

Input Devices

Keyboards

Last updated 2/29/24

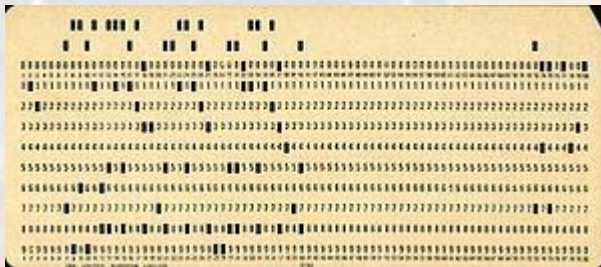
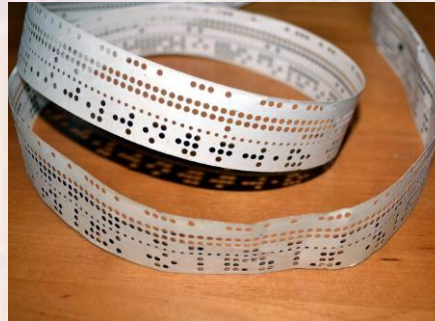
Input Devices

- When I was your age ...

teletypes

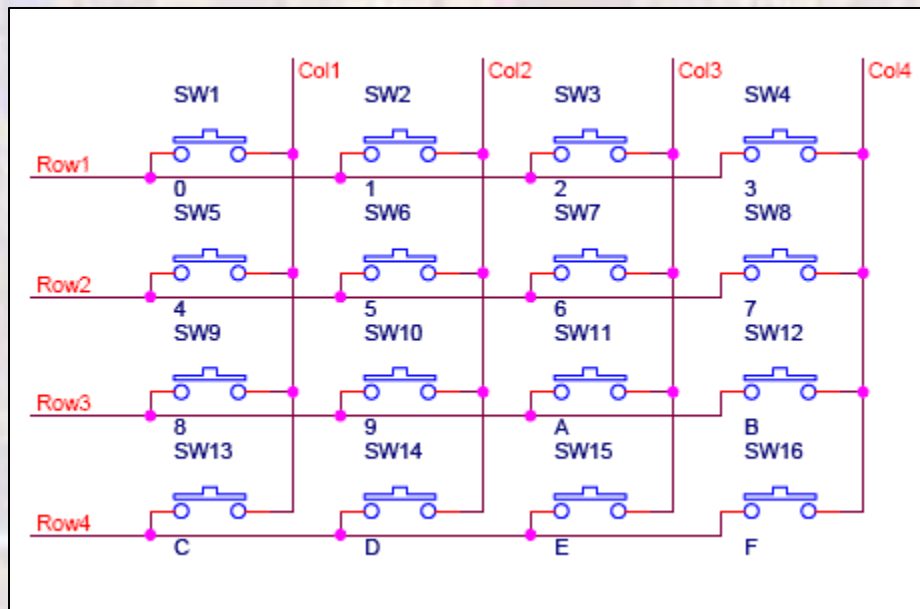
paper punch tapes

computer punch cards



