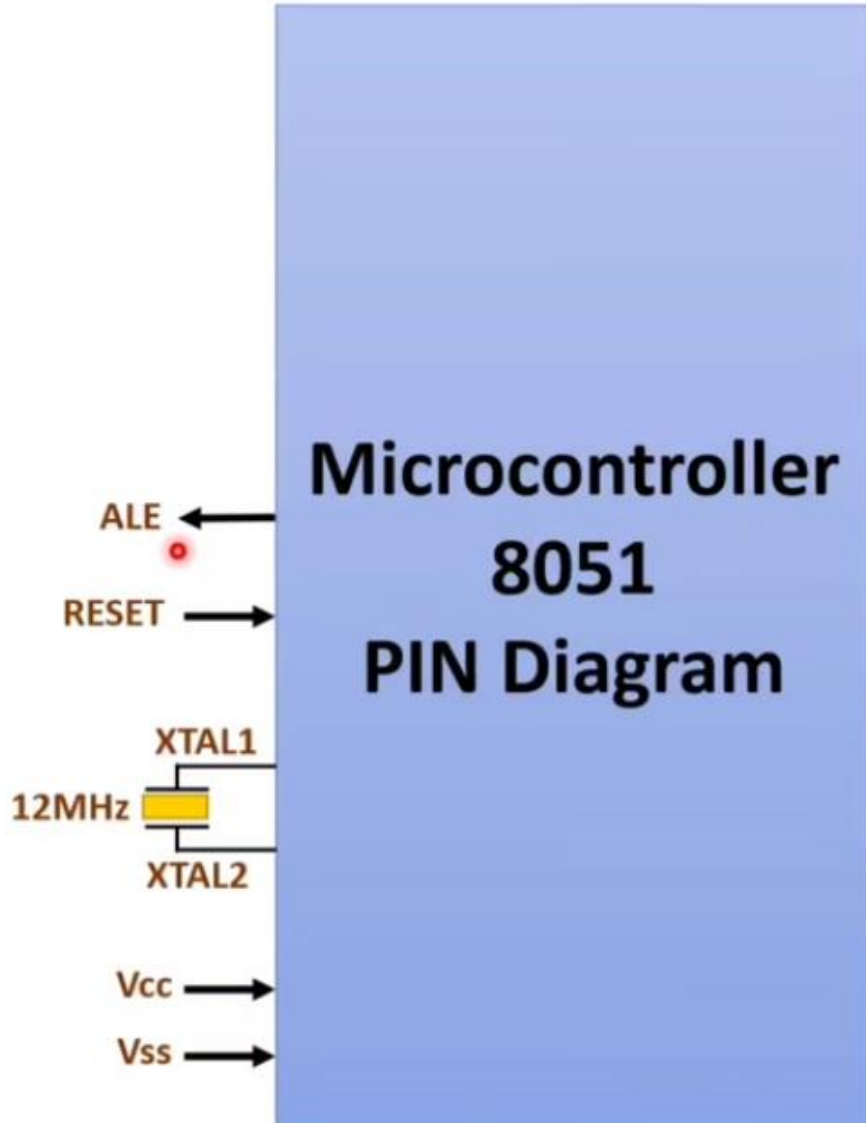


PIN Diagram of 8051 μ C



❖ Power Supply

- ❑ 8051 has $V_{cc} = +5V$ and $V_{ss} = \text{Reference \{Ground\}}$

❖ XTAL1 and XTAL2

- ❑ Crystal is connected in between these two pins.
- ❑ 12 MHz of crystal clock is provided.
- ❑ In serial communication, operating frequency is chosen to be 11.0592MHz, in order to get standard universal baud rates.

