DEVICES AND COMMUNICATION BUSES FOR DEVICES NETWORK–

Lesson-10: Parallel Port Interfacing with Touch Screen

Touch screen

- An input device cum LCD display device.
- Interfaced for the output through output port *O* to an LCD display device controller.
- Interfaced for an additional input port *I* for a byte
- The byte corresponds to the address of touched position on display screen.

Touch screen

- Resistive or capacitive type.
- Touching at a position on the screen, there is a change in resistance or capacitance,
- The change depends on touched position.
- A touch can be by a finger or stylus.
- The stylus about one-fifth thinner than a pencil and about half of the length of the pencil.

PocketPC touch screen

- Device facilitates the GUIs (Graphic User Interfaces).
- Display menus, icons as well as virtual keypad.
- Using the keypad on screen and stylus, a set of characters can be entered for creating or editing SMS message or e-mail or new contact or word pad file.
- A handheld stylus is held like a pencil and is used to touch the virtual keypad and then the device selects menu and commands on the screen

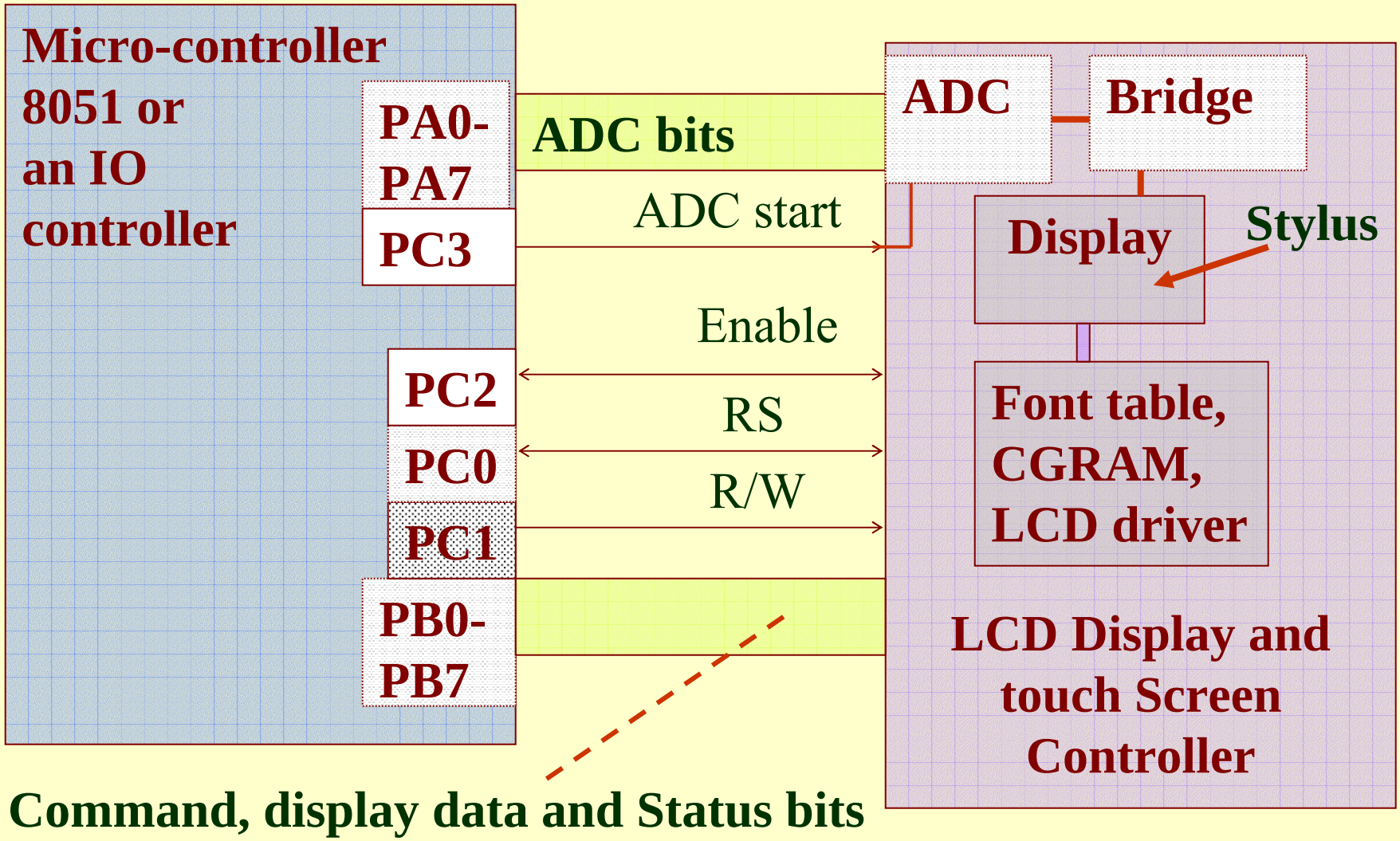
Sensing a touched Position

- The resistance or capacitance — a part of a bridge circuit,
- The circuit generates analog voltage as per the touched screen position.
- An 8-bit ADC is given input from a bridge circuit and the 8-bit ADC output connects to an 8-bit input port *I*.

Parallel port inputs, outputs and control signals to controller (a processing element as single purpose processor)

- Three control signals IO PC0-PC2 as inputs to the LCD controller
- PB0 to PB7 8 input/output bits for parallel set of 8 IO bits for commands and data and for status bits
- Control signal ADC start at PC3 to sense screen (x, y) touched position data using PA0-PA7

Interfacing Controller at Touch Screen



Control Bits

- Controller is sent control words and data words for initialization and programming by setting the PB0-PB7, PC0 and PC1 outputs for each word to controller.
- Touch screen ADC is sent control bit PC3 for start of ADC

Summary

We learnt

- Touch screen device facilitates the GUIs.
- Display menus, icons as well as a virtual keypad
- Parallel port having 8 output data and 4 bits for E, RS and R/W and ADC start used to interface to controller for touch screen

End of Lesson 10 of Chapter 3