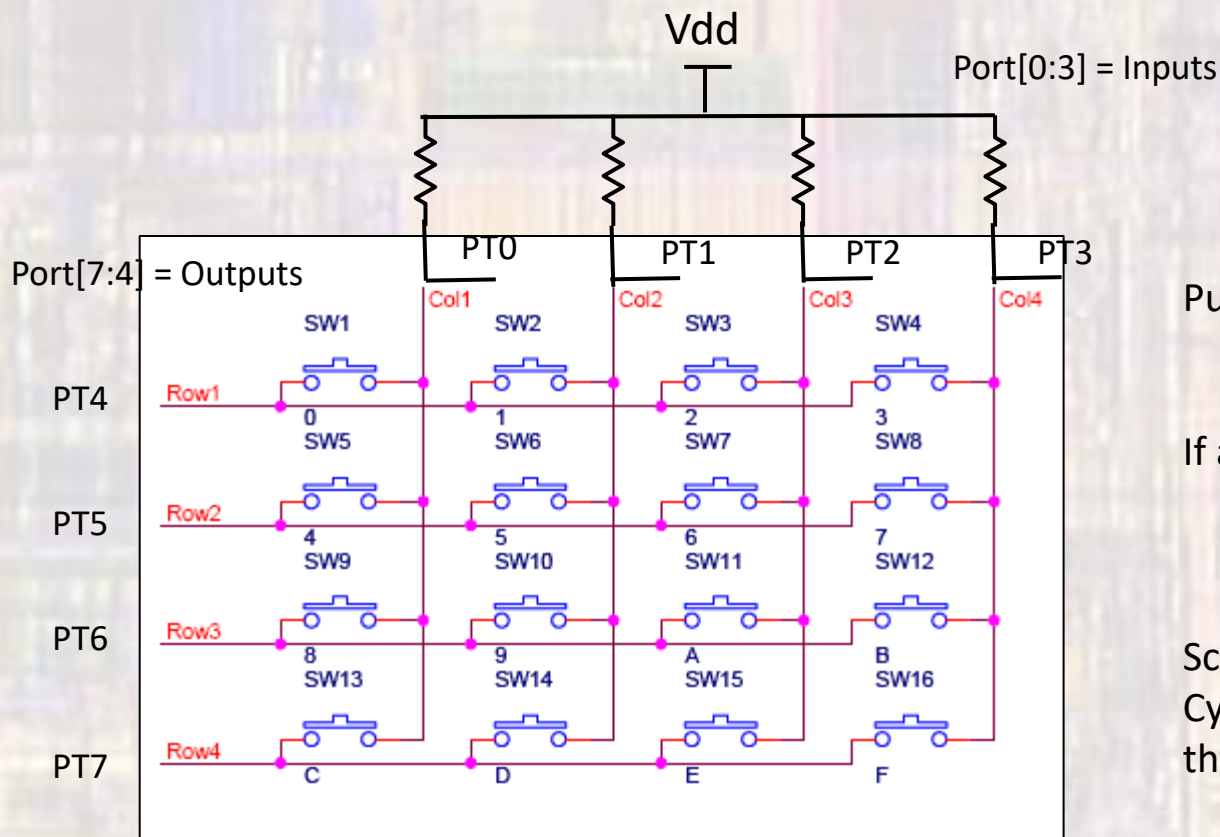
Input Devices - Keyboards

- Keypad
 - Structure



Input Devices - Keyboards

- Keypad
 - Operation



Pull one of
PT4, PT5, PT6, PT7 low

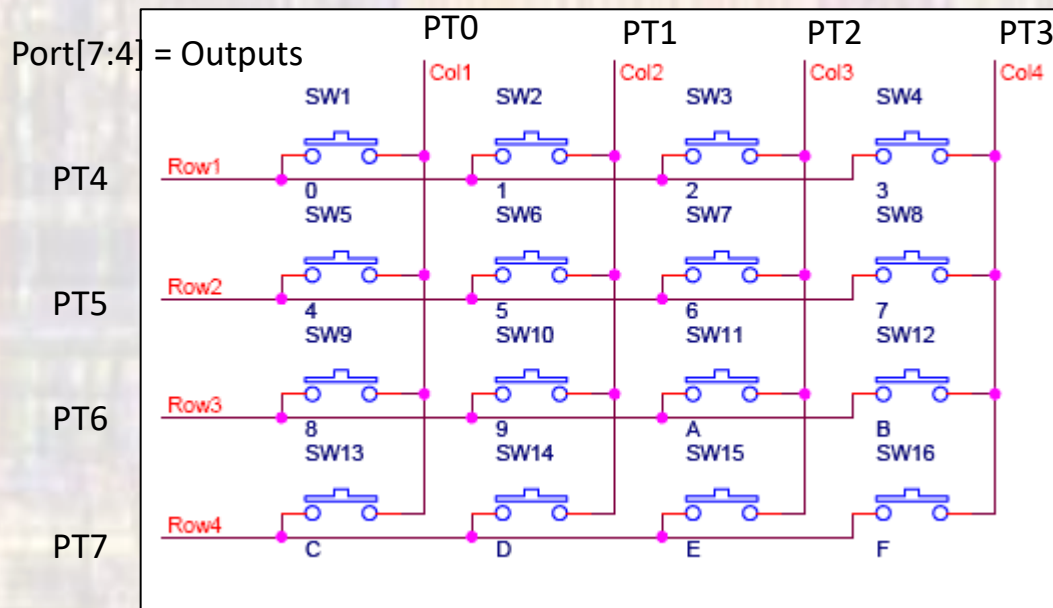
If a key is pressed
The associated PT[3:0] input
will be pulled low

