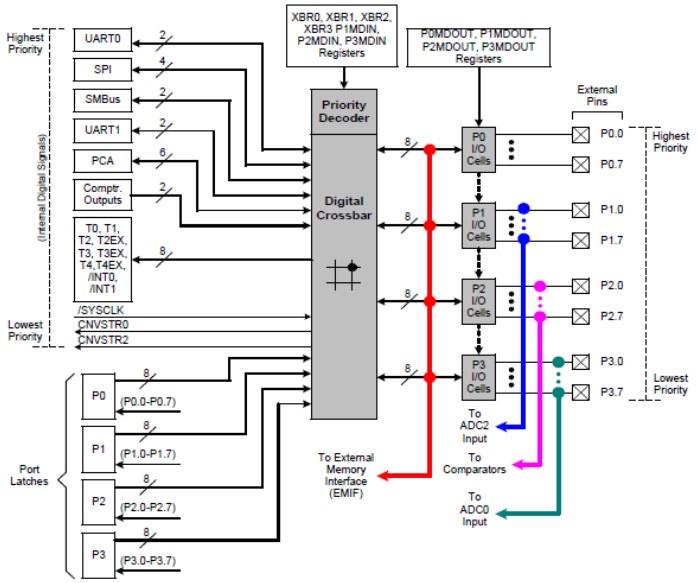


Figure 17.2. Port I/O Functional Block Diagram