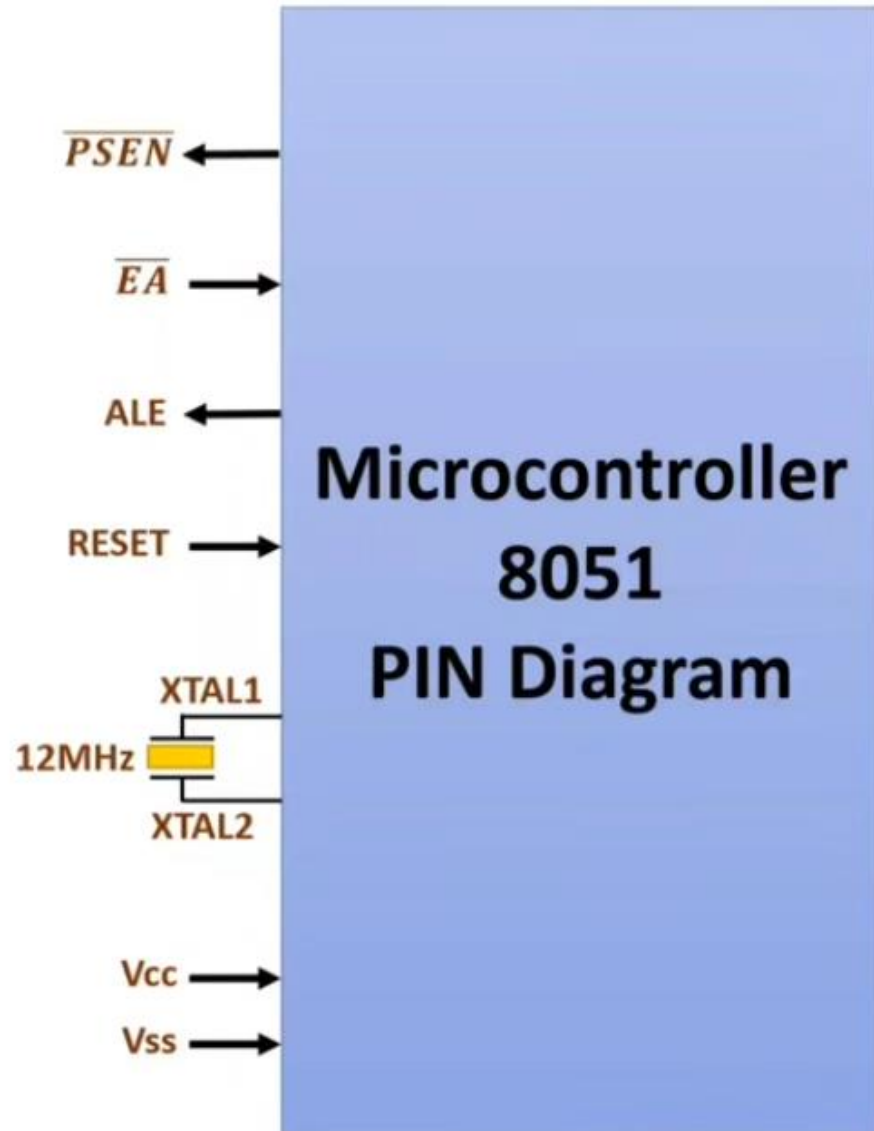
❖ RESET

- ❑ It is used to RESET 8051 Microcontroller.
- ❑ On reset PC becomes 0000H, This address is called RESET vector address.
- ❑ From this address, 8051 executes BIOS programs. BIOS program is used to set up the system and make system ready for end user.

❖ ALE – Address Latch Enable

- ❑ It is used to separate Address and Data.
- ❑ In 8051, AD0-AD7 lines are time multiplexed.
- ❑ If $ALE = 1$, bus carries Address.
- ❑ If $ALE = 0$, bus carries Data.