Scanning:
Cycle through the outputs, check
the inputs

Input Devices - Keyboards

- Keypad
 - Operation

Port[0:3] = Inputs with pull-up turned on



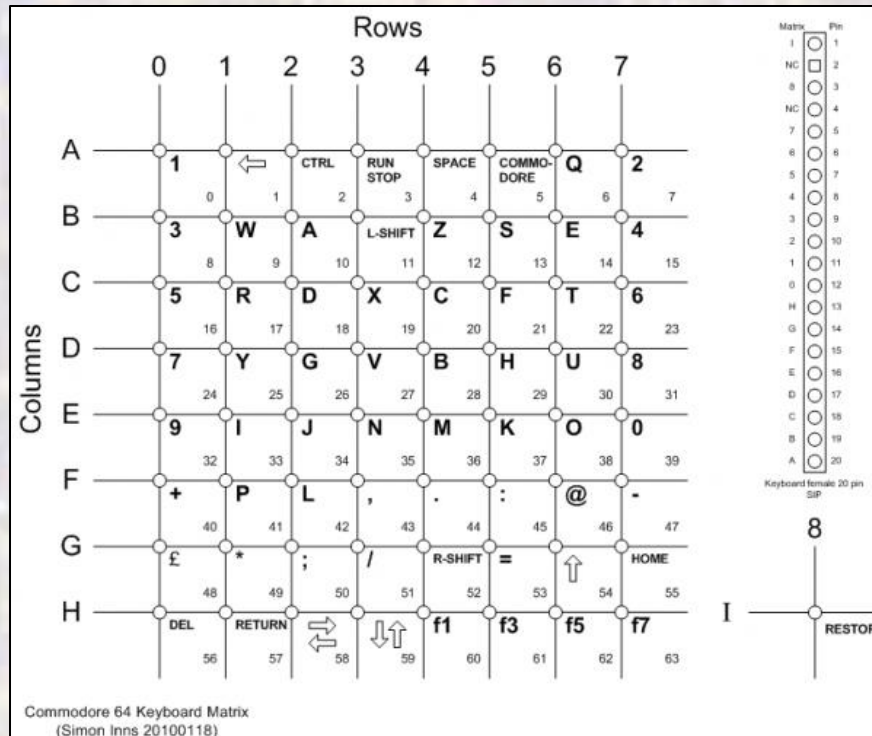