PIN Diagram of 8051 μC



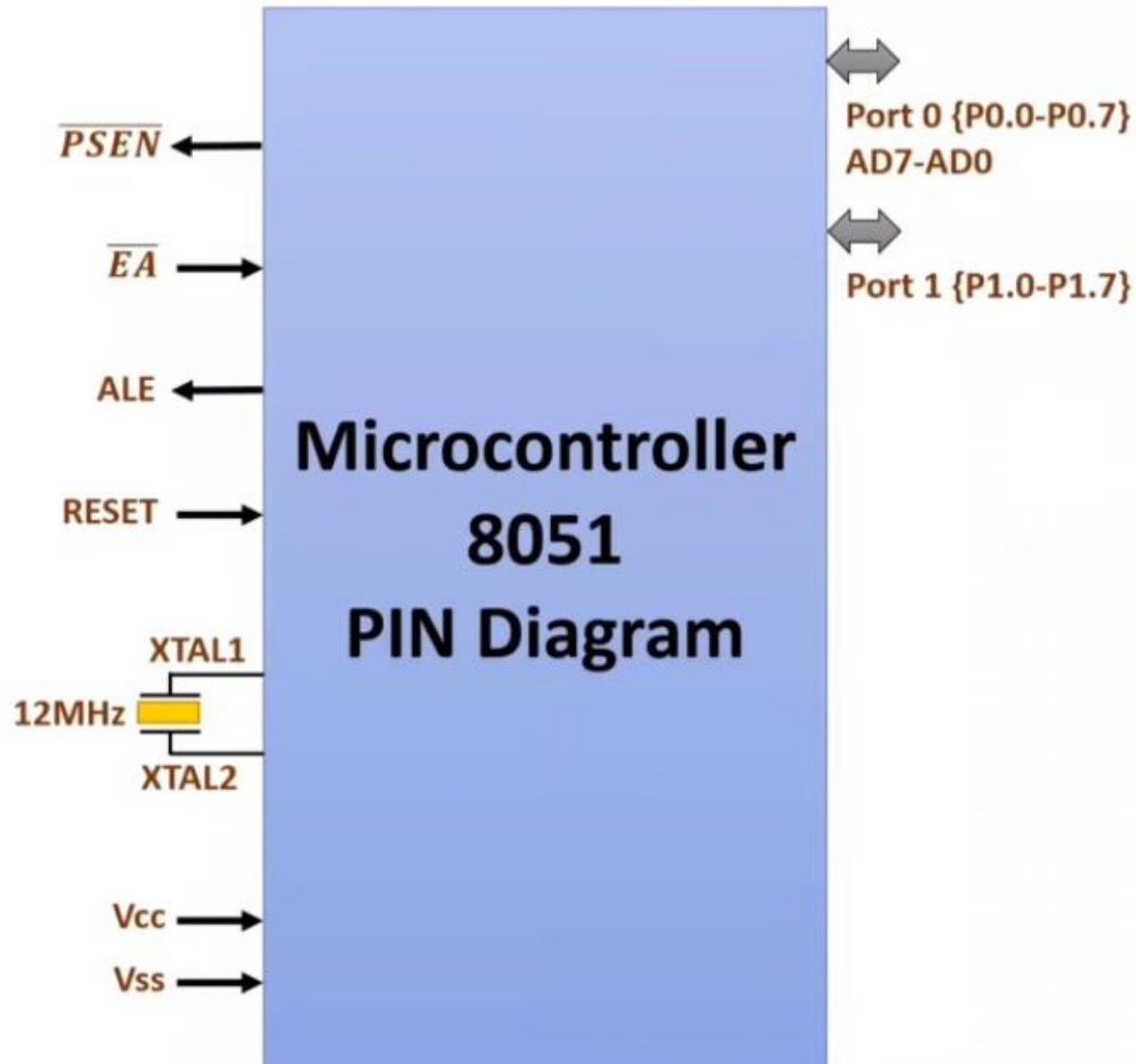
❖ $\overline{EA}$ - Enable External Access

- ☐ 8051 has internal 4KB ROM.
- ☐ If $\overline{EA} = 0$, 8051 will discard internal 4KB ROM and external ROM memory location will start from 0000H.
- ☐ If $\overline{EA} = 1$, 8051 will consider internal 4KB ROM with starting address 0000H to ending address 0FFFH and external ROM memory location will start from 1000H.

❖ $\overline{PSEN}$ - Program Status Enable

- ☐ 8051 has 16 bits Address A0-A15. by that we can interface 64KB of external ROM and 64KB of external RAM, making it total 128KB memory space.
- ☐ Both have same address range 0000H to FFFFH.
- ☐ $\overline{PSEN}$ reads data from external ROM.
- ☐ $\overline{RD}$ and $\overline{WR}$ are used for read and write of external RAM.
- ☐ $\overline{PSEN}$ is referred as program status enable, as it allows program to be read from external ROM.

PIN Diagram of 8051 μ C



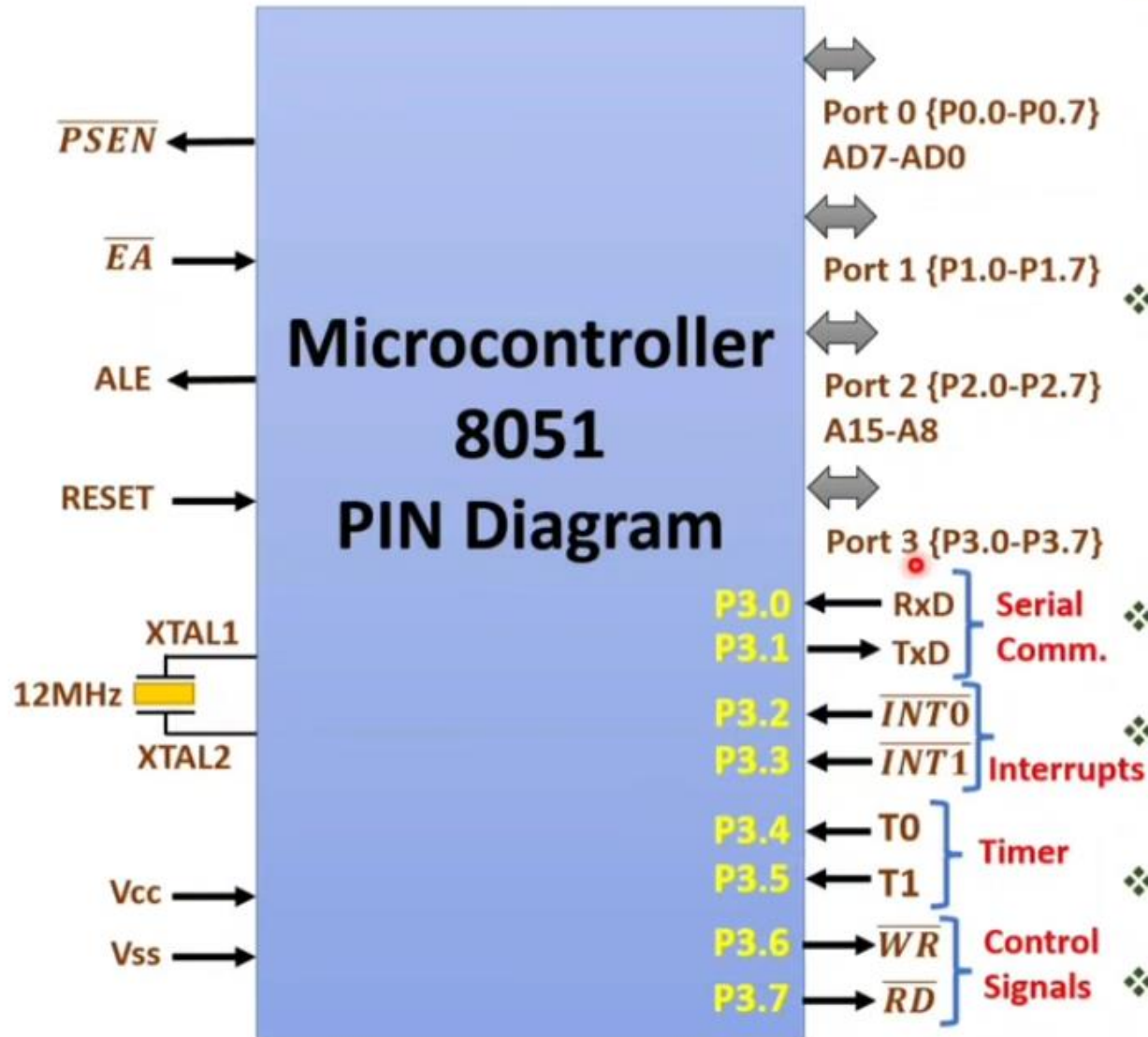
❖ Port 0 – {P0.0-P0.7}/AD7-AD0

- ☐ On port 0, 8051 has 8 pins P0.0-P0.7
- ☐ We can perform 8 bits operation on entire port.
- ☐ We can also perform 1 bit operation on port 0. {Like we can set bit, clear bit and complement bit}
- ☐ Port 0 also carries time multiplexed Address data lines AD7 – AD0.
- ☐ So, it holds A7-A0 address when ALE = 1 and D7-D0 when ALE = 0.
- ☐ For memory Access, 1st Address will be given then data will be given on these lines.

❖ Port 1 – {P1.0-P1.7}

- ☐ On port 1, 8051 has 8 pins P1.0-P1.7
- ☐ We can perform 8 bits operation on entire port.
- ☐ We can also perform 1 bit operation on port 1. {Like we can set bit, clear bit and complement bit}
- ☐ Port 1 has no other Alternate functions.

PIN Diagram of 8051 μ C



❖ Port 2 – {P2.0-P2.7}/A15-A8

- ☐ On port 2, 8051 has 8 pins P2.0-P2.7
- ☐ We can perform 8 bits operation on entire port.
- ☐ We can also perform 1 bit operation on port 2. {Like we can set bit, clear bit and complement bit}
- ☐ Port 2 also carries Address lines A15 – A8.

❖ Port 3 – {P3.0-P3.7}

- ☐ On port 3, 8051 has 8 pins P3.0-P3.7
- ☐ We can perform 8 bits operation on entire port.
- ☐ We can also perform 1 bit operation on port 3. {Like we can set bit, clear bit and complement bit}
- ☐ Port 3 also have many alternate Functions

❖ RxD {P3.0} & TxD {P3.1}

- ☐ RxD and TxD pins are used for serial communication.