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Scanning:
Cycle through the outputs, check
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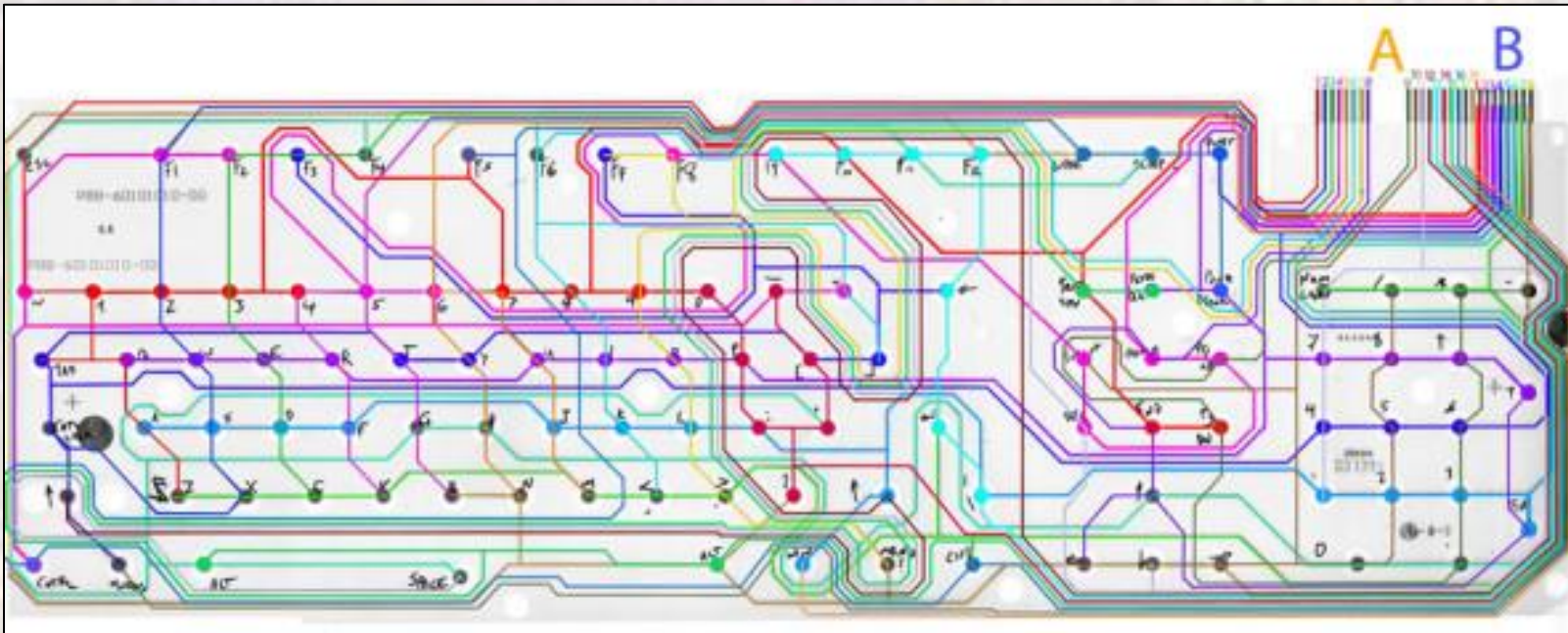
Input Devices - Keyboards

- Keyboard
 - Structure
 - N x M matrix of switches



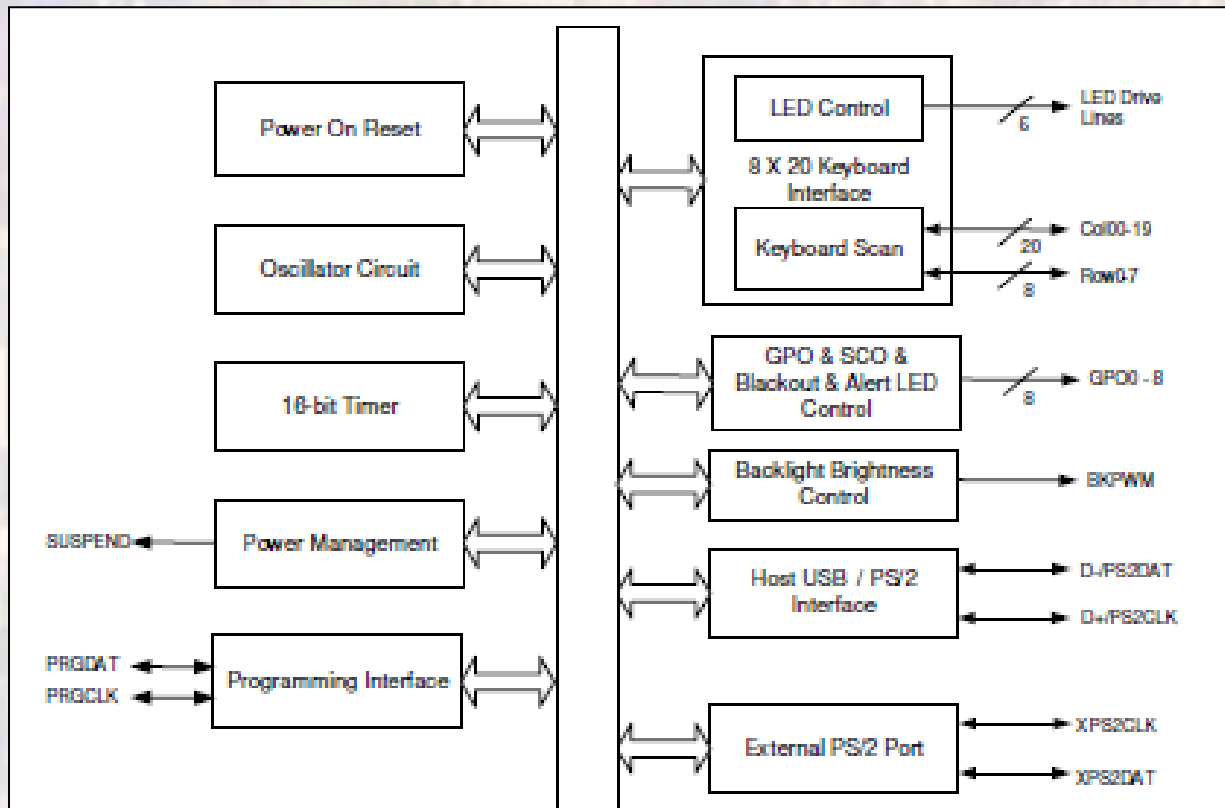
Input Devices - Keyboards

- Keyboard
 - Physical
 - Pattern of switches



Input Devices - Keyboards

- Keyboard
 - Controller

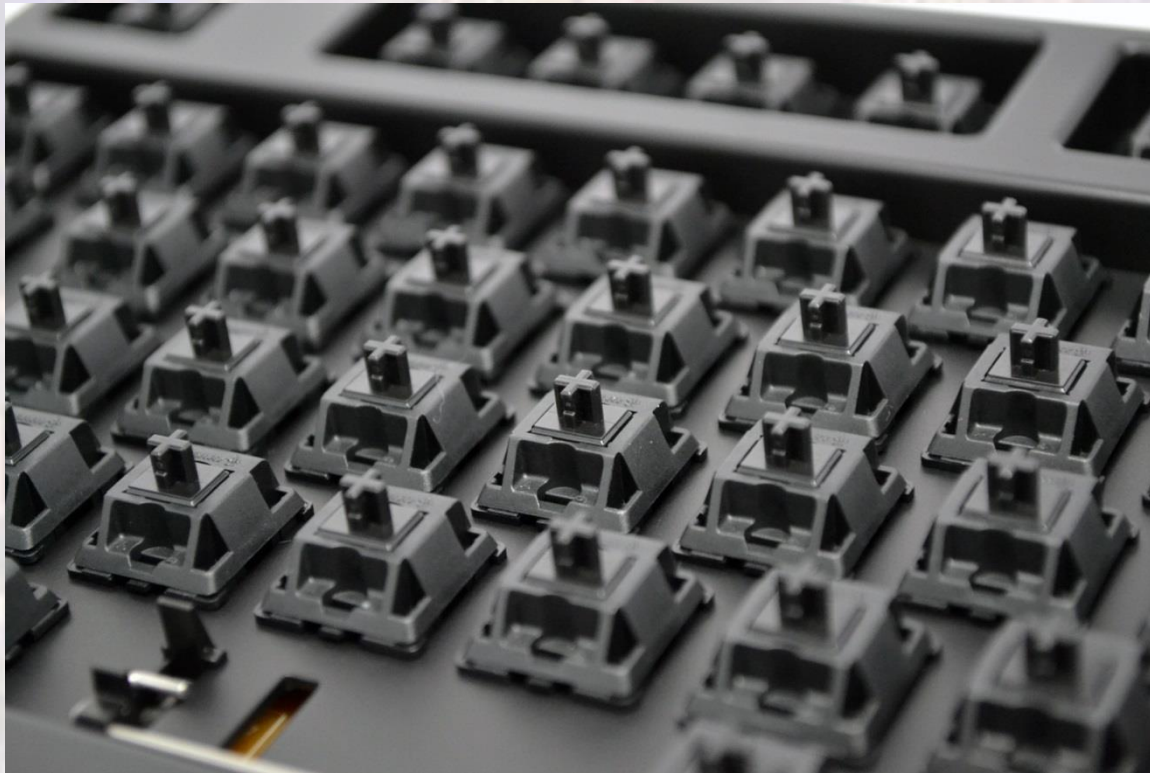


Input Devices - Keyboards

- Keyboard
 - Controller