❖ $\overline{INT0}$ {P3.2} & $\overline{INT1}$ {P3.3}

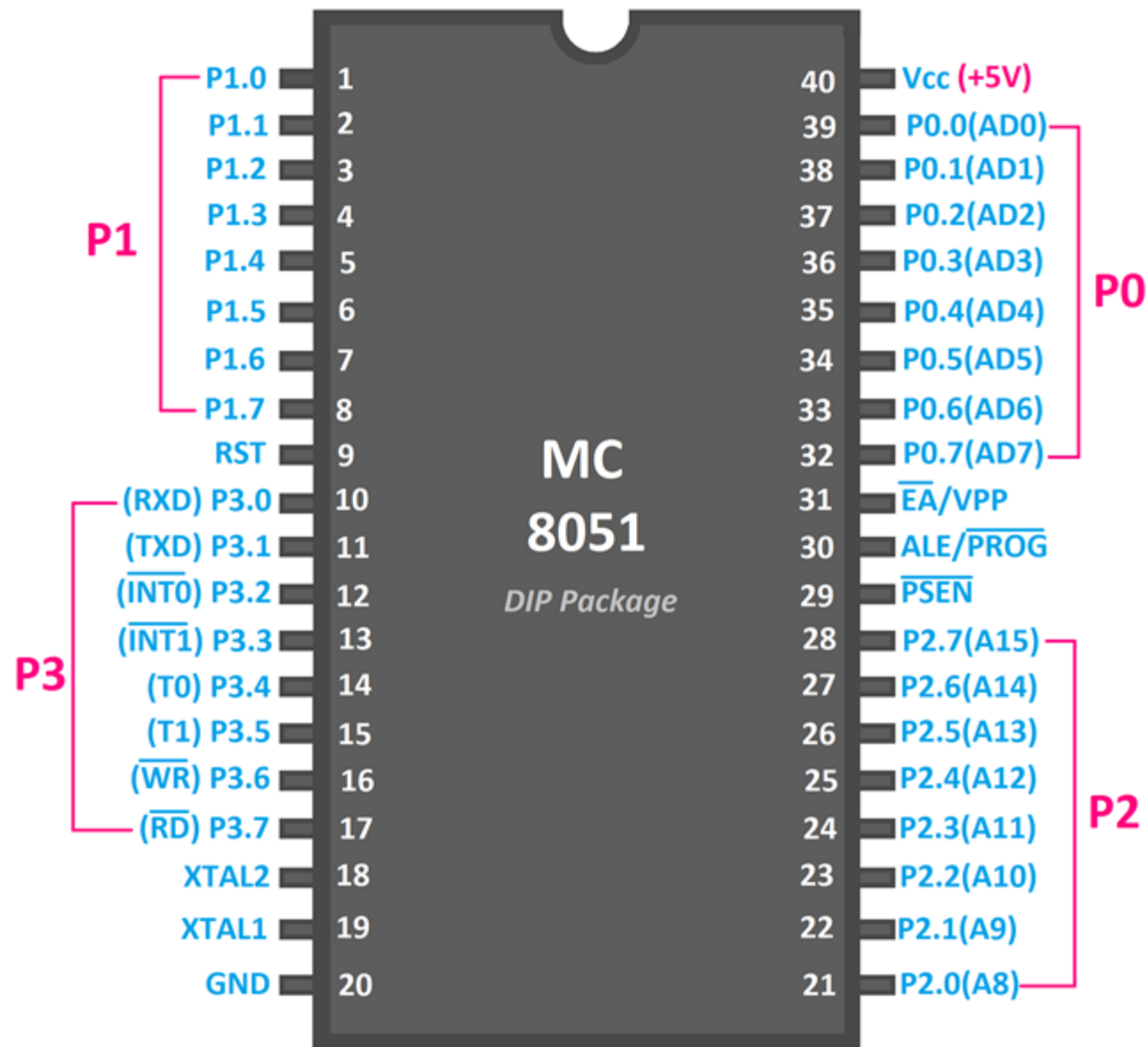
- ☐ They are Hardware Interrupt of 8051, in which $\overline{INT0}$ has higher priority.

❖ T0 {P3.4} & T1 {P3.5}

- ☐ They are Timer clock input of 8051

❖ $\overline{WR}$ {P3.6} & $\overline{RD}$ {P3.7} Control Signals

- ☐ They are used for read and write operation for RAM.



Microcontroller 8051 Pinout Diagram