 - Performs debounce – 1-5ms typical
 - Polling rate - $< 200\text{Hz}$
 - Interface – USB, wireless, SPI, TWI

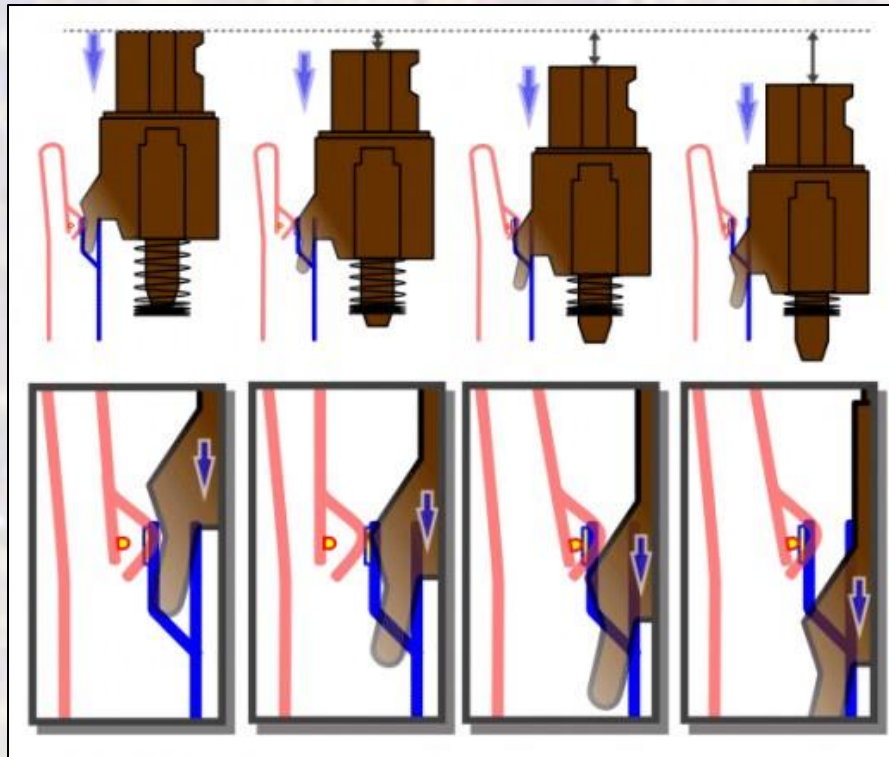
Input Devices - Keyboards

- Mechanical Switches



Input Devices - Keyboards

- Mechanical Switches
 - Operation



Input Devices - Keyboards

- Membrane Switches
 - Construction and Operation

